DS FOX®
DAESUNG ENG
Digital Temperature Controller
www.foxeng.co.kr

Introduction manual

1 Caution for safety

Read carefully this instruction manual before use and use the product properly.
※ The specifications, appearance and dimension may be changed for improvement of performance without a prior notice

⚠ WARNING

1. This product is not made as a safety device, so when it is used for a control of devices feared to cause casualties, damages to the peripheral devices or huge property loss, the double safety devices should be arranged before use.
2. Avoid connecting lines, checking and repairing the products while power is supplied.
3. Connect power after making sure the terminal number.
4. Never disassemble modify, improve or repair the product.

⚠ CAUTIONS

- Be well-informed of how to use, safety regulations, warnings, etc before installation of this device and apply it to the extent of the defined specifications and relevant capacity without fail.
- Avoid wiring or installation to a motor or solenoid with a large inductive load.
- Use a shiled cable for extention of the sensor and ensure not to make it longer than the necessity.
- Ensure not to use the parts generating arc when switching at the same power source or near to it.
- Keep the power cable away from a high-tention power line and ensure not to install it at a place with serious oil and dirt.
- Avoid strong magnetic field or serious noise, vibration or impact.
- Keep away from the place where strong alkaline or acid material is directly released and use an independent pipe line.
- When it is installed at kitchen, ensure not to pour water directly over the product for cleaning.
- Keep the sensor cable away from signal line, power source, power line or loaded line and use an independent pipe line.
- Note that the mark of ⚠ in terminal connection diagram is the safety expression for warnings or cautions.
- Avoid using the product close to the device generating noises(high frequency welder, high frequency sewing machine, high frequency radio, large capacity SCR Controller, etc).
- The use in any way other than what is instructed by the manufacturer may cause injury or property loss.
- It is not a toy and keep it out of reach of children's hand.
- The installation of the device should be performed by an expert or a qualified personnel without fail.
- We shall not take any responsibility for the damage caused by non-compliance with the above-mentioned warnings or cautions or by any consumer's mistake.

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2 Model

Model	Sensor	Controlled output	Temp.Range	Functions
FOX-2001TX FOX-2000RX	NTC	Relay contact	−55.0 ℃ ~ 99.9℃	Temp. control

* Thank you for purchasing our products.
  Please read carefully this instruction to reduce any damages or operation mistakes.

3 Product exterior stand and panel dimension

79mm
77mm
71mm
35mm
PANEL HOLE
29m
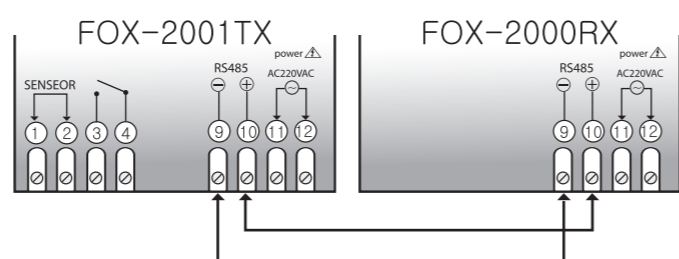77mm
70.5mm
6.5mm
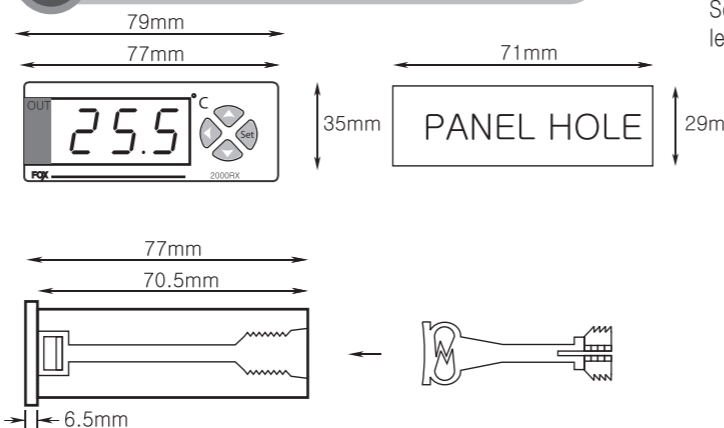
4 Name of parts

■ **Part name**

1 DISPLAY TEMP. OUTPUT
2 UP SWTICH
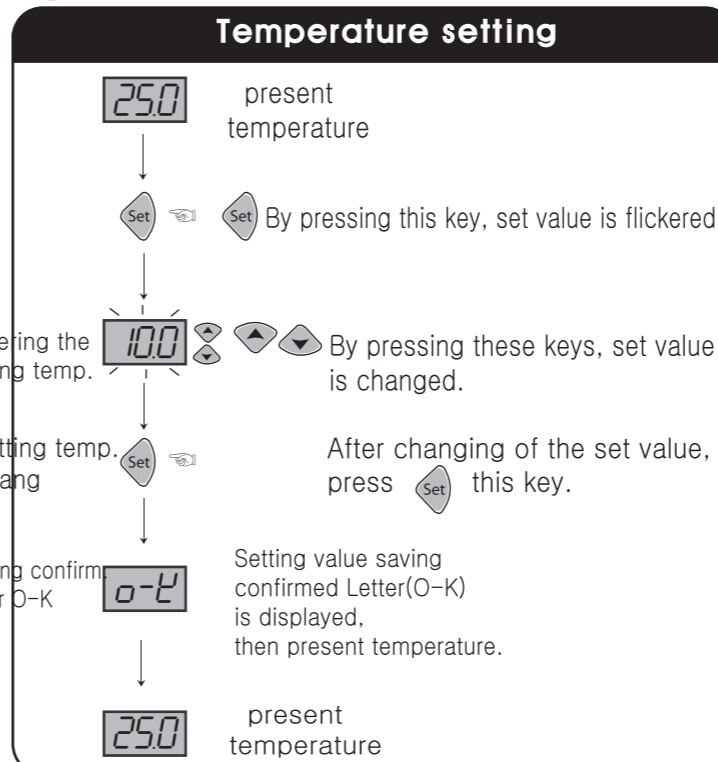3 CHANGE FUNCTION
4 DOWN SWITCH

■ **The function of each key**

1. Set : A key to change of the programs & setting temperature.
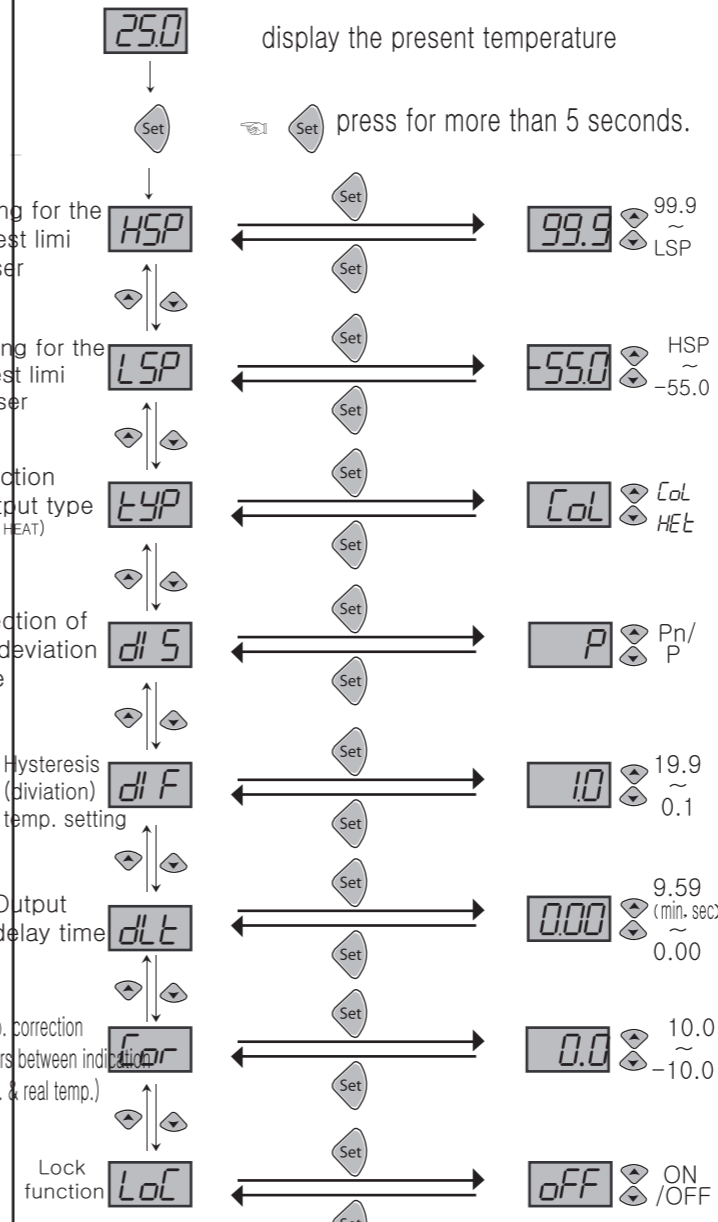2. ▲ ▼ : A key to change of the programs's set values & temperature.

5 Terminal connection diagram

FOX-2001TX

RS485   power⚠
AC220VAC
SENSEOR ⊖ ⊕
1 2 3 4   9 10 11 12

FOX-2000RX

RS485   power⚠
AC220VAC
⊖ ⊕
9 10 11 12

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6 Setting value change sequence

Temperature setting

25.0 — present temperature

↓

Set — By pressing this key, set value is flickered

flickering the setting temp.
10.0 ▲ ▼ — By pressing these keys, set value is changed.

setting temp. chang
Set — After changing of the set value, press Set this key.

Setting confirm letter O-K
o-ㄷ — Setting value saving confirmed Letter(O-K) is displayed, then present temperature.

↓

25.0 — present temperature

Temperature program setting

25.0 — display the present temperature

↓

Set / Set — press for more than 5 seconds.

Setting for the highest limi of user
HSP ⟷ 99.9 — 99.9 ~ LSP

Setting for the lowest limi of user
LSP ⟷ -55.0 — HSP ~ -55.0

Selection of output type (COOL/HEAT)
tYP ⟷ CoL — CoL / HEt

Selection of the deviation style
diS ⟷ P — Pn / P

Hysteresis (diviation) temp. setting
diF ⟷ 1.0 — 19.9 ~ 0.1

Output delay time
dLt ⟷ 0.00 — 9.59 (min. sec) ~ 0.00

Temp. correction (differs between indication temp. & real temp.)
Cor ⟷ 0.0 — 10.0 ~ -10.0
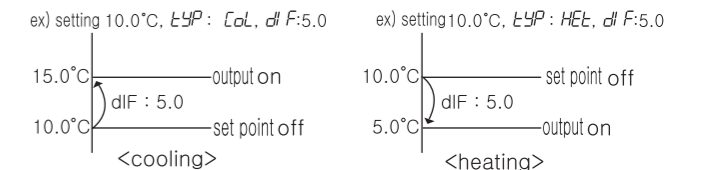
Lock function
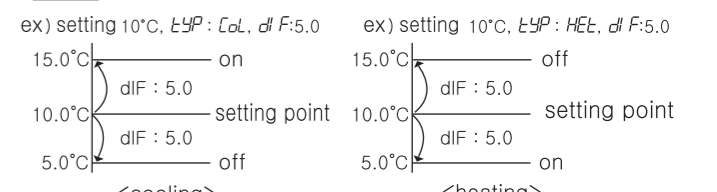LoC ⟷ oFF — ON / OFF

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7 Detailed function description

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 =25.0 ℃ setting → impossible to raise the set value more than 25℃

LSP : Setting functionof 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 = 10.0 ℃ setting → impossible to lower the set values less than 10.0℃.

tYP : Selection function of cooling(CoL) and heating(HEt)

diS : Selection of deviation

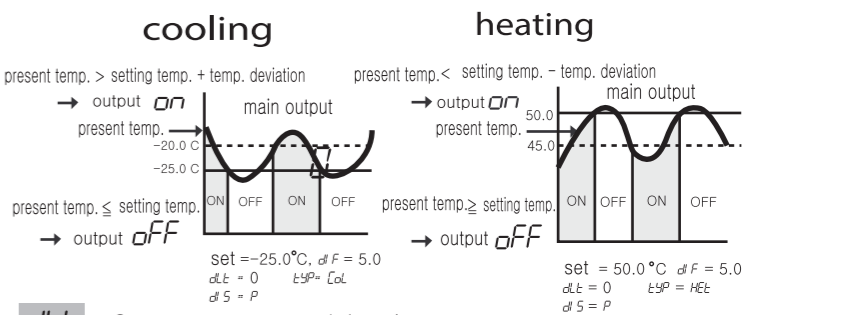**P** output movement : + deviation (in the set point –> off)

ex) setting 10.0℃, tYP : CoL, diF:5.0
15.0℃ — output on
10.0℃ — set point off
dIF : 5.0 (cooling)

ex) setting 10.0℃, tYP : HEt, diF:5.0
10.0℃ — set point off
5.0℃ — output on
dIF : 5.0 (heating)

Pn output movement : ± deviation(based on the set point)

ex) setting 10℃, tYP : CoL, diF:5.0
15.0℃ — on
10.0℃ — setting point
5.0℃ — off
dIF : 5.0 / dIF : 5.0 (cooling)

ex) setting 10℃, tYP : HEt, diF:5.0
15.0℃ — off
10.0℃ — setting point
5.0℃ — on
dIF : 5.0 / dIF : 5.0 (heating)

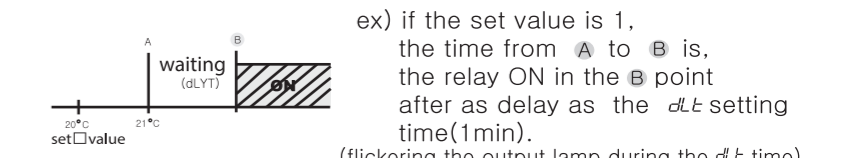**diF** : Setting for temperature deviation
In the ON/OFF control, it needs at regular interval between ON and OFF. (ON/OFF width setting)

– By operating the ON/OFF control frequently, the relay or its output contact can be damaged quickcly and it also occurs the hunting(oscillating, chattering) by virtue of exter –nal 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. ≤ setting temp. → output oFF
main output
present temp.
−20.0 ℃
−25.0 ℃
ON OFF ON OFF
set =−25.0℃, diF = 5.0
dLt = 0, tYP= CoL
diS = P

heating
present temp.< setting temp. – temp. deviation → output on
present temp.≥ setting temp. → output oFF
main output
present temp.
50.0
45.0
ON OFF ON OFF
set = 50.0℃ diF = 5.0
dLt = 0, tYP= HEt
diS = P

dLt : Output movement delay time
In case of operating the ON/OFF control very often.(cooler, compressor ,etc)
To protect the operation machinery when re-input of the power supply or momentary stoppage of power supply.

ex) if the set value is 1, the time from Ⓐ to Ⓑ is, the relay ON in the Ⓑ point after as delay as the dLt setting time(1min).
(flickering the output lamp during the dLt time)

waiting (dLYT)
ON
A B
20℃ 21℃
set value

Cor : Present temperature correction function
It is a function to correct when the error occurred on the sensor input from the outside and standard temperature (ex, mercury thermometer or presently using thermometer, temperature controler) and temperature are different.

ex) real temp : 10.0℃ → Cor : 0.0 → corrects to 2.0
display : 12.0℃ displayed 10.0℃(corrected present temp.)

LoC : on : Program locking
oFF : Program locking lifting