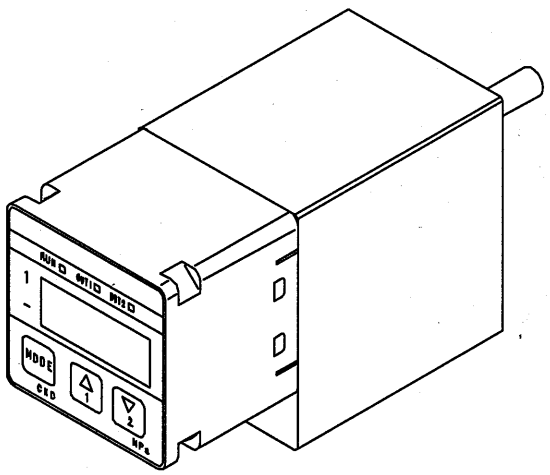
S M-50663-A

CKD

INSTRUCTION MANUAL

Pressure Switch for Coolant

CPD



- Prior to using the Product, it is essential to read this INSTRUCTION MANUAL, especially the description of Safety-use issue.
- For quick reference whenever necessary, keep this INSTRUCTION MANUAL in a good manner

CKD Corporation

Introduction

Thank you for choosing the CKD's Pressure Switch for Coolant "CPD ".

1. Purpose and use of the switch

It is an electronic pressure switch used for a general industrial machine and equipment.

2. Use of the switch

This is an electronic pressure switch used to confirm the fluid pressure.

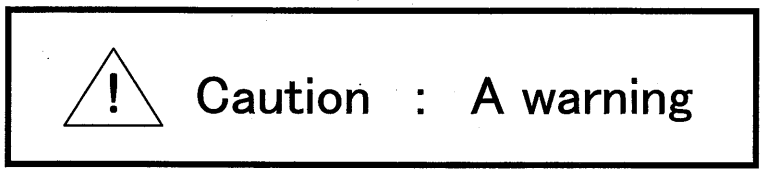
3. General precautions

- This instruction manual describes the basic matters regarding the handling of the product from the unpacking, installation, use, maintenance through withdrawal.
- The instructions for installation given by this manual assume that they will be read by specialist engineers, i.e.mechanics and electricians.
  Thoroughly read this manual before the design and installation in order to assure the safety of the machine or instrument and properly handle the product.

4. Safety precautions

- To avoid injury, fire and damages to the facilities, the warnings shown on the product shall be strictly observed.
  Please observe absolutely.
- Each warning has a heading "Danger?", "Warning" or "Caution" depending on the rating of the possible risk.
  As these switches are used as components of a machine or instrument, all the warning are shown with, the heading "Caution."

Example



【 Contents 】

1. Unpacking

- Check that the model No. shown on the face plate of the product agrees with that you ordered.
- Check that the product has no external damages.
- Attach a seal plug to prevent foreign matter from entering during storage. Remove the seal plug before starting piping.
- This product's protection performance is not attained when the package is opened or before the product is installed. The protection performance is attained only when the product has been correctly installed, wired and piped. Provide sufficient protection and prevent water, etc., from coming in contact until installation is completed.

2. Installation

2. 1 Conditions for installation

2. 1. 1 Installation posture

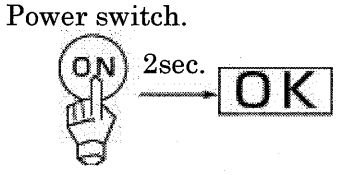
- The installation posture of the switch is free.

2. 1. 2 Precautions for handling and installing

- Turn the power OFF and ON at the voltage's quick rising edge and falling edge.

  If an unstable voltage lower than the rated level is supplied continuously, this may cause the product to malfunction and the product not to be recovered after the voltage is returned to the rated level. If this occurs, turn OEF the power, and then turn it ON again. Additionally, if the power voltage drops to a level lower than the rated level even instantaneously, turn OFF the power, and then turn it ON again.

  As well, after the power is turned ON, this product carries out a self-diagnosis of the internal circuit, so the pressure is not detected immediately. The control circuit is so designed that the signal is ignored for approximately 2 sec. after the power is turned ON.

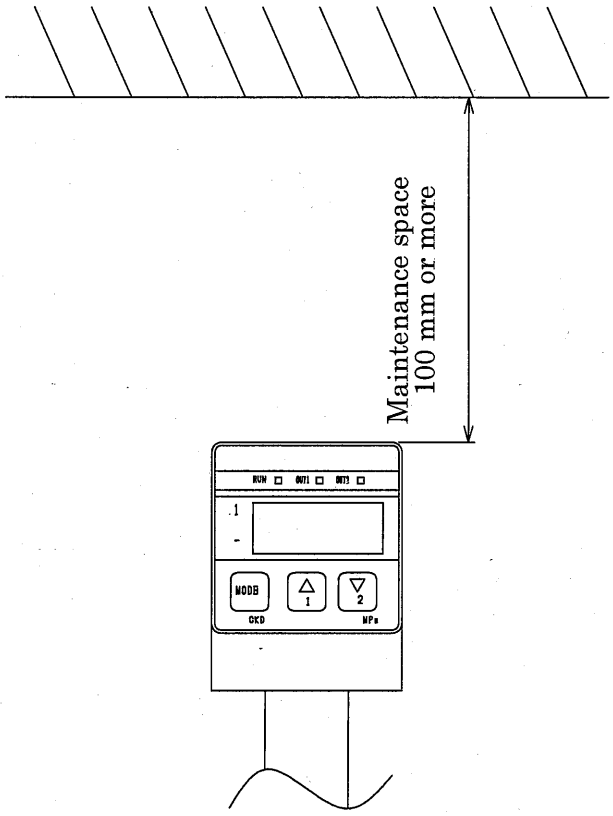


- The CPD switch output's over-current protection turns the output OFF when a short-circuit current is detected. However, the output is repeatedly turned ON for a short time to check whether the current has been recovered from the short-circuited state. If this product is used with a device that generates a rush current, such as a timer type relay, the rush current may be detected as a short-circuit current. This will stop the power and prevent drive. Select the device while paying attention to the constant drive current as well as the transient current capacity.
- Avoid using this product where it will be subject to vibration or impact. Also avoid vibration and impact on the lead wires, wiring and piping.
- Take care to the temperature of the fluid being measured and the environmental temperature in the piping.
- Avoid connecting the output for a relay contact, operation switch or other component's output in parallel with the PC to the product's output, or short circuit the input terminal of the PC to which this product is connected with the power supply cable's minus side to test the input device. This product's output circuit could be damaged.

- Take care when using this product for an interlock circuit. When using the pressure switch for an interlock signal requiring a high reliability, provide a double interlock by installing a mechanical protection function or a switch (sensor) other than a pressure switch as a guard should trouble occur. Periodically inspect and verify that the double interlock functions correctly.
- Wire and pipe the product after fixing it at the installation place. Check the surrounding safety and make sure that water and other substances will not come in contact before starting wiring. Continue to provide protection after the product is connected. (The current could leak at the connection, and water could run along the cable and enter the case.)

2. 1. 3 Space for maintenance

- An adequate space shall be provided around the switch to assure the safety during the maintenance/troubleshooting work.



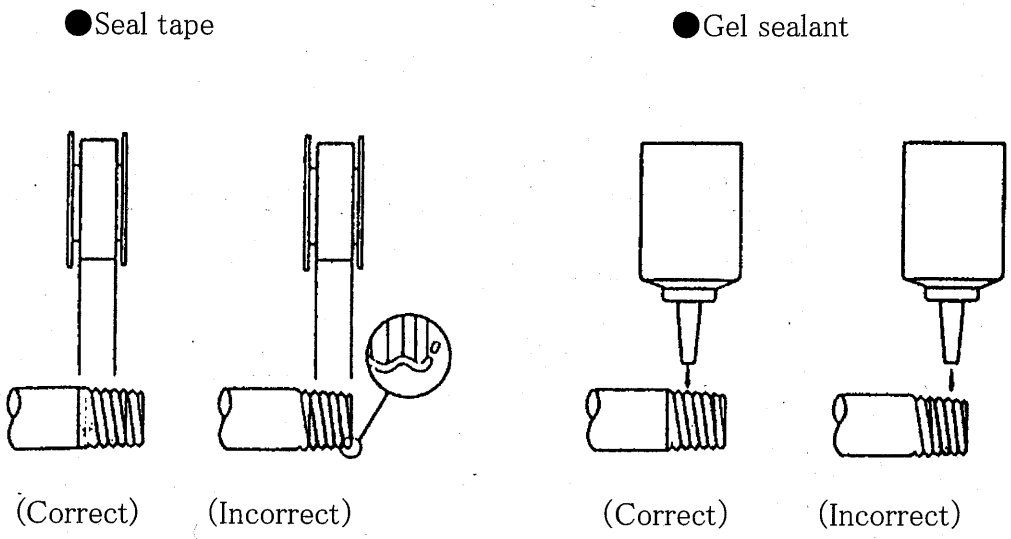
(Fig. 2-1)

2. 1. 4 Protection of the product

- When using the switch in a cold district, au adequate provision is required to prevent the freezing of the switch.
- When the switch is used, protect it such as by installing it in a cover or panel, so that it does not come directly in contact with water or coolant.
- The switch cannot be used outdoors. Installing the valves in a cover or panel should protect them.

2. 2 Piping work

- Sufficiently flush the pipes and confirm that no foreign matter, swarf or burrs are stuck on the piping material before connecting the pipes.
  Remove the foreign matter, swarf and burrs from the pipes by blowing with 0.3MPa or higher compressed air.
- Dirt and foreign matter in the fluid will cause operation faults and seat leaks.
  Install an approx. 80 to 100 mesh strainer in front of the switch.
- Take steps to meet the situation as damper, absorber, accumlator are installed to ease water hammer, plunge pressure or pulsatory motion if necessary.
- When the switch is under pressure that crosses **withstanding pressure" value**, even if it is momentary, it sometimes makes damage the switch.
- The sealer shall be used with great care to prevent it from entering the pipes or leaking out.
  When taping a threaded portion, 1～2 threads at the end of the portion shall be exposed. (Figure 2-2) If the sealing tape protrudes from the end of the pipe threads, the tape could be cut when the pipe is screwed in. The cut pieces could get inside and cause trouble.
  When using liquid sealer, take care not to apply too much sealer. Similarly to the ease of taping, threads, at the end of the threaded portion shall be exposed.
  Do not apply to the female screw of the apparatus.



(Fig. 2-2)

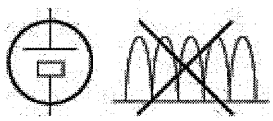
- Tighten the pipes with the appropriate torque to prevent leaks and thread damage. To prevent damaging the threads, tighten by hand first and then use a tool.
  The recommended tightening torque for piping is 23 to 25N·m. (Size: Rc1/4)
- Instead of applying hand tools over the resin part of the unit, always apply it on the metal part of the port during the work of laying pipes of connecting joints.
- Suspend the 'body of unit to handle it. Carefully avoid bouncing, dropping, charging an excessive load to the lead cord or giving frequent bending stress to the cord. They could result in an unsatisfactory level of accuracy, disconnection or failure. As well、connect the wires in an environmentally resistant wiring box, such as a waterproof box, according to the working environment. Make sure that the box is at atmospheric pressure. (Take care to prevent water entering from the lead wire ends.)
- The hexagon socket taper screw plug (size: Rc3/8) can be removed and the port used as a fluid introduction port. In this case, close the Rc1/4 port with a plug.

2. 3 Wiring work

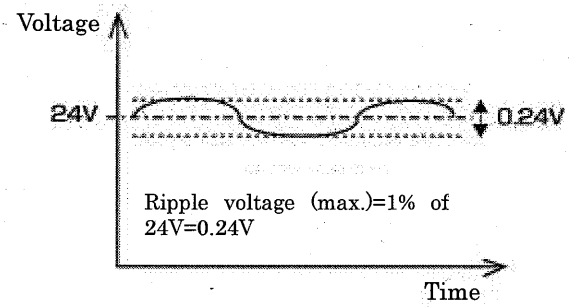
> ⚠ CAUTION : Take extreme care never to make a wrong Connection.

2. 3. 1 Precautions for wiring

- Always discharge any static electricity accumulated in the worker's body or tools before and during the work.
- A local reverse connection protection and over-current protection circuit is assembled into this product. However, this does not protect against all incorrect connections and overloads. This circuit does not protect against reverse connection of the switch output or against a connection with an over-voltage, reverse voltage or AC power. It also does not provide protection against a compound incorrect connection or incorrect use. An incorrect connection could result in critical damage extending past this product to other peripheral devices.
- Use a DC stabilized power supply within the rating that is insulated from the AC power supply. A non-insulated power supply could result in electric shocks. If the power supply is not stabilized, the peak voltage value could be exceeded resulting in product damage or a drop in accuracy.



- Use a stabilized power supply unit that can provide a noiseless power with a ripple voltage of 1% or less.



- Stop the control device and machine devices, and turn the power OFF before wiring. Starting operation immediately after wiring could result in unpredictable operation and hazards. Carry out an energized test with the control devices and machine devices stopped, and check the switch data settings and unit settings before starting operation.

- Do not operate any control unit, device or machine just after the wiring of this product. Unexpected signals could be output if an incorrect setting value is inadvertently set. Carry out an energized test with the control unit and machine devices stopped, and set the target switches.
- Install this product and wiring away from the power distribution line and noise source.
- Provide separate measures for noise that enters the power cable. Avoid connecting and using an inductive load, such as a solenoid valve, relay or solenoid to the same power as the DC power connected to this product. As a rule, use a separate DC power for the sensor system and drive system. If the power cannot be separated, directly install a flywheel diode for all inductive loads in the same power circuit.

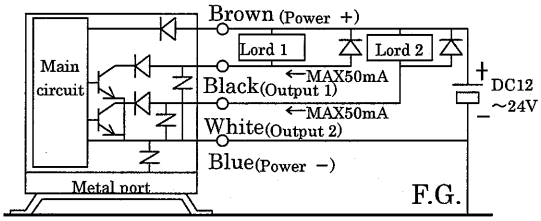
● Provide the following measures to avoid faults caused by noise.
①Insert a line filter in the AC power line.
②Use a surge suppressor, such as a C.R diode, on the inductive load (solenoid valve, relay, etc.) to eliminate noise at the source.
③Separate the wires from strong magnetic fields.
④Connect the wires with shielded wires.
⑤Connect the shielded wire to the ground on the power side.

2. 3. 2 Wiring methods

● Connect the lead wires as shown below. Check the connection before turning the power ON. Wait at least five minutes after turning the power ON to allow the device to warm up and stabilize before starting operation.

Brown ... Power (+)
Blue ... Power (−)
Black ... Output 1
White ... Output 2

<Example of connection circuit>



● Install this product on a frame or panel which is connected to the frame ground (F.G.). If necessary, connect the wires directly from the CPD port to the F.G. When leading in fluids from an external device, connect via a relay joint which is connected to the F.G.
(Safety measure when using conductive fluids.)

● Connect either the plus (+) or minus (−) side of the power cable to the F.G. A varistor (limit voltage approx. 40V) is connected between this CPD's internal power circuit and body to prevent the sensor from being damaged by static electricity. Do not perform a withstand voltage test or insulation resistance test between the CPD's internal power circuit and body. An excessive potential difference between the PCD power and body will burn the internal parts. If the device or frame is electrically welded or if a short-circuit occurs after the CPD is installed, connected and wired, the welding current or the transient high voltage and surge voltage generated during welding could run through the cables or grounding cable connected between the above devices. This could damage the cables or devices. Disconnect this device's and the electrical cable F.G. connections before performing any work such as electrical welding

3. Confirmations before use (Confirmation after installation)

3. 1 Confirmation of appearance

Caution: ● Shut off the fluid flow.(Close the main. shut-off valve)
● Turn off the power.

● Push the switch by hand to confirm that it is securely fixed onto the pipe.
● Confirm that the screwed parts are not loose.

3. 2 Check for leakage

● Compress the fluid to cheek for leakage at pipe joints.
It is recommended to check for leakage by supplying compressed air of 0.3 to 0.5MPa with soapy water applied to the joints. Air bubbles will be generated at the leaking joints.

3. 3 Electrical check

> ⚠ CAUTION : Turn off the power.

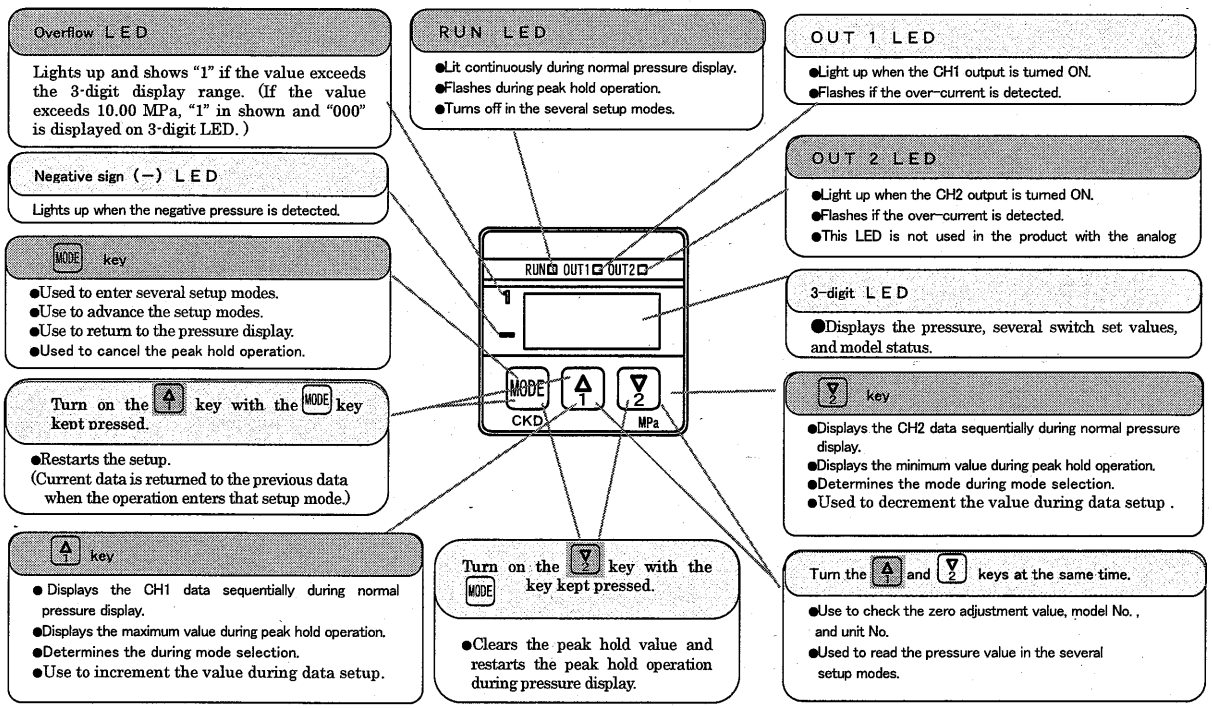
- Check the power voltage.
  Use exceeding the rated voltage will cause damage.

4. Appropriate usage methods

> ⚠ CAUTION : Do not flow an over-current.

- If an over-current flows to the pressure switch because of a load short-circuit, etc., not only will the pressure switch be damaged, it could also ignite. Provide an over-current protection circuit, such as a fuse, for the output wire and power cable as needed.

4. 1 Display and operation section



- Displays numbers and alphanumeric characters shown below by combination of LED lamps.
- Displays the pressure value, switch model, and switch status.

Number	0	1	2	3	4	5	6	7	8	9
Display status	0	1	2	3	4	5	6	7	8	9

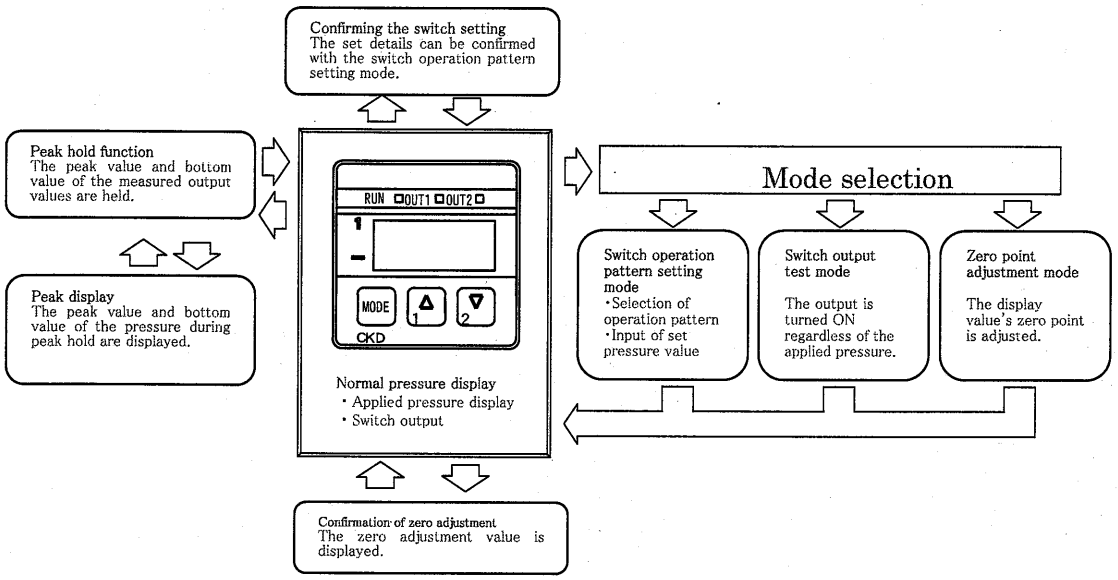
Alphabet	A	B (b)	C (c)	D (d)	H	I (i)	J	L	N (n)	O (o)	P
Display status	A	b	C	d	H	i	J	L	n	o	P

4. 2 Operation and setting

> ⚠ CAUTION : Check the surrounding safety so that the system (device) does not malfunction.

- Always operate the keys with fingertips. If sharp instruments, such as knives or screwdriver tips, are contacted against the plastic film on the operation section, the film could be damaged and the protective functions lost.
- Always stop the machine and devices, and confirm the safety before setting the switch outputs.

4. 2. 1 Functions and flow



4. 2. 2 Operation and setting methods

1. Mode selection methods

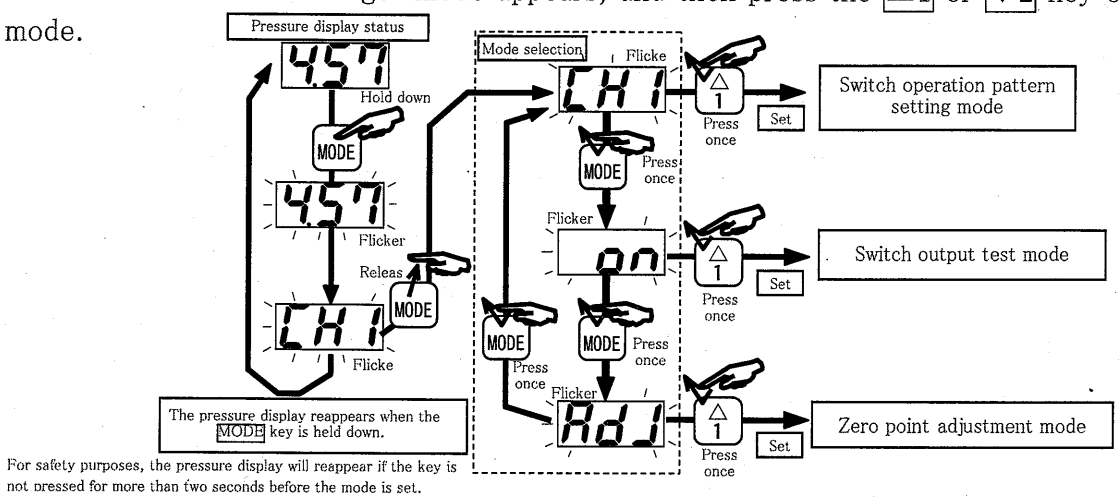
This product has the following setting and test modes which affect the functions of the pressure switch.

①Switch operation pattern setting mode, ②Switch output test mode, ③Zero point adjustment mode

These settings and tests greatly affect the output signal and display value. Always stop the machine and devices using this product, and confirm that safety can be ensured even if trouble or an incorrect display occurs before operating. Using this function while the machine or device is operating could result in unforeseen trouble or incorrect displays.

As a measure to avoid incorrect operations, all keys must be held down for a set time to select the mode.

Hold down the MODE key and then release it once after the display appears. Press the MODE key several times until the target mode appears, and then press the ▲1 or ▼2 key once to set the mode.



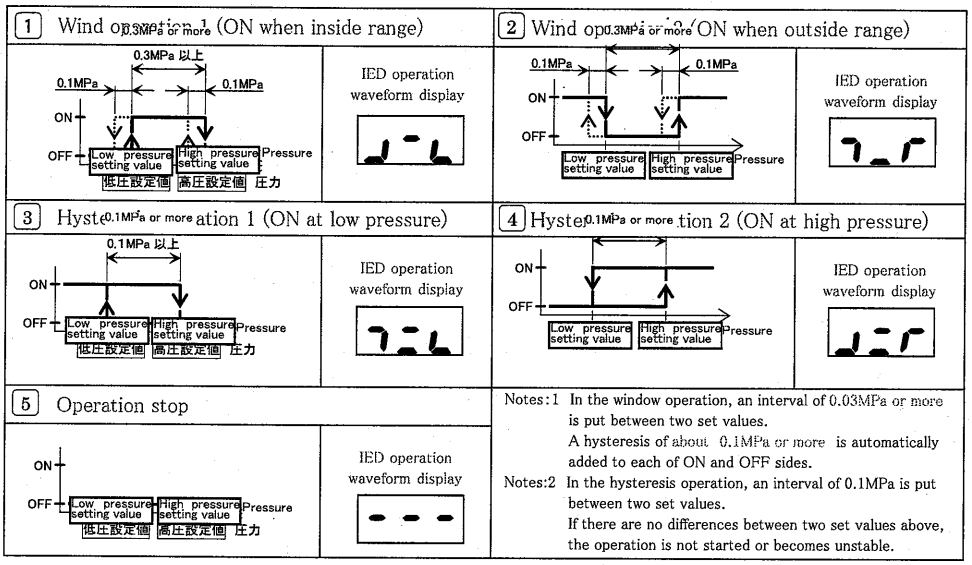
For safety purposes, the pressure display will reappear if the key is not pressed for more than two seconds before the mode is set.

2. Switch operation pattern setting mode

2.1Switch operation pattern

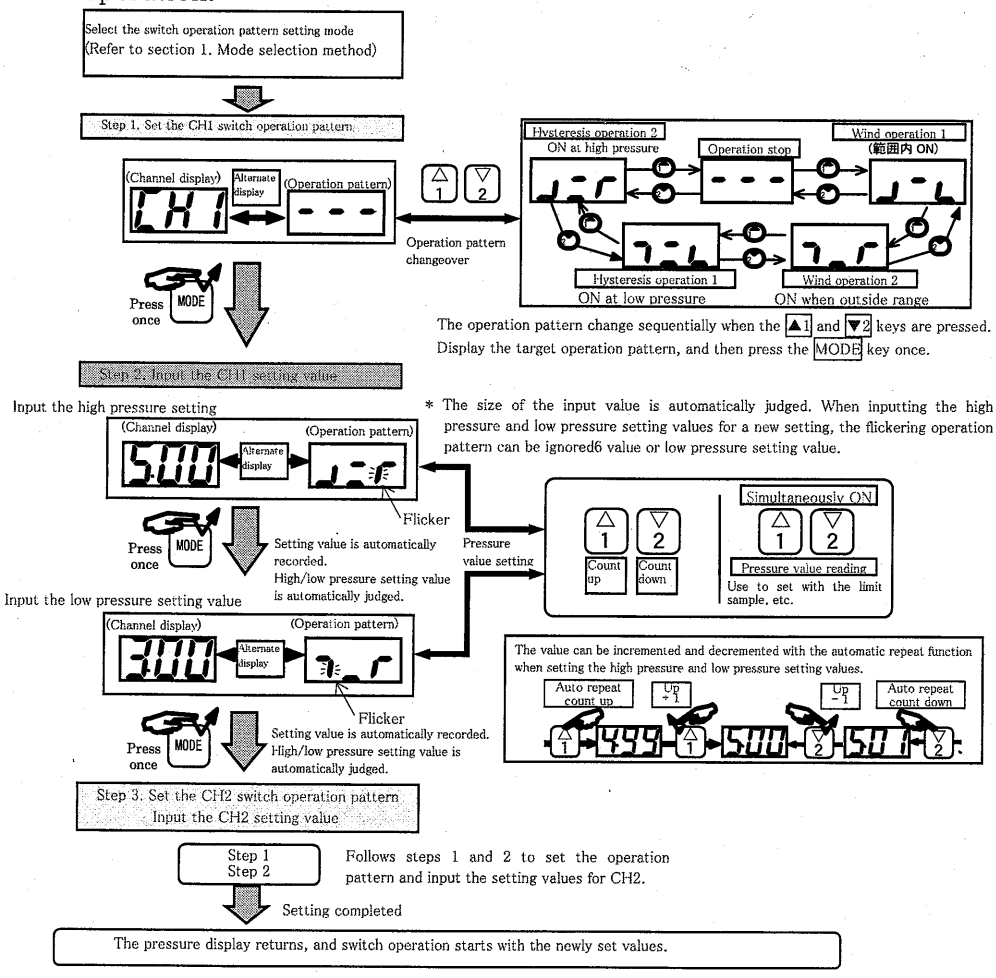
The CPD has two switch output points. Whether to run or stop the following four operation patterns can be selected for each output point. The switch function is started by setting the required operation pattern and the two setting values that specify the operation pressure.

Determine the operation pattern to be used, the high pressure setting value and low pressure setting value before starting the settings.



2.2 Switch operation pattern setting

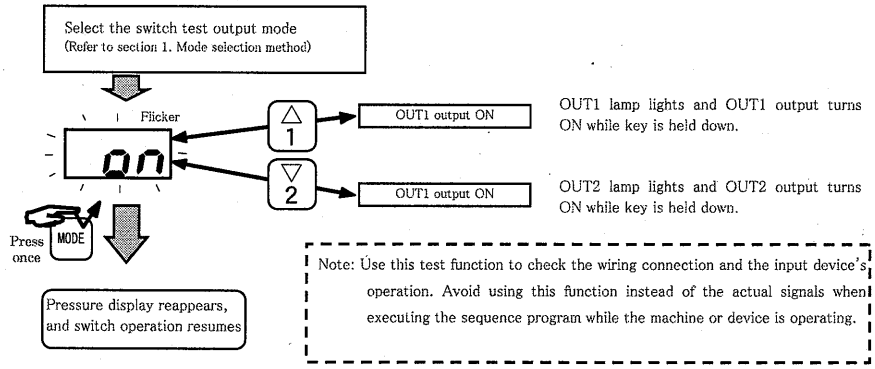
Select the switch operation pattern setting mode with the mode selection (refer to section 1. Mode selection method). Then, refer to the following procedure and complete the settings required for switch operation.



3. Switch output test mode

Select the switch output test mode with the mode selection (refer to section 1. Mode selection method). The display flickers during this mode. The OUT1 output turns ON while the ▲1 key is held down, and the OUT2 output turns ON while the ▼2 key is held down.

The display will return to the regular pressure display when the MODE key is pressed once.

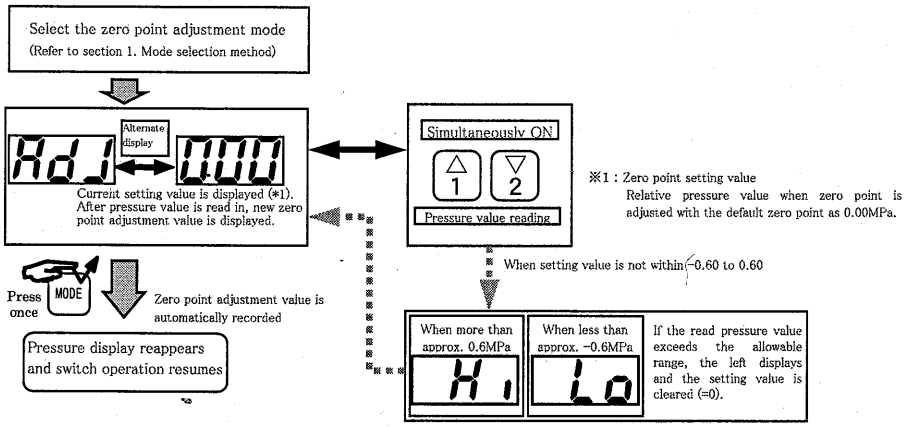


4. Zero point adjustment mode

Select the zero point adjustment mode with the mode selection (refer to section 1. Mode selection method). The display alternates between ADJ and the current zero point adjustment value during this mode.

When the ▲1 and ▼2 keys are pressed simultaneously, the pressure value at that point will be read in and displayed as the new zero point adjustment value.

When the MODE key is pressed once, the displayed zero point adjustment value is recorded and the pressure display compensated with the new zero point adjustment value is started.



Notes

1: In the zero adjustment, do not stick to complete zero display Always consider the ac-curacy range and allow a deviation within the accuracy range. The zero point may deviate immediately after the power to the pressure switch is turned ON or after a certain period of time has elapsed. Always perform the zero adjustment under stable conditions close to the operating conditions. Additionally, the zero point may vary depending on changes in ambient temperature.

2: Perform the zero adjustment with the pressure released to the atmospheric pressure level. Do not perform the zero adjustment with the pressure applied. Such operation is beyond the scope of guarantee and the reliability of the display value lowers. Even if the pressure is controlled to "0" using the regulator, the residual pressure may remain due to structure of the check valve. Disconnect the residual pressure release valve and pipe to put the product in the atmosphere release state.

3: The zero adjustment may affect the display pressure range. The pressure is not displayed at around the upper or lower limit of the rating even though the pressure level is within the rated pressure range.

4: When reading the pressure value during zero adjustment, instantaneous pressure value at that time is read. If the zero adjustment pressure varies, a change in pressure is read and deviation in zero adjustment value increases. Changes in pressure fluctuation at the zero point, as well as electrical noise may result in changes in pressure. After checking that the read value is correct, record the zero adjustment value.

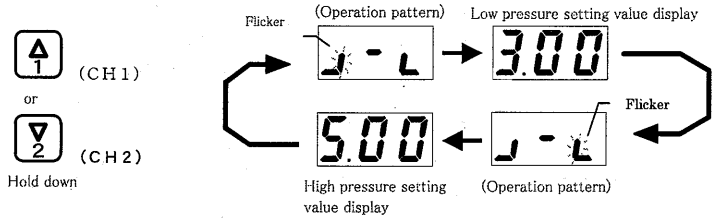
5: To clear the zero adjustment value, perform the zero adjustment with a pressure of 20% F.S. or more applied. (This ensures reliable clear process.)

5. Confirming the set value

The switch setting values and zero point adjustment value can be displayed and confirmed from the pressure display state without affecting the switch operation, etc.

5.1 Confirming the switch setting values

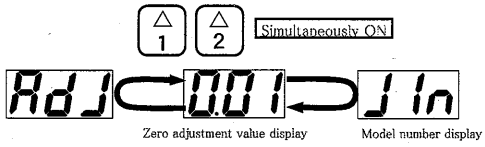
The CH1 operation pattern and high/low pressure setting values alternately display and can be confirmed while the ▲1 key is pressed. The values for CH2 alternately display while the ▼2 key is pressed. Note that the values will not appear if the operation pattern is stopped.



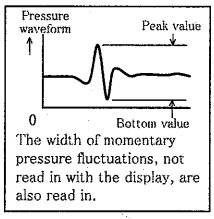
Note that the values will to appear when operation is stopped (operation pattern setting ---).

5.2 Confirming the zero point adjustment value

The values will alternately display while the ▲1 and ▼2 keys are held down simultaneously.



6. Using the peak hold function



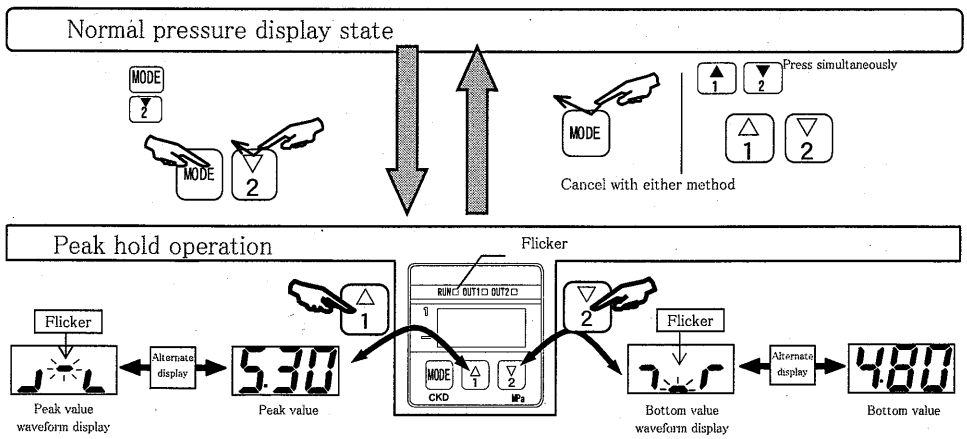
The maximum and minimum values indicated with the pressure value during a set period can be viewed.

Use this to confirm the stability of the main pressure and supply pressure, etc.

The peak hold operation does not affect the basic functions of this product, such as the switch operation and pressure display.

Press the ▼2 key once while holding down the MODE key. The RUN lamp will flicker, and the peak hold operation will start. If the ▲1 key is pressed during peak hold operation, the peak hold value and waveform display will alternately display. If ▲2 is pressed, the bottom value and waveform display will alternately display.

Press the MODE key once or press the ▲1 and ▼2 keys simultaneously to cancel the peak hold operation.



Note 1: The peak hold operation differs from the normal pressure display which shows the average value. The maximum and minimum values of the momentary pressure used for the switch operation is recorded. These values may differ greatly from the display value.
Note 2: The peak hold operation is canceled when the MODE key is pressed for setting the switch data, etc.
Note 3: The peak hold operation is also canceled when the power is turned OFF.
Note 4: The switch setting values and the zero point adjustment value cannot be confirmed during the peak hold operation. Cancel the peak hold operation before confirming these values.

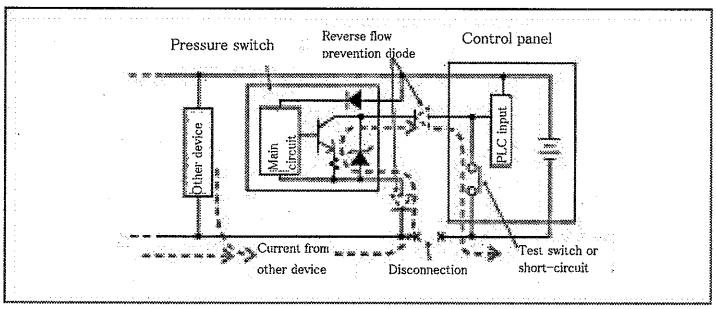
4. 2. 3 Precautions for operations and settings

- This product's switch output operation is detected and judged every approx. 2.5msec. The pressure display changes approx. 4 times/second, so only the average pressure can be displayed. Even if the switch operation pressure is not reached on the display, the switch operation may start in reaction to quick and momentary pressure fluctuations. Provide sufficient allowance to the setting value, or use a control circuit or program that ignores momentary changes in the switch output.
- This product's switch output operation judges with a finer resolution than the display value. Even if the switch operation pressure is reached on the display, the switch will not operate if it is less than the resolution level.
  Provide the following difference between data A and B to ensure stable operation.
- The value for data beyond normal pressure setting or unrealistically rated value may be set. However, in this case accuracy cannot be guaranteed. Whether it suits the operational purpose or not has to be verified, individually.
  Provide the following difference between data A and B to ensure stable operation.

Operation mode	Data difference
Hysteresis operation	0.1MPa or more
Wind operation	0.3Pa or more

{Data A = data B ON point = OFF point} This equation must not be satisfied.

- Determine the setting value taking the error caused by accuracy and temperature characteristics into consideration. Even if the pressure is constant, fluctuation of the detection value within the error range or the temperature could result in errors.
- Pay attention to reverse currents caused by disconnected wires and wiring resistance. When other devices, including pressure switches, are connected to the same power supply as the pressure switch, and the output cable and power cable's - side are short-circuited or the power supply's - side is disconnected to check the operation of the input device in the control panel, a reverse current could flow to the pressure switch's output circuit and cause damage.



Take the following types of countermeasures to prevent damage caused by a reverse current.

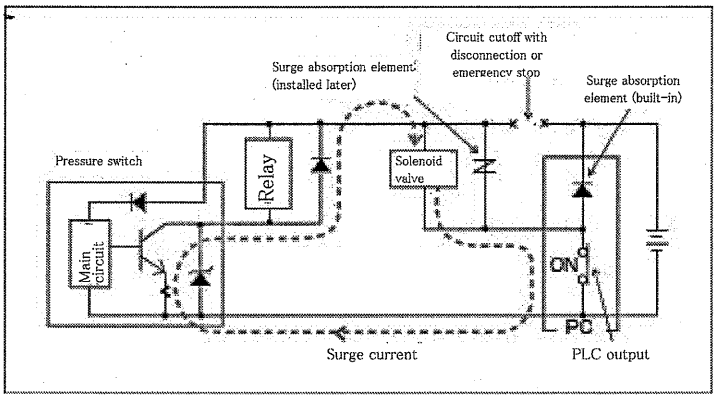
① Avoid concentrating the current to the power cable, especially the - side power cable, and use as thick a wire as possible.

② Limit the number of devices connected to the same power supply as the pressure switch.

③ Insert a diode in serial with the pressure switch's output cable to prevent reversal of the current.

④ Insert a diode in serial with the pressure switch's power cable minus side to prevent reversal of the current.

● Pay attention to leading of the surge current. When the pressure switch power is shared with an inductive load that generates a surge, such as a solenoid valve or relay, if the circuit is cut off while the inductive load is functioning, the surge current could enter the output circuit and cause damage depending on where the surge absorption element is installed.

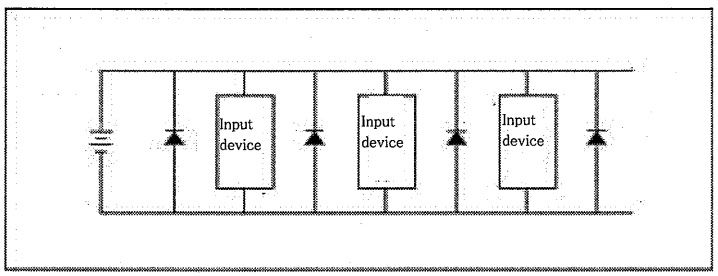


Take the following types of countermeasures to prevent damage from surge current that is led in.

① Separate the power supply for the output system comprising the inductive load, such as the solenoid valve and relay, and the input system, such as the pressure switch.

② If separate power supplies cannot be used, directly install a surge absorption element for all inductive loads. Remember that the surge absorption element connected to the PLC, etc., protects only that device.

③ Furthermore, connect a surge absorption element to the following places on the power wiring as shown below as a measure against disconnections in unspecific areas.



When the devices are connected to a connector, the output circuit could be damaged by the above phenomenon if the connector is disconnected while the power is ON. Always turn the power OFF before connecting or disconnecting the connector.

4. 3 Precautions

CAUTION : ● Always use within the specified range. Use for applications, or at load currents, voltages, temperatures, impacts or sites exceeding the specified range could result in damage or miss operations.

● This product cannot be used with high-pressure gas. This product has not been approved by High Pressure Gas Safety Laws. Do not use this product with devices subject to High Pressure Gas Safety Laws.

● Never use this product in an explosive gas environment. The pressure switch does not have an explosive-proof structure. Never use in an explosive gas environment as explosions or fires could result.

● Take care to the internal drop voltage. When using with a voltage less than the specified voltage, the pressure switch may activate correctly, but the load may not function correctly. Check the load's working voltage, and make sure that the following expression is satisfied.

Power voltage - Internal drop voltage > Load operation voltage

- Do not step on the switch or place heavy objects on it.
- A pressure exceeding the withstanding pressure, even momentarily, could damage this product. Install a damper, absorber or accumulator as necessary if the water hammer, rush pressure or pulsation must be eased.
- It is assumed that this product will be used at atmospheric level. Do not install it where it will be subject to corrosive gases, flammable gases, chemicals or solvents, or in a pressurized or reduced pressure environment.
- This product uses a stainless steel diaphragm sensor. Avoid measuring fluids containing elements which could infiltrate the SUS303 or fluorine rubber. Failure to observe this could result in leaks or damage from corrosion.
- Some types of coolants cannot be used as they could corrode the sealing agent. Contact CKD or your dealer for details.
- Refer to section "7. Troubleshooting" if there are any problems.

5. Disassembly and Assembly

- The product should not be disassembled.
- Disassembling may damage the product or decrease its performance. The manufacturer does not guarantee the performance of a product that has been disassembled.
- When replacing or relocating the product, be sure to remove the product together with its mount (pressurizing port).

6. Maintenance and Inspection

- In order to use this product in the optimal state, please usually perform a scheduled inspection once in hale a year.
- If the product is clogged with dirt, etc., remove the hexagon socket taper screw plug on the back, and clean out the inside. After cleaning out, wind sealing tape or apply sealing agent, and tighten with an appropriate torque. Catch a spanner on the metal section when tightening. The recommended tightening torque for the hexagon socket taper screw plug (size: Rc3/8) is 31 to 33N·m.
- This case is made of resin. Do not use solvent, alcohol or detergent to remove any contamination, etc., as the resin could be impregnated. Wipe off any dirt with a rag soaked in a diluted neutral detergent solution and wrung out well.
- Refer to "3. Pre-operation check" for the contents of check.

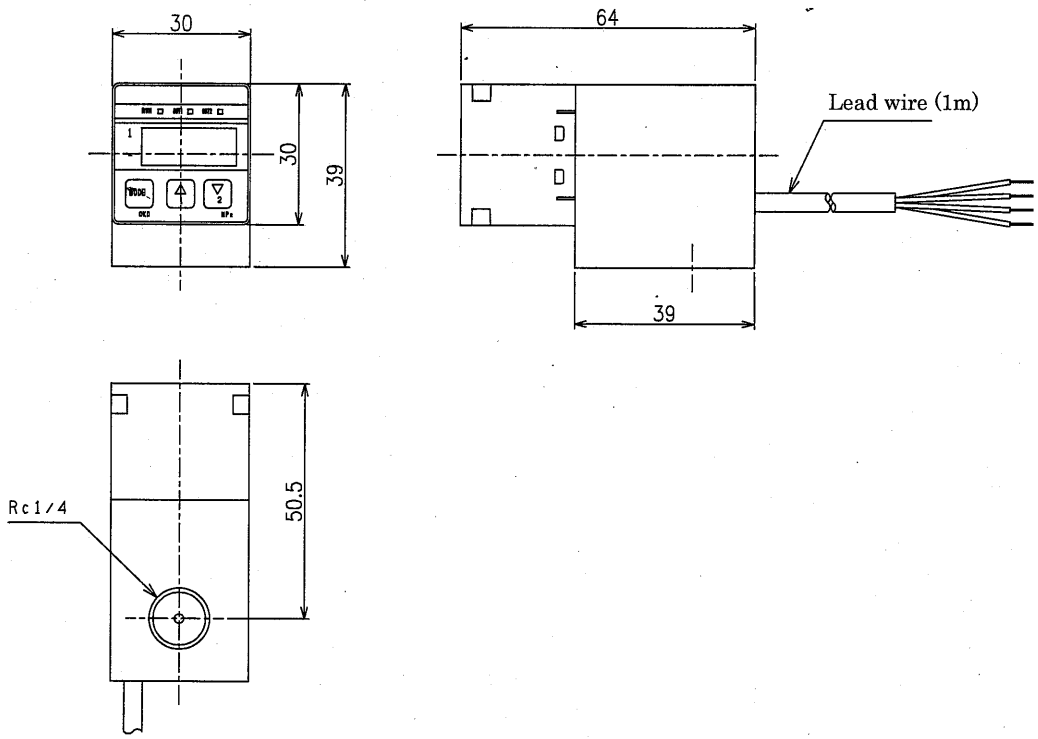
7. Troubleshooting

- If the switch does not operate as intended, refer to the following table and inspect it.

Irregular phenomenon	Cause	Measure
Pressure is not displayed	Disconnection	Replace the product
		Check the external wiring
	The power is not connected correctly	Correctly connect the rated power
	Miss operation caused by noise	Separate the CPD body and cable from the noise source
	Product fault	Replace the product
Pressure display indicates abnormal value	Power voltage fault (insufficient voltage or performance)	Supply the rated pressure
		Ensure the power capacity
	Miss operation caused by noise	Separate the CPD body and cable from the noise source
	Inappropriate zero adjustment setting	Reset the zero adjustment value
Switch output does not turn ON or is not output	Disconnection	Replace the product
		Reconnect the external wiring
	Incorrect switch data setting	Check and correct the setting
	Incorrect input circuit setting	Check and change the load or input circuit
	Damaged output circuit	Replace the product
Switch output does not turn OFF	Incorrect switch data setting	Check and correct the setting
	Incorrect input circuit setting	Check and change the input circuit
	Damaged output circuit	Replace the product
External leak	Loose hexagon socket taper screw plug	Tighten the plug (31 to 33N·m)
Internal leak	Sensor or O-ring damage	Replace the product

- Contact CKD or your dealer for any other unclear points.

8. Dimensioned outside drawing



9. Product specifications

9. 1 Model number indication

CPD - P70 N - 8

① ② ③ ④

①Model number indication	
Symbol	Details
CPD	Electronic pressure switch for coolant (with digital display)

②Pressure adjustment range	
Symbol	Details
P70	0～7MPa

③Switch output format	
Symbol	Details
N	2-point NPN transistor output

④Connection port	
Symbol	Details
8	Rc 1/4 downward lead out

9. 2 Product specifications

Item		CPD
Pressure sensing element		Stainless steel diaphragm pressure sensor
Working fluid		Coolant, other non-corrosive fluids
Rated pressure range	MPa	0～7
Withstanding pressure (at water pressure)	MPa	10. 5
Pressure adjustment range	MPa	0～7
Fluid temperature	℃	0～50
Ambient temperature	℃	0～50
Ambient humidity	%RH	0 to 85 (with no dew condensation)
Connection bore size		Rc1／4
Display		3-digit LED display 8mm
Display accuracy (25°C)		±2%F. S. (±0. 14MPa)
Temperature characteristics (0 to 50°C)		±4%F. S. (±0. 28MPa)
Repeatability	MPa	±0. 02
Power voltage		12 to 24VDC ± 10% (ripple ratio: 1% or less)
Current consumption	mA	50 or less
Output responsiveness	msec	Approx. 5
Switch output format		2-point NPN transistor open collector output
Switch output current	mA	MAX50
Switch output voltage drop	V	2.4 or less
Set value holding		EEPROM
Lead wire		Oil-resistant vinyl cord 4-core (0.2mm^2) 1m
Weight	kg	0. 36
Installation attitude		Free
Protective structure		IP65 (dust-proof, jet-proof type) or equivalent