ISO 9001:2008

CONOTEC®
Digital Temperature Controller

CONOTEC CO., LTD.   www.conotec.co.kr

USER MANUAL

FOX-1CH   FOX-1PH

1 Safety

※ Pls use this item after installing the duplex safety device in which is applied at dangerous factors such as serious human injury or serious damages of property & important machine because this item is not designed as safety device.

⚠ WARNING

1. As the product is not manufactured as safety equipment, make sure to use this product after mounting double safety device when using it for the purpose of controlling a device having risk of personal injury, equipment damage or huge property loss.
2. Do not cut the wire or make check-up or maintenance when the power supply is connected.
3. Make sure to check the socket number before connecting the power.
4. Never disassemble process, improve or repair this equipment.

⚠ CAUTION

- Please carefully read and digest the operation procedure and safety related regulations or WARNING descriptions prior to the use of product, and make sure to operate the product only per the relevant specification or within the corresponding capacity rating.
- Do not make wiring or install the product on motor or solenoid with large inductive loads. When extending the sensor, use the shielded wire not extending the extension wire length unnecessarily long.
- Do not use the components generating arc when opening and closing under same power supply line or near to power supply.
- Keep the power supply line away from high voltage wire, and avoid installation at the locations subject to severe moisture, oily content and dust.
- Do not install the product at places exposed to direct sung light or rain.
- Do not install the product at places subject to strong magnetism or severe noise, vibration and impact.
- Keep the product far away from the places directly producing strong alkali or acidic substances using separate conduit for wiring.
- Do not spray water on the product for cleaning purpose when installed at kitchen area.
- Do not install at those places under the temperature and/or moisture exceeding the rated capacity.
- Use the product paying attention not to have disconnected sensor wiring or defect.
- Allow the sensor wiring stay away from signal, power supply, drive and load wires using separate conduit for wiring.
- Please note that no warranty services shall be provided when the product is disassembled or modified at user's own discretion.
- The ⚠ mark shown on Terminal Wiring Diagram is a safety notice notifying warning or caution.
- Do not use the product at places near to the devices generating strong high frequency noise (High frequency welding machine, high frequency sawing machine, high frequency radio, large capacity SCR controller).
- Using the product with procedures not specified by the manufacture may incur the personal injury or property damage.
- Not being a toy, do not allow children touch the product.
- Make sure to execute the installation only by the skilled person with related industry or authorized personnel.
- CONOTEC shall assume absolutely no responsibility of whatsoever nature for those damages and/or losses incurred due to the operation not complying with above WARNING or NOTE descriptions or negligence and/or fault of user.

⚠ Danger

■ Caution, Danger of electric shock
● Electric shork - Do not touch AC board during on power because of electric shock.
● Please intercept input power surely when input power check.

2 Composition

Model	Sensor	Temp.range	Size(mm)	Output	Function
1PH	PT100Ω	-50℃~400℃	77(W)x35(H)	100~240VAC 50/60Hz	Temp.
1CH	K(CA)	-50℃~400℃	77(W)x35(H)	100~240VAC 50/60Hz	Temp.
1PH-D	PT100Ω	-50℃~400℃	77(W)x35(H)	AC:17~28V DC:12~35V	Temp.
1CH-D	K(CA)	-50℃~400℃	77(W)x35(H)	AC:17~28V DC:12~35V	Temp.

3 Part name

1 ← Setting up
2 ← Setting down
3 ← Output
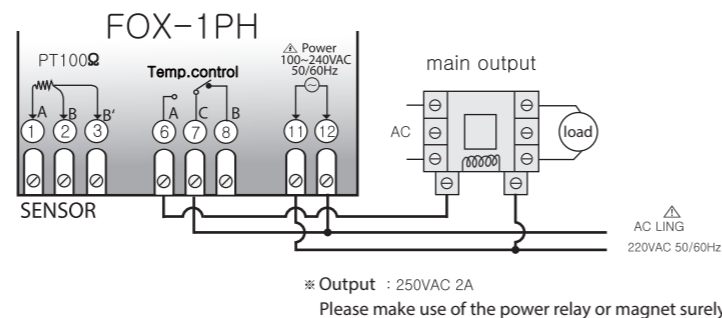4 → Change function switch

1 Setting up
2 Setting down
3 Output
4 Change function switch

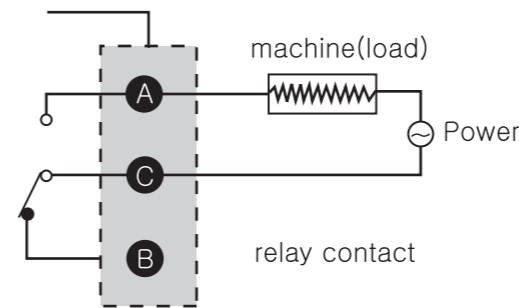### User mode change & installer mode function setting

• User Mode change(Setting up Temperature)

Set Pressing this key once, flashes the letter SET, pressing once again, flashes the set value.

▲ ▼ Change the set value with these keys.

Set Stores the set value with this key by pressing once again.

• Installer Mode Function setting

If press Set key for more than 5 seconds, dispalys and set in order such as user setting upper limit, lower limit temperature, C/H select, delay time, deviation temperatue, temperature correction, etc..
Each model setting is set to change with ▲ ▼ keys and press Set when change to the next mode.

■ After input all the setting value, and O-K message, then return to the current temperature.

4 Connection

FOX-1PH

PT100Ω   Temp.control   ⚠ Power 100~240VAC 50/60Hz   main output

A B B'   A C B
1 2 3   6 7 8   11 12

SENSOR   AC   load   ⚠ AC LING 220VAC 50/60Hz

※ Output : 250VAC 2A
Please make use of the power relay or magnet surely.

FOX-1CH

CA(K)   Temp.control   ⚠ Power 100~240VAC 50/60Hz   main output

A C B
1 2   6 7 8   11 12

SENSOR   AC   ⚠ AC LING 220VAC 50/60Hz

※ Output : 250VAC 2A
Please make use of the power relay or magnet surely.

FOX-1PH-D ⚠ Power AC:17~28V DC:12~35V

PT100Ω   Temp.control   AC/DC DC

A B B'   A C B   AC (+) (-)
1 2 3   6 7 8   10 11 12

SENSOR

FOX-1CH-D ⚠ Power AC:17~28V DC:12~35V

CA(K)   Temp.control   AC/DC DC

A C B   AC (+) (-)
1 2   6 7 8   10 11 12

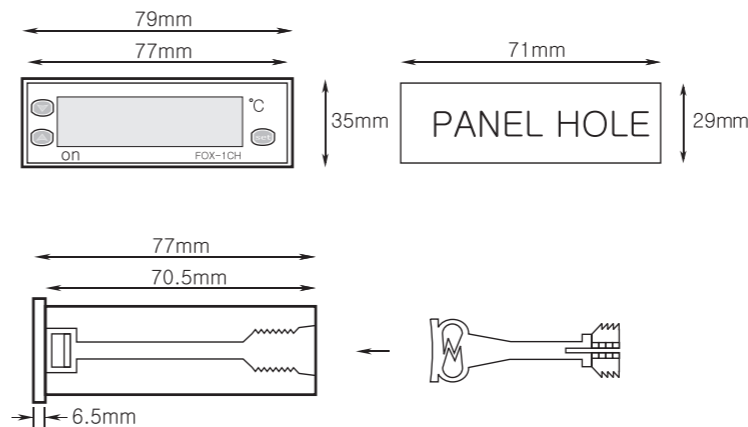SENSOR

■ Relay junction
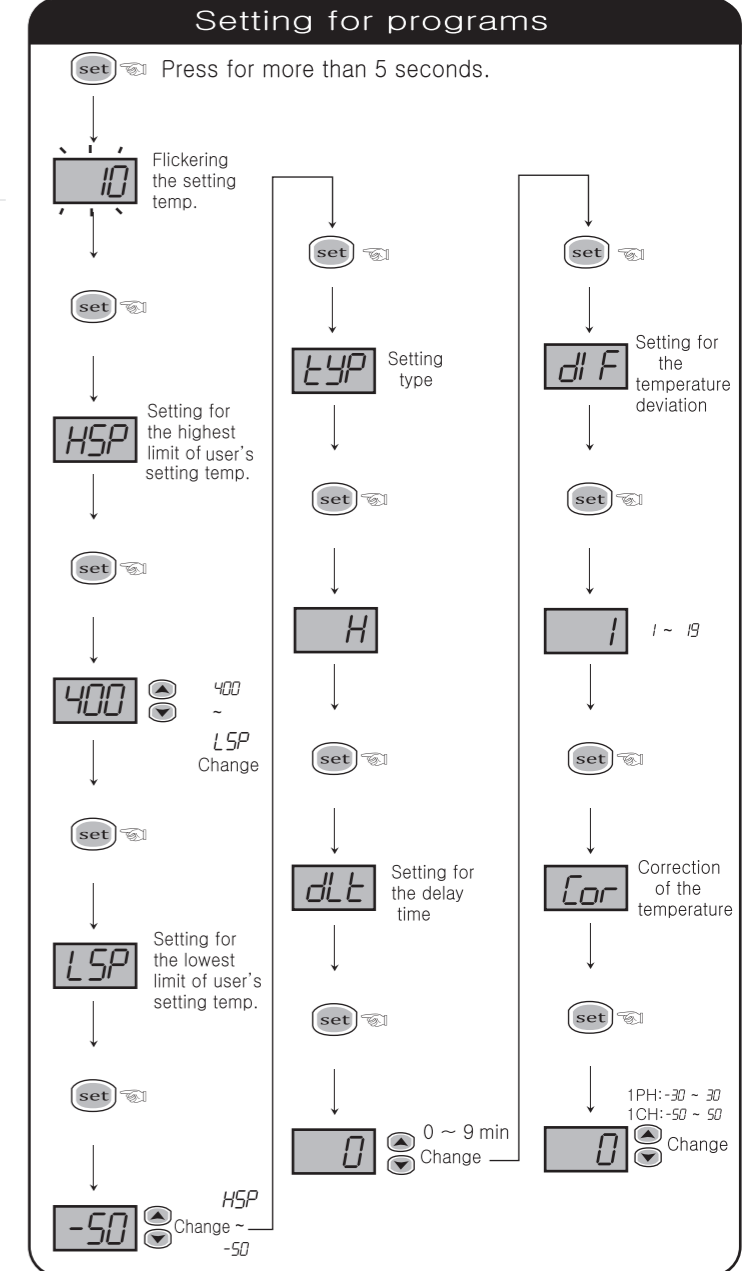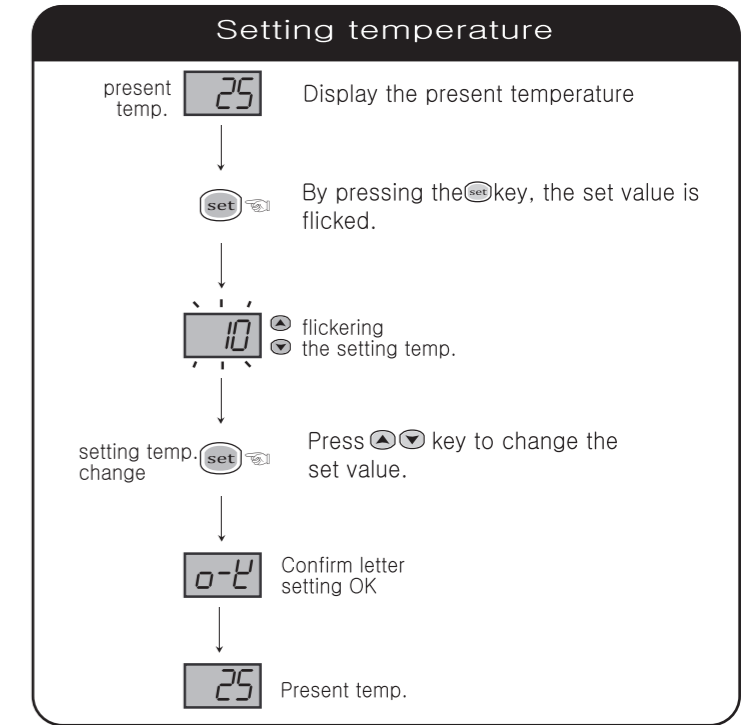
machine(load)
⊖ Power
relay contact

A
C
B

※ Relay contact capacity - less than 250VAC 2A
In case of using the load exceeding the capacity of the contact, it caused fused contact, connection error.
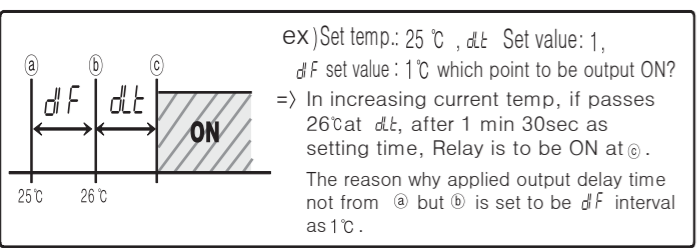
5 Dimension

79mm
77mm
35mm

PANEL HOLE
71mm   29mm

77mm
70.5mm

6.5mm

6 Sequence

Setting temperature

present temp. **25** — Display the present temperature

set — By pressing the set key, the set value is flicked.

10 ▲▼ flickering the setting temp.

setting temp. change   set — Press ▲▼ key to change the set value.

o-ʮ — Confirm letter setting OK

25 — Present temp.

Setting for programs

set — Press for more than 5 seconds.

10 — Flickering the setting temp.

set

HSP — Setting for the highest limit of user's setting temp.

set

400 ▲▼ — 400 ~ LSP Change

set

LSP — Setting for the lowest limit of user's setting temp.

set

-50 ▲▼ — HSP Change ~ -50

set — **tYP** Setting type

set — **H**

set — **dLt** Setting for the delay time

set — **0** ▲▼ 0 ~ 9 min Change

set — **dI F** Setting for the temperature deviation

set — **1** 1 ~ 19

set — **Cor** Correction of the temperature

set — **0** ▲▼ 1PH:-30 ~ 30 1CH:-50 ~ 50 Change

HSP : Setting function of the highest limit of temperature range
(Maximum set point allowed to the end user)
–Impossible to set up the set value more than *HSP* set value
ex) *HSP* = 25°C setting ⟶ impossible to raise the set value
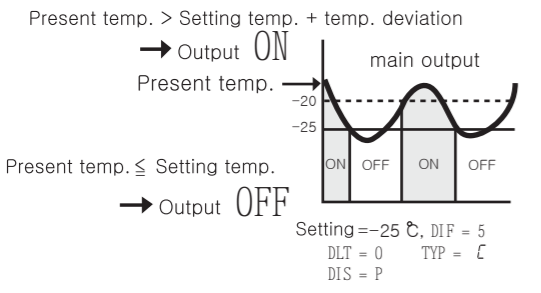more than 25°C

LSP : Setting function of the lowest limit of temperature range
(Minimum set point allowed to the end user)
–Impossible to set up the set value less than *LSP* set value
ex)*LSP* = 10°C setting ⟶ impossible to lower the set value
less than 10°C

tYP : Selection of the Cooling(*C*) & Heating(*H*)

dLt : Delay time of the output

–in case of operation machinery when re-input of the
power supply or momentary stoppage of power supply

ex)Set temp.: 25 °C , *dLt* Set value: 1,
dF set value : 1°C which point to be output ON?
=> In increasing current temp, if passes
26°Cat *dLt*, after 1 min 30sec as
setting time, Relay is to be ON at ⓒ .
The reason why applied output delay time
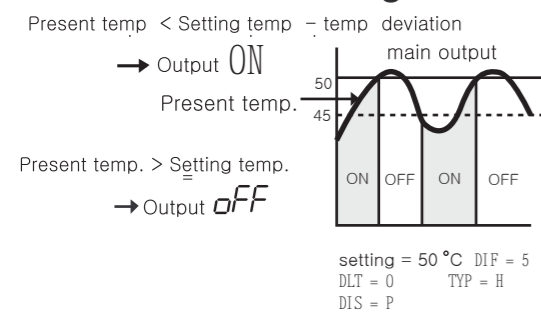not from ⓐ but ⓑ is set to be *dF* interval
as 1°C .

DIF : Setting for temperature deviation
– In the ON/OFF control, it need at regular interval between ON
and OFF.
– By operating the ON/OFF control frequently, the relay or its
output contact can be damaged quickly and it also occurs the
hunting(oscillating, chattering) by virtue of external noise,
You can make use of the temperature deviation in order to
protect its relay or contact and so on.

cooling

Present temp. > Setting temp. + temp. deviation
⟶ Output ON
Present temp.
Present temp. ≦ Setting temp.
⟶ Output OFF

Setting =-25 °C, DIF = 5
DLT = 0   TYP = *C*
DIS = P

heating

Present temp < Setting temp – temp deviation
⟶ Output ON
Present temp.
Present temp. > Setting temp.
⟶ Output OFF

setting = 50 °C DIF = 5
DLT = 0   TYP = H
DIS = P

Cor : Correction of the present temperature.
It is used for the correction of an discrepancy between the
display temperature and an actual temperature.

ex) actual temp : 10°C
display   : 12°C

*Cor* : 0 → −2 correction → 10°C display

Function \ Display	Model	FOX-1PH	Set value when deliver	FOX-1CH
Highest limit of temp. range	*HSP*	+400°C	+400°C	+400°C
Lowest limit of temp. range	*LSP*	−50°C	−50°C	−50°C
C/H	*tYP*	C / H	H	C / H
Delay time	*dLt*	0 ~ 9 min	0 min	0 ~ 9 min
Temp. deviation	*dF*	1 ~ 19°C	1°C	1 ~ 19°C
Correction of temp.	*Cor*	± 30°C	0°C	±50

※ It shall be turned off at the setting temperature because the
temperature deviation is only one sided deviation, + or −
ON is depended on the deviation setting.

■ application

ex)Heater⟶ turn off at 30°C ,turn on at 25°C
How to operate(setting for the temperature&programs)?
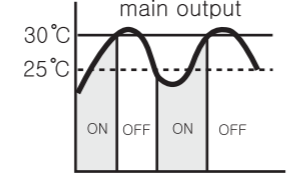
<Setting temp.> (see the setting temperarure)
setting : 30°C
<Setting program> (see the setting for program)
tYP : *Htt*
dS : *P*(deviation⟶one side, set point ⟶off)
dF : 5 (on/off interval⟶ 5°C)

ex2) Cooler ⟶ turn off at 0°C ,turn on at 2°C
How to operate(setting for the temperature&programs)?
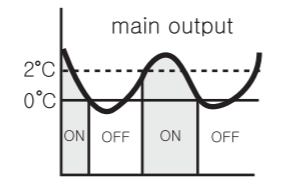
<Setting temp.> (see the setting temperarure)
setting : 0°C
<Setting program> (see the setting for program)
tYP : *C*
dS :*P* (deviation⟶one side, set point⟶off)
dF : 2 (on/off interval⟶2°C)

• Indicating ERROR on using items

• This *Er1* is the damage of memory data for various of inner
–DATA due to be got nosied strongly from outside while
using this items. Please request us A/S by return.
Although our controller is designed as the complementary
measures regarding these noise from outside, it is not
endurable against these noise with endlessly.

• If noise(2KV) disordering become an inflow, the inner-part
will be damaged.

• O-E(open error), S-E(short error) In this case, sensor error,
the sensor is interrupted. Check the sensor cable.

• If the error message persists, please request A/S by return.

MEMO