Version 1.2

CE

# DS FOX®

DAE SUNG E.N.G

Digital Temperature Controller

www.foxeng.co.kr

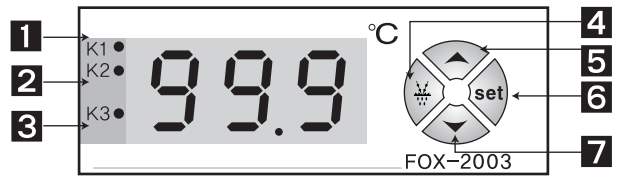

FOX-2003

# Operating Manual

| Model | Sensor | Output | Temp. range | Function |
|---|---|---|---|---|
| FOX-2003 (for cooling) | NTC | Relay (3EA) | -55.0°C ~ +99.9°C | COMP control<br>Defrost control<br>FAN control |

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

## ■ Part name



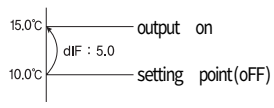

1 COMP output lamp
2 Defrost output lamp
3 FAN output lamp
4 Defrost switch
5 Setting up
6 Change function switch
7 Setting down

## ■ The function of each key.

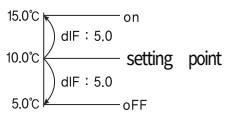
1. (set) : A key to change of the programs & setting temperature.
2. (▲)(▼) : A key to change of the programs & set values & temperature
3. (✻) : A key for manual defrost
   Press the (✻) key for more than 3seconds to operate manual defrost or to stop the manual defrost.

## ■ Detailed manual

1. Eu1 : To change the set values for the temperature output.
2. Eu2 : To change the set values for the defrost output.
3. Eu3 : To change the set values for the FAN output
4. 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°C setting ⇒ impossible to raise the set value more than 25.0°C
5. 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 = 10.0°C setting ⇒ impossible to lower the set value less than 10.0°C
6. dIS : Selection of the temperature deviation
   P : + deviation ( in the set point ⇒ off )
   ex) setting = 10.0°C, dIF : 5.0



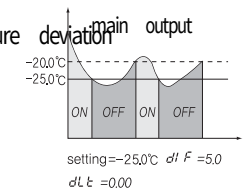

   Pn : ± deviation
   ex) setting = 10.0°C, dIF : 5.0



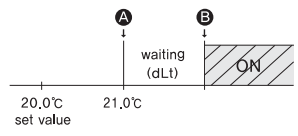

7. dIF : Setting for temperature deviation
   - In the ON/OFF control, it needs at regular interval between ON and OFF.
   - By operating the ON/OFF control frequently, the relay output or its contact can be damaged quickly and it also occurs the hunting(oscillating) by virtue of external noise. You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

   「ex ⇒ The method of the temp. deviation when ON/OFF control」

   • present temp. > setting temp. + temperature deviation
   ∴ output on
   • present temp. ≦ setting temp.
   ∴ output oFF



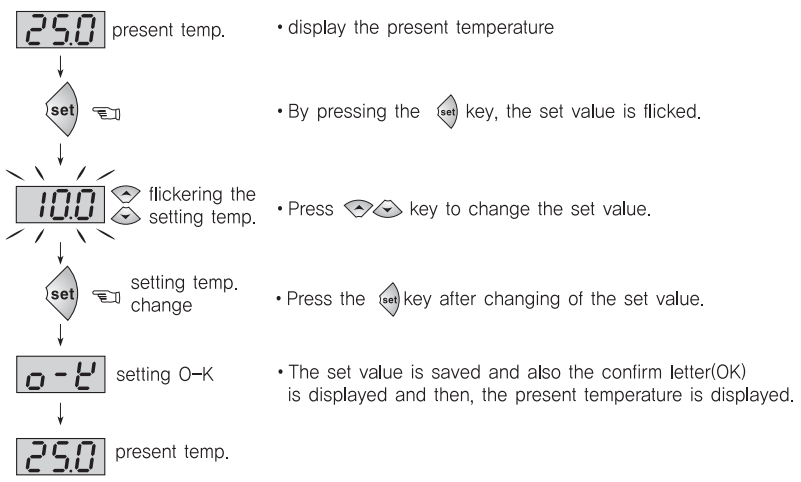

8. dLt : Delay time of the output
   It is widely used as the followings
   - in case of operating the ON/OFF control very often,
   - to protect the operation machinery when re-input of the supply power or momentary stoppage of power supply



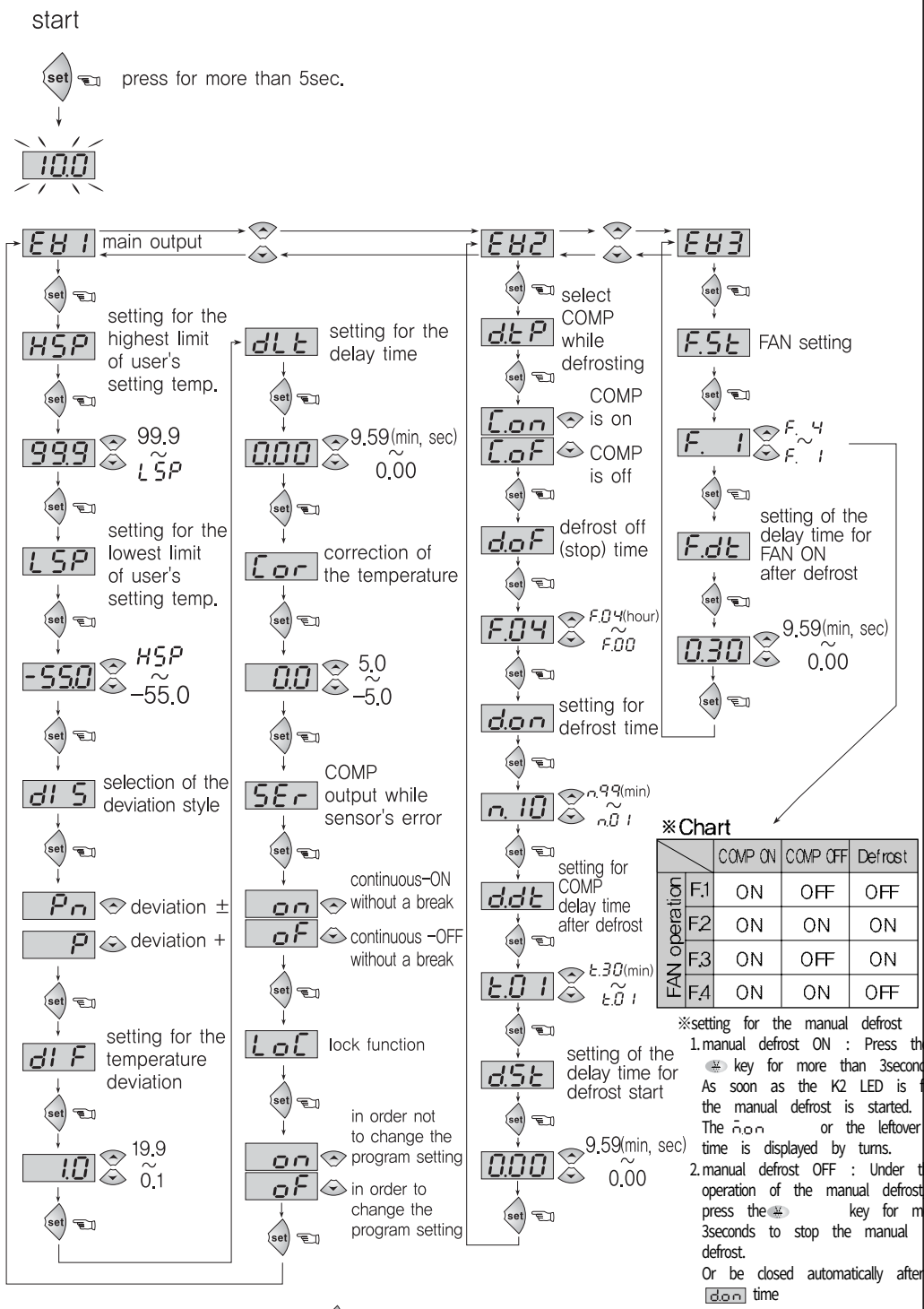

   ex) if the set value is 1.30,
   from Ⓐ until Ⓑ time → the relay is ON in the Ⓑ point after as delay as the setting time(1min.30sec.)
   (flickering the output lamp during dLt)

9. Cor : Correction of the present temperature.
   - It is used for the correction of an discrepancy between display temperature and real temperature
   ex) real temp. : 10.0°C → display : 12.0°C Cor : 0.0 ⇒2.0 correction → 10.0°C display
10. SEr : setting for the COMP output while sensor's error continuous ON continuous OFF
11. LoC : The lock function
    - As a safety device, it is used in order not to change the set values except for the main use
    ON- setting for the lock function.
    OFF- removal for the lock function
12. dtP : The selection of the COMP when defrosting
    Con : COMP ON when defrosting
    CoF : COMP OFF when defrosting

## Setting temperature




## Setting for programs




※Chart

| | | COMP ON | COMP OFF | Defrost |
|---|---|---|---|---|
| FAN operation | F.1 | ON | OFF | OFF |
| | F.2 | ON | ON | ON |
| | F.3 | ON | OFF | ON |
| | F.4 | ON | ON | OFF |

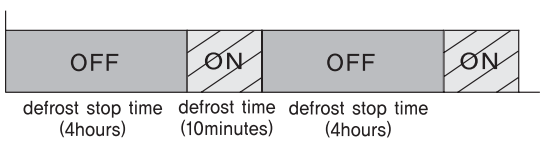
※setting for the manual defrost
1. manual defrost ON : Press the (✻) key for more than 3second. As soon as the K2 LED is flicked, the manual defrost is started. The don or the leftover defrost time is displayed by turns.
2. manual defrost OFF : Under the operation of the manual defrost, press the (✻) key for more than 3seconds to stop the manual defrost. Or be closed automatically after don time

※ To change it with program mode, press the set key for second than the present temperature display mode.
※ The set or programming mode is terminated , if you press the set key for 2 second, parameters(set values) are saved after the display shows OK letter or return to present temperature display automatically after 30 second.

13. d.oF : Defrost stop time
- Setting range 0.00 ~ 4.48 hour
- Start the defrost if a cycle of the defrost

14. d.on : Defrost time
- setting range 0.01 ~ 9.99 min
- Operate the defrost while defrosting time.

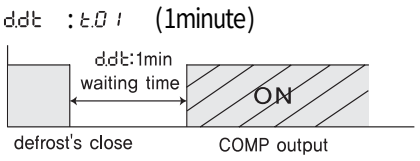
ex) d.oF : 4.04 (4hours), d.on 0:10 (10minute) setting




※ repeat the defrost operation for 10 minutes every 4 hours

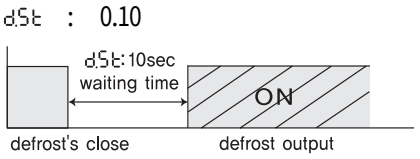
15. d.dt : Delay time of the COMP after defrost
- setting range 0.00 ~ 3.30 min
- COMP output is ON : after as delay as the setting time after the defrost

ex) d.dt : 0.01 (1minute)




16. d.St : the delay time for defrost start
- setting range 0.00 ~ 9.59 (minute, second)
- COMP output is on after as delay as the setting time before operating of the defrost

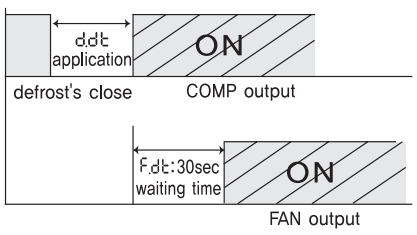
ex) d.St : 0.10




17. F.St : FAN setting F.( 1 ~ 4 ) ⇒ Pls refer to the chart in the program mod

18. F.dt : Delay time of FAN ON after defrosting
- setting range 0.00 ~ 9.59 (minute, second)

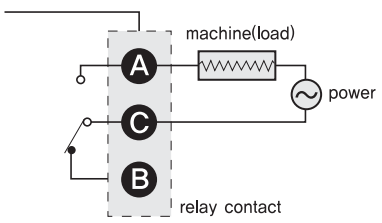
ex) F.dt : 0.30(30seconds)



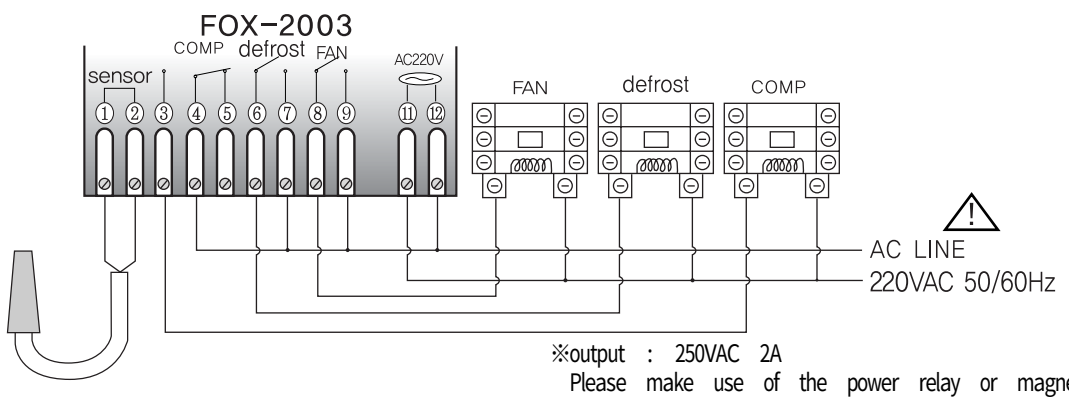

## ■ Temp. range & set value when deliver

| | | Function | Display | Range | Set values when deliver | Remarks |
|---|---|---|---|---|---|---|
| Setting temp. | | Setting temp. | | -55.0 ~ 99.9 | 10.0 | |
| Program Setting | E0 1 | Setting for the highest limit of user | uSP | LSP~99.9 | 99.9 | It is irrelevant to the relay output. |
| | | Setting for the lowest limit of user | uSP | -55.0 ~ HSP | -55.0 | It is irrelevant to the output relay. |
| | | Selection of the deviation style | dI S | P/Pn | P | Pn - deviation ±<br>P - deviation + |
| | | Temperature deviation | dI F | 0.1 ~ 19.9 | 1.0 | |
| | | Delay time | dLt | 0.00 ~ 9.59 | 0.00 | (minute, second) |
| | | Correction of temp. | Cor | -5.0 ~ 5.0 | 0.0 | correct for an discrepancy between the display temp. and real temp. |
| | | Sensor's error | SEr | on/oF | oF | on - COMP ON<br>oF - COMP OFF |
| | | Lock functionon | LoC | on/oF | oF | on - setting for the lock function<br>oF - removal of the lock function<br>however, except for the setting temperature value. |
| | E0 2 | Selection of the COMP while defrosting | dtP | Con/CoF | CoF | Con - COMP ON while defrosting<br>CoF - COMP OFF while defrosting |
| | | Defrost stop time | d.oF | 0.00 ~ 4.48 | 4.04 | hour |
| | | Defrost time | d.on | 0.01 ~ 9.99 | 0.10 | minute |
| | | Delay time of the COMP after defrosting | d.dt | 0.00 ~ 3.30 | 0.01 | minute |
| | | Delay time of operating for defrost | d.St | 0.00 ~ 9.59 | 0.00 | (minute, second) |
| | E0 3 | FAN setting | F.St | F.1 ~ F.4 | F.1 | ※Refer to the Chart |
| | | Delay time of the FAN ON after defrosting | F.dt | 0.00 ~ 9.59 | 0.30 | (minute, second)<br>※Delay time of the COMP after defrosting |

## ■ Relay junction

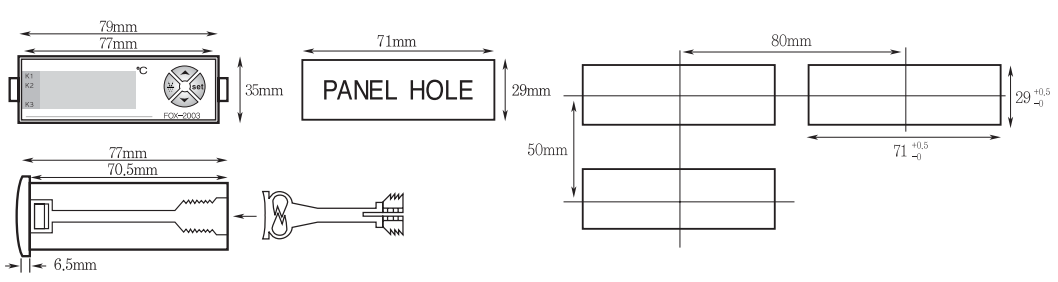



## ■ Connection




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

## ■ Dimension




## ■ Safety and Hazard Instructions

### ⚠ 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**

### ⚠ Safety Instruction and Hazard Warnings

- Please read the operating manual through completely before putting the device into operation.
- We will not assume any responsibility for damage to assets or persons caused by improper handling or failure to observe the safety instructions or hazard warnings.
- For safety and licensing reasons, unauthorized conversion and/or modification of the device is not permitted.
- Do not exceed the maximum permissible current – in case of higher loads, use a contactor of adequate power. Make sure that the supplied voltage matches the values specified for the instrument.
- The device must be adequately protected from water and dust as per the application and must be accessible via the use of appropriate tools
- The device must not be exposed to extreme temperature, sunlight, strong vibrations or high levels of humidity.
- Operation or installation is not permitted under unfavorable ambient conditions such as wetness or excessive induction loads or solenoid and dust, combustible gases, vapors or solvents, especially high-frequency noise
- Avoid operation or installation close to high-frequency fields such as welding devices, sewing machines, wireless transmitter, radio systems, SCR controller, etc
- Do not install the sensor cable nearby signal cable, power cable, load cable
- Please use the shield cable when the sensor cable's lengthen, however do not make it too much longer
- Please use the sensor cable without any cutting or flaw, blemish.
- The device is not a toy and should be kept away from children
- Installation work must only be carried out by suitably qualified personnel who are familiar with the hazards involved and with the relevant regulations.
- You shouldn't tinker with anything or the product may not be opened or disassembled unless you know what you're doing. Please ask us about this questioning

### ⚠ Danger

Attention ! Never work on electrical connections when the machine is switched on

### Error message

E r 1 Memory error. Turn the power off and turn it on again
If the error message persists, please request us A/S by return
o -E Sensor error. The sensor is interrupted. Check the cable.
S -E Sensor error. The sensor is short-circuited. Check the cable

## ■ The terms of guarantee : for one year from the date of purchase

## ■ Model & output spec.

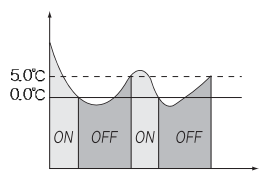
| | 2001 (sensor : 1EA) | 2001D (sensor : 1EA) | 2001T (sensor : 1EA) | 2001F (sensor : 1EA) | 2000TT (sensor : 1EA) |
|---|---|---|---|---|---|
| temp. output | one-stage output | two-stage output | three stage output | four-stage output | control by the temperature & time (for greenhouses) |

| | 2001 (sensor : 1EA) | 2002 (sensor : 1EA) | 2003, 2003S (sensor : 1EA) | 2004 (sensor : 2EA) | 2005 (sensor : 2EA) | 2006 (sensor : 2EA) | |
|---|---|---|---|---|---|---|---|
| | | | | | | temp. 1 | temp. 2 |
| temp. output | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | | | | | alarm 1 | alarm 2 |
| alarm output | – | ○ | – | – | ○ | ○ | ○ |
| defrost output | – | – | ○ | ○ | ○ | – | |
| FAN output | – | – | ○ | ○ | ○ | – | |

## ■ ex) application

- Cooler → turn off at 0.0°C, turn on at 5.0°C, defrost output is forever by 4 hour, FAN → turn on while COMP output, turn off while COMP OFF and defr

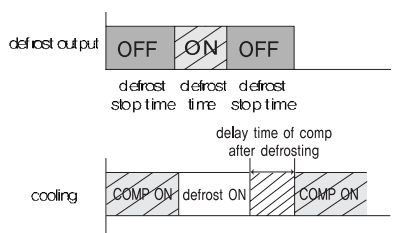
How to operate(setting for the temperature & programs) ?




< setting temp. (see the setting temperature)
setting : 0.0°C

< setting program (see the setting for program)

COMP setting
dI S : P (one side deviation, turn off at setting po
dI F : 5.0 (due to the on/off's interval → 5.0°C)




setting defrost
d.oF : 4.04 (defrost stop time : 4hours)
d.on : 0:10 (defrost time : 10minutes)

setting FAN
F.St : F. 1
COMP ON : FAN output → on
COMP OFF / while defrosting : FAN output

※The product's specification can be changed without any notification to improve its quality.


■ H. Office : B-112, Techno plaza 681-11
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FAX: 82-51-819-4562
E-mail : foxeng@foxeng.co.kr
Homepage : http://www.foxeng.co.kr


※This device works proper operation with;
Surrounding Temp. : 0°C~60°C
Surrounding Humi. : below 80%RH
Regular power : 220VAC ±10% 50/60Hz