CONOTEC®
CONOTEC CO., LTD.
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ISO 9001:2008

Instruction manual   CNT-FDP CNT-FDC

◆ OUT2(FAN) OFF delay time

※ Thank you for purchasing CONOTEC product.

We distribute this manual to prevent damage and breakdown of product by carelessness and inform you of exact method of use. Please keep it well and refer to it when you have any question during use.

Regarding the English - language manual, please download it at our homepage.

1 Composition of model

Model	Input	Output	Input power
CNT-FDP	PT100	Relay 2 EA	AC100V~230V 50/60Hz
CNT-FDC	CA(K)	Relay 2 EA	

* Sensor is not included in this product, therefore you have to purchase separately.

2 Caution for safety

Please read "Caution" carefully before use and use it correctly.

※ Specification, appearance, dimension specified in this instruction manual can be changed without prior notice to improve performance of product.

⚠ Warning

1. Please use this product after attaching two-tier safety system definitely when it is used to control the equipment which may cause deadly consequence or serious damage to peripheral device and serious property damage, because this product is not manufactured as safety equipment.
2. Do not connect, check or repair it while power is supplied.
3. When connecting power source, please check terminal number without fail.
4. Never dismantle, process, improve or repair this device.

⚠ Caution

1. Please be well-acquainted with method of use, safety regulation and warning before installing this device, and use it definitely within the scope of defined specification and relevant capacity.
2. Do not wire line or install in a motor or solenoid where inductive load is large.
3. Use shielding wire when extending sensor and do not make it long more than needs.
4. Do not use component at same power source or close to it, which may generate arc when directly 'making and breaking' circuit.
5. Keep power line away from high voltage line and do not install where there is lots of water, oil and dust.
6. Do not install in the place of direct sun-light or exposed to rain.
7. Do not install where there is strong magnetism, noise, vibration or impact.
8. Please avoid place where strong alkaline or acid substance is directly generated, and use independent pipe.
9. Do not pour water directly to it for cleaning when it is installed in kitchen.
10. Do not install where temperature/humidity exceeds rating.
11. Use this device so as for sensor line not to be cut or scratched.
12. Please keep sensor line away from signal line, power source, power and load line, and use independent pipe.
13. Please be advised that A/S is not provided when this product is dismantled or revised arbitrarily.
14. ⚠ Mark in terminal connection diagram is a safety words for warning or caution.
15. Do not use this product near the device which generates strong high-frequency noise (high frequency welding machine, high frequency sewing machine, high frequency radio set, high-capacity SCR controller)
16. If this product is used in other way than specified by manufacturer, it may cause injury or loss of property.
17. Keep out of reach of children because it is not a toy.
18. Installation work should be done by related specialist or qualified person only.
19. We are not responsible for any damage caused by non-compliance of above -mentioned warning or caution words, or fault of consumer.
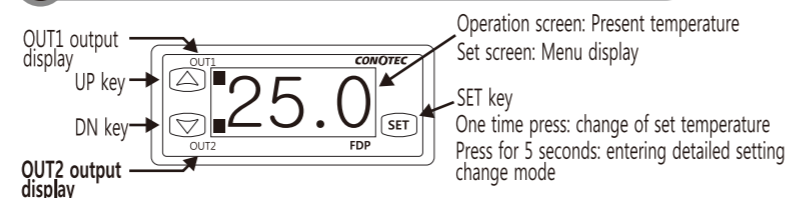
⚠ Danger

■ Caution, Danger of electric shock

1. Electric shock- Do not touch AC terminal while electric power flows. You may get electric shock.
2. When checking input power source, please cut off input power source definitely.

3 Specification of product

Input power	100~240VAC 50/60Hz	
Display	7 segment 3.5 Digit 0.51 Inch	
Sensor	PT100, CA(K)	
Accuracy	PT100 : ±1% dg ± 1 digit	
	CA(K) : ±1%rdg ± 1 digit	
Outputs	Out1(Relay) : Temperature control output (250Vac 2A Max, 1a relay)	
	Out2(Relay) : FAN control output (250Vac 2A Max, 1a relay)	
Correction of error	PT100 : -30.0~30.0℃	Time limit of memory: Approx. 10years (Non-volatile)
	CA(K) : -50~50℃	
Ambient condition	0~55℃, 35~80%Rh (There should be no freezing or dew condensation)	

4 Front operation and name of display unit

OUT1 output display
UP key
DN key
OUT2 output display

Operation screen: Present temperature
Set screen: Menu display

SET key
One time press: change of set temperature
Press for 5 seconds: entering detailed setting change mode

Change of user mode and setting of installer mode function
Change of user mode (Temperature setting)

Set If pressing this key once, 'SET' letter flickers and if pressing it one more time, set temperature flickers.
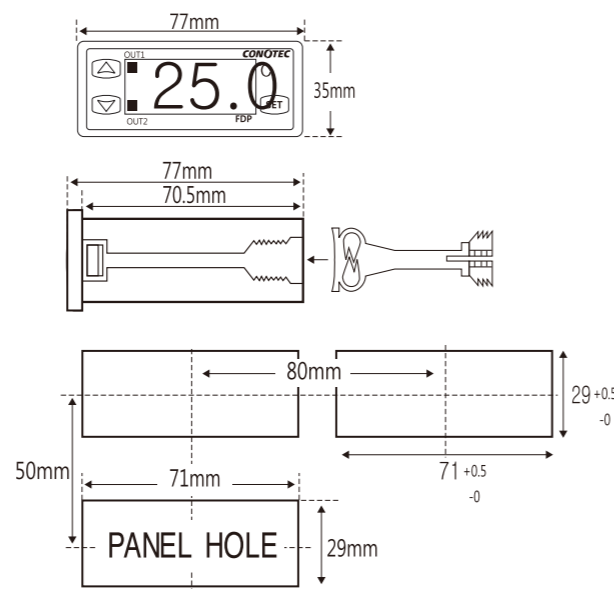
▲ ▼ Change set value by pressing these keys.

Set Set value is memorized if pressing this key one more time. Setting of installer mode function
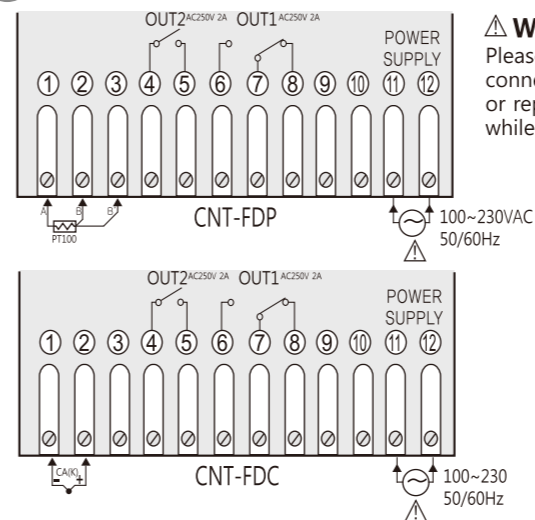
Set If pressing this key for more than 5 seconds, you can set various items on display panel in the order of user set maximum temperature, user set minimum temperature, C/H selection, delay time, deviation temperature and temperature correction etc., and set by each mode can be changed by Set keys. If pressing ▲ ▼ keys, you can go on to next mode.

※ After all set value is inputted and O-k message is displayed, it is restored to present temperature.
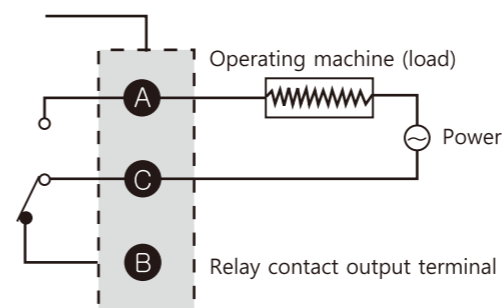
5 Outer shape standard of product and panel processing dimension

77mm
25.0
35mm

77mm
70.5mm

80mm
29 +0.5 -0
50mm
71mm
71 +0.5 -0
29mm

PANEL HOLE

6 Terminal connection diagram

OUT2 AC250V 2A   OUT1 AC250V 2A   POWER SUPPLY
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫
CNT-FDP
PT100
100~230VAC 50/60Hz

⚠ Warning
Please carry out connection work or replacing work while power is OFF.

OUT2 AC250V 2A   OUT1 AC250V 2A   POWER SUPPLY
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫
CNT-FDC
CA(K)
100~230 50/60Hz

Operating machine (load)
A
C
B   Relay contact output terminal
Power

Relay connection capacity is less than 250VAC 2A.
Be careful that if load which exceeds contact capacity is used, it may result in contact deposition, faulty contact and breakage of relay.

7 How to set program

CNT-FDP			CNT-FDC	
Function	Factory set value		Function	Factory set value
SET	30.0		SET	30
TYP	H		TYP	H
DLT	0.00		DLT	0.00
DIF	1.0		DIF	1
FOD	0.10		FOD	0.10
COR	0.0		COR	0

※ How to set FAN ON
If ▼ switch is pressed to make delay time below 0.00 it is set to ON.
(When FOD ON is set, FAN output is ON continuously.)

8 How to set program

Change of set temperature

CNT-FDP
25.0   SET
30.0   ▲▼   set temperature
SET
25.0   present temperature

CNT-FDC
25   SET
30   ▲▼   set temperature
SET
25   present temperature

Program setting

SET Set menu shift   ▲ ▼ Change of set value

CNT-FDP
25.0 present temperature
SET press for 5 seconds
1 TYP output type
SET
H ▲ Ccooling ▼ Hheating
SET
2 DLT temperature output delay time
SET
0.00 ▲▼ 0.00~19.59 (Minute, second)
SET
3 DIF output deviation temperature
SET
1.0 ▲▼ 0.1~25.0
SET
4 FOD Fan(Out2) off Delay time
SET
1.0 ▲▼ 0.00~19.59 (Minute, second)
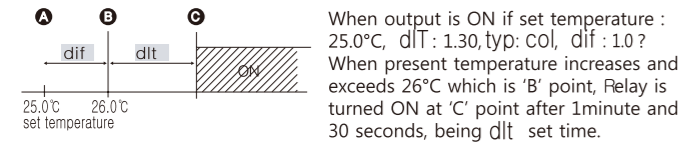SET
5 COR present temperature correction
SET
0.0 ▲▼ scope of corrected temperature −30.0~30.0

CNT-FDC
25 present temperature
SET press for 5 seconds
1 TYP output type
SET
H ▲ Ccooling ▼ Hheating
SET
2 DLT temperature output delay time
SET
0.00 ▲▼ 0.00~19.59 (Minute, second)
SET
3 DIF output deviation temperature
SET
1 ▲▼ 1~50
SET
4 FOD Fan(Out2) off Delay time
SET
1.0 ▲▼ 0.00~19.59 (Minute, second)
SET
5 COR present temperature correction
SET
0 ▲▼ scope of corrected temperature −50~50

1 `typ` **Output type setting**

Heater : `HET` setting   Cooling : `COL` setting
control   control

**2** `dLT` **Output delay time setting: Applicable to Relay ON/OFF control only**

It is used in case that object to be controlled repeats ON/OFF frequently
and causes problem. (Refrigerator or compressor, etc.,)
It has function to protect operating machine at the time of instantaneous
power failure or re-input of power.

When output is ON if set temperature :
25.0°C, `dlT` : 1.30, `typ`: Col, `dif` : 1.0 ?
When present temperature increases and
exceeds 26°C which is 'B' point, Relay is
turned ON at 'C' point after 1minute and
30 seconds, being `dlt` set time.

3 `dif` **Output deviation temperature setting: Applicable to Relay ON/OFF control only**

*Direction of deviation: One direction (+ direction) *Output is OFF at set point.

If Relay output repeats too frequent ON/OFF, output contact is damaged
quickly or hunting occurs by external noise (Oscillation, chattering).
To prevent this kind of phenomenon, it has function to protect contact
of device by setting a certain interval between output movement of
ON and OFF.
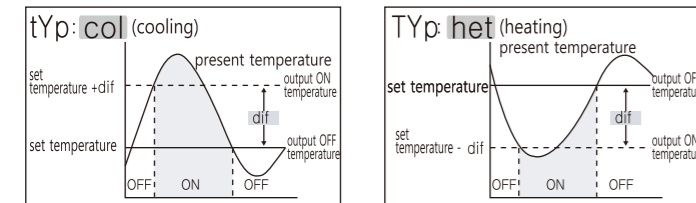
4 `FOD` **Out2 (Fan) output OFF delay time setting**

Out2 (FAN) is OFF after `FOD` set time elapses after OUT1 output is OFF.
(When `FOD` is set as `ON`, OUT2 is ON continuously regardless of OUT1.)

5 `COR` **Sensor correction**

When there is any difference between displayed value of present temperature
and temperature actually measured by precise measuring instrument, displayed
value can be adjusted to the temperature actually measured.
Example 1) Displayed value: 5°, Actually measured temperature: 10°⇒ Input Cor +5°
Example 2) Displayed value: 5°, Actually measured temperature: 2°⇒ Input Cor -3°

9 Other

* Sensor extension

-PT100 ohm sensor: All 3 strands should have same quality of material and thickness.
-CA(K): It should be extended with CA(K) sensor wire or exclusive compensating wire.
⇒We recommend soldering on extension area and be careful that poor treatment on
  extension area may cause malfunction of sensor by inflow of moisture.

* Sensor error display

`O-E` In case that sensor line is cut in the middle or it is connected to terminal loosely

`S-E` In case that sensor lines are short-circuited

* Memory error display

`ER1`: It is displayed in case that abnormal data is recorded in non-volatile memory
        inside product or it is damaged by serious external noise. If pressing "Set" key
        when this sign appears, set value is changed to factory set value.