

TY-CE20-001A



I N S T R U C T I O N M A N U A L

F O R

P R E S S U R E S W I T C H

M O D E L C E 2 0

NAGANO KEIKI CO., LTD.

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MANUAL FOR ACCURATE AND SAFE OPERATION

SAFETY CHAPTER FOR PRESSURE TRANSMITTER PRESSURE TRANSDUCER AND ELECTRONIC PRESSURE SWITCH

To use these devices accurately and safely, carefully read this manual and the operation manual. Incorrect usage may cause malfunction and result in human injury, accidents, etc.

Be sure to keep this manual for reference after reading.

WARNING

1. Do not apply more than the maximum allowable pressure.
Human injury or damage to surroundings may result due to explosion or breakdown of the pressure elements.
2. Do not use these devices on measured objects which are corrosive to fluid or gas contacting areas.
Human injury or damage to surroundings may result due to explosion or breakdown of the pressure elements and exposure of dangerous measured objects.
3. Do not apply excessive weight, vibration or shock.
Human injury or damage to surroundings may result due to explosion or breakdown of these devices and exposure of dangerous measured objects.
4. Use with the unspecified power supply may cause fire hazard or electric shock.
5. Use with the instrument temperature range.
Use outside the instrument temperature range may cause human injury or damage to surroundings due to explosion or breakdown of the devices.
6. Connect wiring accurately according to the wiring drawings or instructions in the operation manual.
Incorrect wiring may result in human injury or fire hazard.
7. Use devices with an explosion-proof construction when operating in places liable to have explosive gas.
Danger of ignition and explosion.
8. If the measured object is oxygen, use devices with anti-oil treatment.
Standard devices may possibly contain remaining oil, and there is danger of combustion and explosion if oil acts on oxygen.
9. Accurately install these devices according to the installation instructions in the operation manual.
10. Never attempt to reconstruct the main body of devices nor add any new function to the devices, etc. Contact us for repairs.

Note : Inform us in advance when using these devices in a way that may result in fatal or serious injury due to malfunction or incorrect operation.

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1. Introduction

CE20 electronic pressure switch has functions of current CE10. CE20 also has digital setting and a pressure display as additional functions.

It does not require to apply pressure while setting. It is easy to set the comparator with display.

2. Application

CE20 can be used as pressure alarm, pressure controller, input sensor of programmable controller or microcomputer, etc.

3. Features

- Because of employing stainless diaphragm for pressure sensor, CE20 dose not have the leak problem that many piston type switches have.
- CE20 can measure many kind of fluids including gases and liquid (water, oil), etc.
- Wide choice of pressure ranges. -100~300kPa to 0~50MPa are available.
- Easy setting operation. LCD panel helps delicate setting operation.
- Upper and lower limits and ON/OFF differences are possible to set freely in the pressure range. In addition, by the adoption on E PROM, CE20 can memorize a set value for longer than 10 years without back-up battery.



4. Specification

- Pressure range :

- 100	~ 300	kPa
- 100	~ 500	kPa
- 0.1	~ 1	MPa
- 0.1	~ 2	MPa
0	~ 300	kPa
0	~ 500	kPa
0	~ 1	MPa
0	~ 2	MPa
0	~ 3.5	MPa
0	~ 5	MPa
0	~ 10	MPa
0	~ 20	MPa
0	~ 35	MPa
0	~ 50	MPa

- Maximun allowable Pressure : Twice the rated pressure (exceptional 1.5 times for 35MPa and 50MPa)

- Connection : R1/4 , R3/8 , G3/8B ,

- Display accuracy : $\pm 1 \%F.S. \pm 1$ digit

- Setting : 1 or 2 CHANNEL

- Power source : 24VDC

- Display : Pressure display 3-digit

- Display period : 0.2 s

- Comparator response : Within 10ms

- Comparator output : Open collector 30VDC 80mA max.

- Operating temperature : -10 ~ 60 °C

- Wet materials : SUS630(equiv) ,SUS316, NBR (Part of pressure range)

- Case : SPCC

- Cable length : 2m

- Weight : About 200g

5. Instructions for Transportation, Storage and Unpacking

(1) Instructions for transportation

This instrument, which is precision-built, may become inoperative if dropped or subjected to a shock. Take utmost care when relocating it.

(2) Instructions for storage

Keep the instrument in an environment not so humid and substantially free from vibrations and dust. When storing a number of them in stack, be sure that their packings are not distorted or dropped.

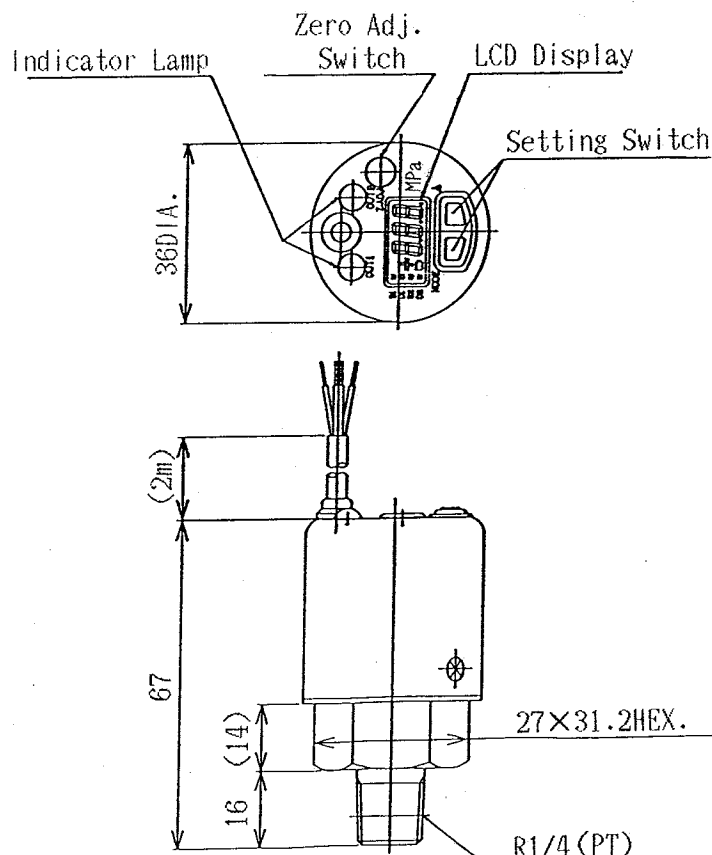
The direct sunlight, especially in summer, raises the meter to unexpected high-temperature. So, do not expose the meter to direct sunlight.

(3) Instructions for unpacking

In unpacking the meter, handle the packing carefully. It is important to unpack the meter in a sufficiently spacious place in order not to slip it down or otherwise harm it by mistake.

6. Name and Function

•Name



•Function

MODE switch:

This switch functions to toggle mode or to move among figures. To toggle between the pressure display mode and comparator set mode, press and hold down the switch more than 3 seconds.

▲ switch:

This switch functions to change a number while set mode. Press the switch once to increase the number.

Z.ADJ switch:

This switch functions to adjust zero point. Open pressure inlet to atmosphere, then push the switch. The display will be zero.

Set 1 operation indicator:

It turns on while the set 1 comparator is ON.

Set 2 operation indicator:

It turns on while the set 1 comparator is ON.

note 1) Press each switch surely to avoid any error.

note 2) Never remove MODE switch and ▲ switch's cover.

7. Instruction for Setting Comparator.

The point for setting comparator.

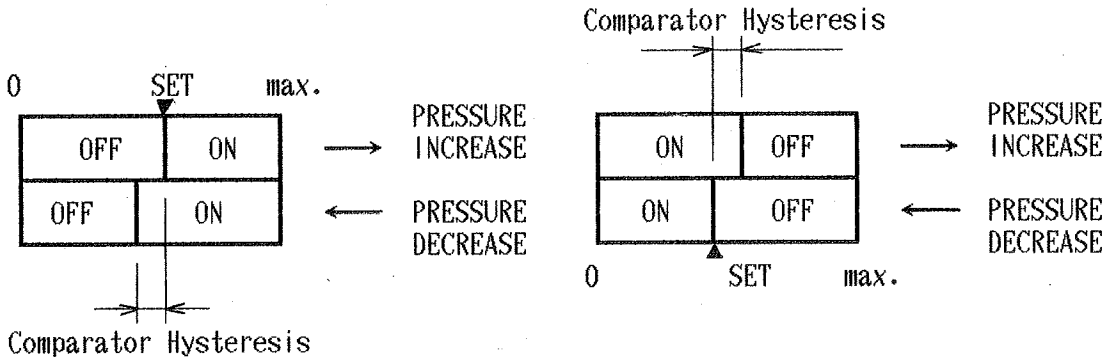
《Operating system》

Upper limit set point

The transistor turns ON at set point when pressure is on the increase.

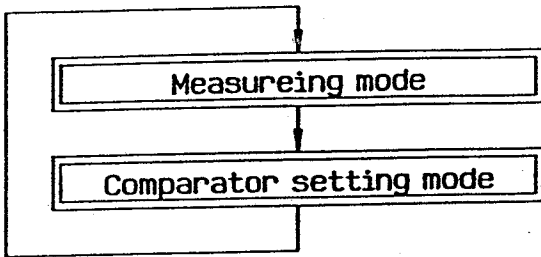
Lower limit set point

The transistor turns ON at set point when pressure is on the decrease.



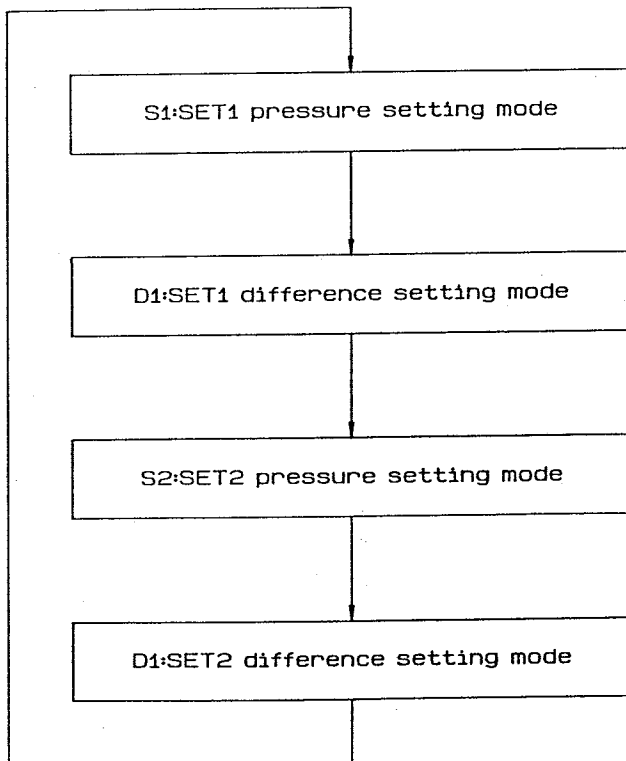
CE20 pressure switch functions either upper limit set point or lower limit set point shown as figure above by setting. The setting instruction is written in pp 7/9 to 8/9 To set the operating system, set the difference positive (+) for upper limit set point, set the difference negative (-) to for lower limit set point.

Two set point system has two independent comparators



① In the case to change mode from the measuring mode to the comparator setting mode.

Press and hold down MODE switch more than 3 seconds. The switch toggles the mode between the measuring mode to the comparator setting.

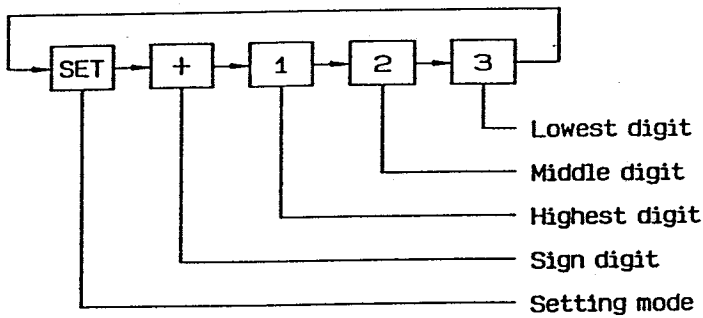


② Instruction for setting

Set mode to the comparator setting by 1.

Then,

Every time pushing ▲ switch, the mode will change as S1 → D1 → S1 → D2



S1:SET1 pressure setting mode.

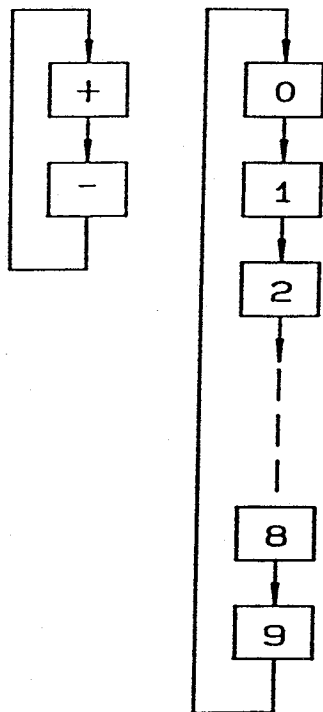
D1:SET1 difference setting mode.

S2:SET2 pressure setting mode.

D2:SET2 difference setting mode.

Every time pushing MODE switch, the flicker of the numbers of display will move as lowest-digit → sign-digit → highest-digit → middle digit → S1 - setting mode.

Mode to the figure (mode) you want to change.



Then, push ▲ switch. Every time pushing ▲ switch the display changes as 0 → 1 → 2 → 3 →

4 → 5 → 6 → 7 → 8 → 8 → 9 → 0 → 1

The sign-digit changes as + → - → +

After changing setting numbers, move cursor among S1 to D2.

The changing setting mode instructed in 1.



8. Installing

- (1) If the switch has been adjusted to a desired setting pressure value, you can install it in your apparatus. If not so, adjust it to the desired value following "7.SETTING COMPARATOR". The switch should be installed in a location that is shown below. In installing, never turn the cap of the switch, be sure to turn the hexagonal part of it by wrench. It can be installed in any position but the recommended method is to install the cap directly above the socket so that the liquid to be measured may not soak into it. You can see the brightening LED even from the side direction.

A recommended location for installing is:

- where vibration is not very high.
- where humidity is not very high.
- where the switch is not exposed to the sun.
- where water or oil does not fall.

(2) Wiring

The wire distinction is shown below.

- RED Electric source (+)
- BLACK Electric source (-)
- WHITE Open collector output 1
- GREEN Open collector output 2 (This is an optional function.)

Either switching regulator or series regulator can be used for the electric source and it should be able to supply 24VDC and adequate current to operate the switch. In using a number of switches, pay attention to the current consumption.