



1 Caution for Your Safety

Please read this instruction carefully before using this controller.
 ※ The Manual's information & specification can be changeable to improve its quality without any notification.

⚠ 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.
- Do not check or repair when it is power on.
- Please check the terminal number before connecting power supply.
- Do not disassemble or open, remodel, repair without any permission.

⚠ Safety Instruction and Hazard Warnings

- Please read the operating manual through completely before putting the device into operation.
- Do not install or wire to it under an excessive induction loads or solenoid.
- Pls use the shield cable when the sensor cable's lengthen, however, do not make it too much longer.
- Do not use same power supply or any component to cause arc when make and break near directly.
- The device must be adequately protected from water and dust as per the application and must be accessible via the use of appropriate.
- The device must be exposed to extreme temperature, sunlight, strong vibrations or high levels of humidity.
- Keep away and use independence piping with place that strong alkalinity, strong acidic material appears directly.
- When establish in the kitchen, do not sprinkle water directly due to cleaning.
- Do not install the device for the temperature/humidity in excess of the rated.
- Please use the sensor cable without any cutting or flaw, blemish.
- Do not install the sensor cable close to signal cable, power cable load cable.
- Please be understanding that the device may not be after service when disassembled or remodelled by random.
- The mark ⚠ in the diagram for connection is for caution or safety phrase.
- Avoid operation or installation close to high-frequency fields such as welding devices, sewing machines, wireless transmitter, radio systems, SCR controller, etc.
- 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.
- 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 relevant regulations.

⚠ DANGER

- Caution, Danger of electric shock
- Electric shock- Do not touch AC board on power because of electric shock
- Pls intercept surely when checking power input

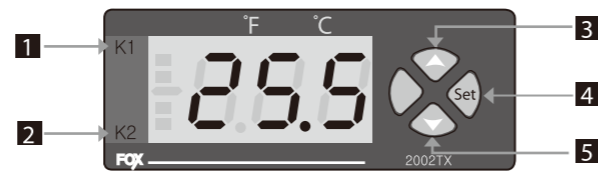
2 MODELS

MODELS	SENSOR	OUTPUT CONTROL	RANGE	FUNCTION
FOX-2002TX	NTC	RELAY OUTPUT	°C: -55.0°C ~ +99.9°C °F: -67°F ~ 212°F	Temp.control ALARM
FOX-2002TX-RS	NTC	RELAY OUTPUT SSR OPER. VDC (12V DC30mA MAX)		Temp.control ALARM
FOX-2002TX-SR	NTC	RELAY OUTPUT SSR OPER. VDC (12V DC30mA MAX)		Temp.control ALARM

T/C (°C, °F) 485 com.

3 PART'S NAME

■ External shape & each name of part

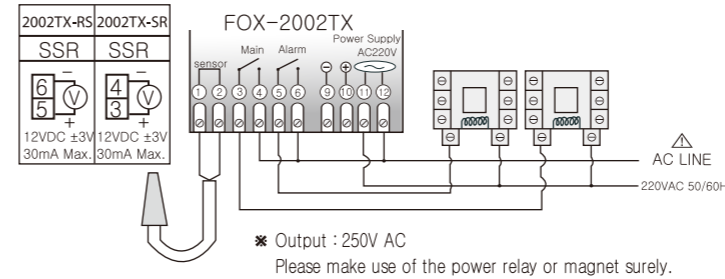


- TEMPERATURE OUTPUT
- ALARM OUTPUT
- SETTING UP
- FUNCTION CHANGING
- SETTING DOWN

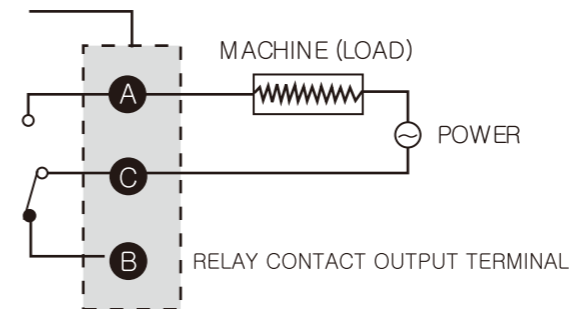
■ MODE SETTING FOR USER(TEMPERATURE)

- How to change the setting temp. for Main output
 ⏏ If press it once, the setting value is flickered.
 ⏏ or ⏏ the value can be up & down with this key.
- How to set mode function for an installer
 ⏏ A key to enter to intaller mode if press for more than 5 sec., and change with these keys. ⏏ ⏏

4 CONNECTIONS

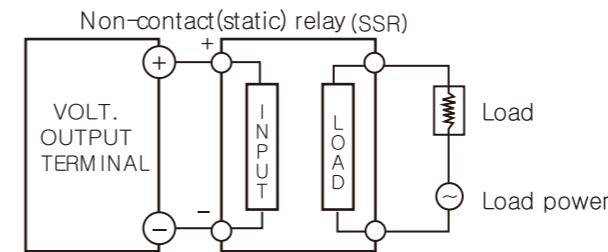


■ RELAY JUNCTION



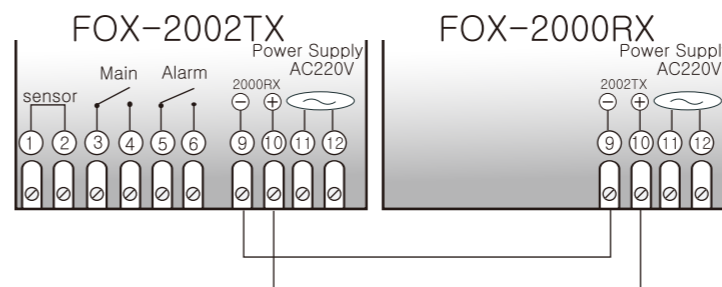
※ Relay contact capacity is less than 250VAC 2A.
If using the load to exceed contact capacity, be cautious on those can be caused by contact deposited, contact failure, relay damaged,etc.

■ SSR JUNCTION

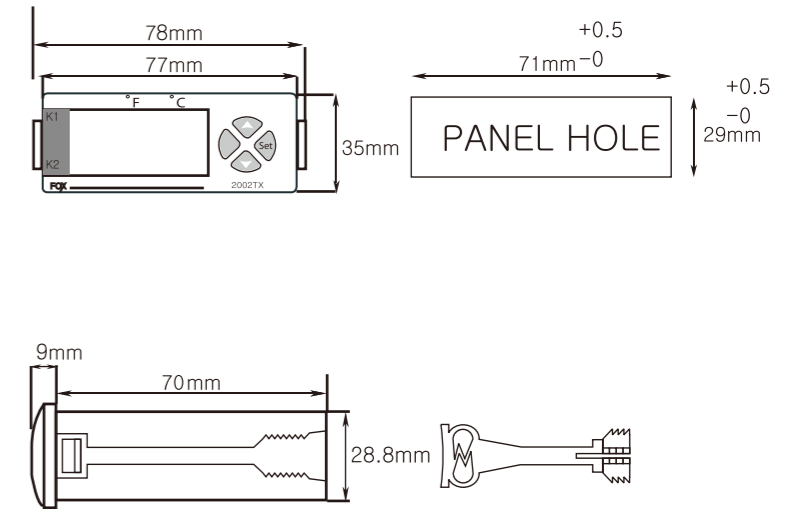


※ Please make sure that the SSR's capacity should be used more than load capacity.

5 HOW TO CONNECT TO 2000RX

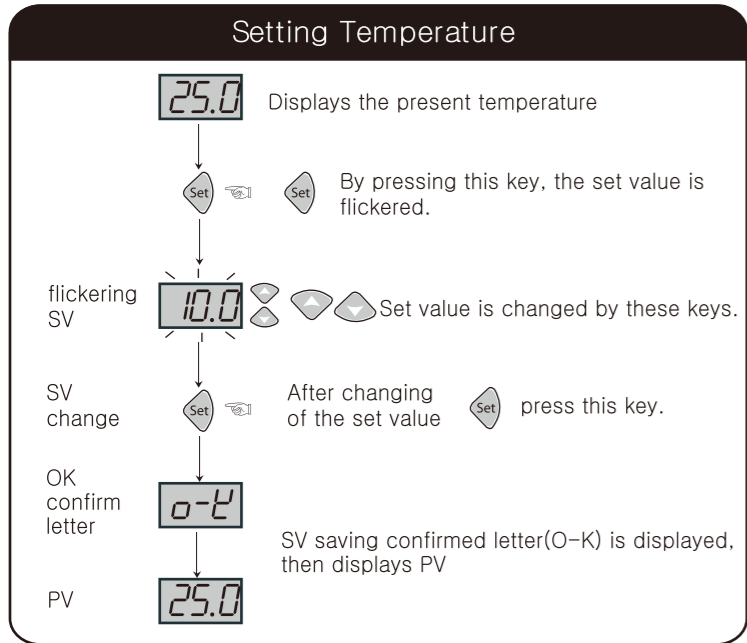


6 EXTERNAL & PANEL SIZES



7 SETTING RANGE & SET VALUE WHEN DELIVER

DISPLAY	FUNCTIONS	°C	°F	SET VALUE	REMARKS
	Temperature setting	-55.0 ~ 99.9	-67 ~ 212	10.0	
Unit	Temperature display unit	°C / °F		°C	°C : Celsius °F : Fahrenheit
HSP	Setting for the highest limit of user	LSP ~ 99.9	LSP ~ 212	99.9	Irrelevant to the relay output
LSP	Setting for the lowest limit of user	-55.0 ~ HSP	-67 ~ HSP	-55.0	Irrelevant to the relay output
Typ	Select for type	Col / HET		Col	HET: for a heater Col: for a cooler
dls	Select for deviation style	P / Pn		P	Pn : deviation ± P : deviation +
dIF	Temperature deviation	0.1 ~ 19.9	1 ~ 35	1.0	
dLT	Delay time of the output	0.00 ~ 9.99		0.00	min, hour
Cor	Correction of temperature	-10.0 ~ 10.0	-18 ~ 18	0.0	Correc. Difference between displayed & actual temp.
Art	Alarm operation	t-0 ~ t-3		t-0	
ArS	Alarm option	5-0 ~ 5-6		5-0	
HPr	Alarm high limit temperature	-55.0 ~ 99.9	-67 ~ 212	99.9	
LPr	Alarm low limit temperature	-55.0 ~ 99.9	-67 ~ 212	-55.0	
AdF	Alarm deviation temperature	0.1 ~ 99.9	1 ~ 212	1.0	
LoL	Lock function	on / off		off	on : set to lock off: set to unlock but except the value of temp.

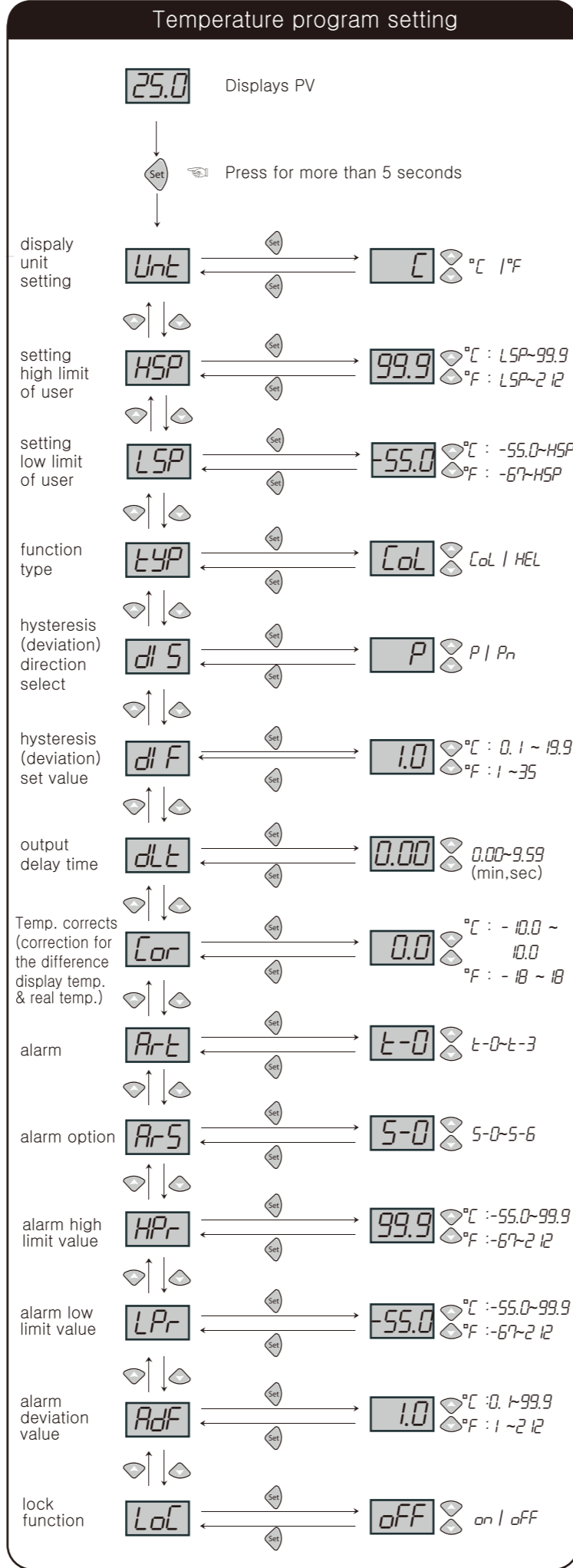


Alarm motion chart

5-0	—	No alarm output
5-1	<p>when set deviation value 10°C in ADF</p>	<ul style="list-style-type: none"> Deviation high limit alarm Output turns ON if deviation value between PV and SV is more than set value as high limit. Deviation temperature is set in the ADF.
5-2	<p>when set deviation value 10°C in ADF</p>	<ul style="list-style-type: none"> Deviation low limit alarm Output turns ON if deviation value between PV and SV is more than set value as low limit. Deviation temperature is set in the ADF.
5-3	<p>when set deviation value 10°C in ADF</p>	<ul style="list-style-type: none"> Deviation high-low limit alarm Output turns ON if the value is more than deviation of PV based on SV as high limit. Deviation temperature is set in the ADF.
5-4	<p>when set deviation value 10°C in ADF</p>	<ul style="list-style-type: none"> Deviation high-low limit alarm Output turns OFF if the value is more than deviation of PV based on SV as high limit. Deviation temperature is set in the ADF.
5-5	<p>when set deviation value 10°C in HPR</p>	<ul style="list-style-type: none"> Absolute high limit alarm Output turns ON if PV is same or higher if comparing with PV and alarm SV. Alarm high limit value is set in the HPR.
5-6	<p>when set alarm value 90°C in HPR</p>	<ul style="list-style-type: none"> Absolute low limit alarm Output turns ON if PV is same or lower if comparing with PV and alarm SV. Alarm low limit value is set in the LPR.

Alarm option chart

display	sign	Function setting
t-0	normal alarm	General alarm that added no option as standard type
t-1	keep alarming	Keeping output ON when output once at the alarm
t-2	waiting alarm	No output at the initial operation(reach at first target)
t-3	keep & waiting alarm	keep an alert alarm operation and standby operation at the same time.



Unt : Display unit changing

°C : displays in Celsius
°F : displays in Fahrenheit

Cautious : Re-set all setting values due to all setting values except for are returned to the value for ex-factory if you change the unit in operating.

In case of changing: HSP : 99.9 LSP : -55.0 LYP : C dl S : P dl F : 1.0
to Celsius dLT : 0.00 Cor : 0.0 Ar-S : t-0 Hr-S : 5-0 HPr : 99.9
LPr : -55.0 AdF : 1.0 LoC : oFF

In case of changing: HSP : 212 LSP : -67 LYP : C dl S : P dl F : 1
to Fahrenheit dLT : 0.00 Cor : 0 Ar-S : t-0 Hr-S : 5-0 HPr : 212
LPr : -67 AdF : 1 LoC : oFF

HSP : Setting for the highest limit of user's setting temperature. (Maximum set point allowed to the end user) Impossible to set up the set value more than HSP set value.
ex) HSP = when setting to 25.0 C
→ Impossible to set higher than 25.0 C

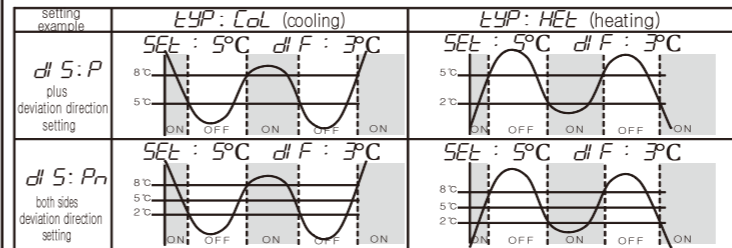
LSP : Setting for the lowest limit of user's setting temperature. (Minimum set point allowed to the end user) Impossible to set up the set value less than LSP set value.
ex) LSP = when setting to 10.0 C
→ Impossible to set less than 10.0 C

LYP : Main output function select
CoL : using for a cooler
HEt : using for a heater

dl S : Selection for the hysteresis application direction(deviation)
P : deviation value(DIF) applied(+) direction only (OFF in the setting point)
Pn : deviation value(DIF) applied(±) direction(setting point basis)

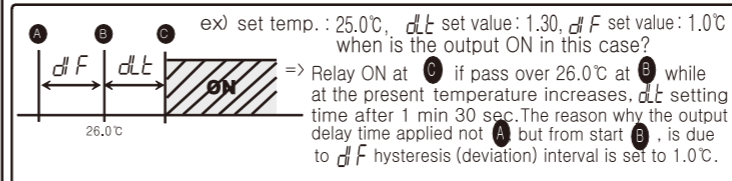
dl F : Setting for temperature deviation

In the ON/OFF control, it needs at regular intervals between ON and OFF. If ON/OFF operation is activated frequently, the relay or output contact can be damaging quickly and it occurs the hunting(oscillating, chattering) by virtue of external noise, and so on. To prevent these happenings, you can set up the temperature deviation in order to protect its relay or contact and so on.



dLT : Delay time of the output

In case of operating the ON/OFF control very often. To protect the operation machinery when re-input of the power supply or momentary stoppage of power supply.



Cor : Correction of the present temp. The product itself has no problem, but the correction functioned for that if temp. differs between an error occurs in the input sensor from outside and basic temp.

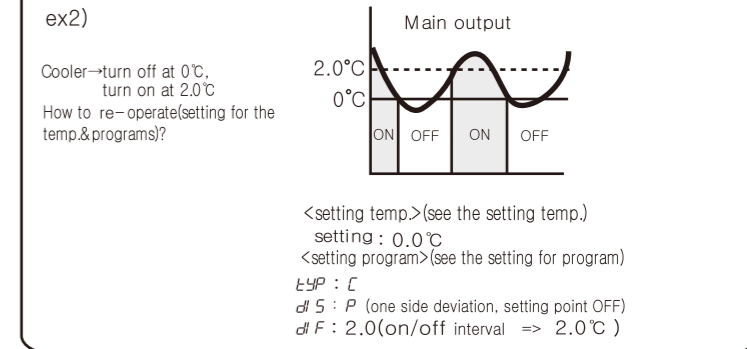
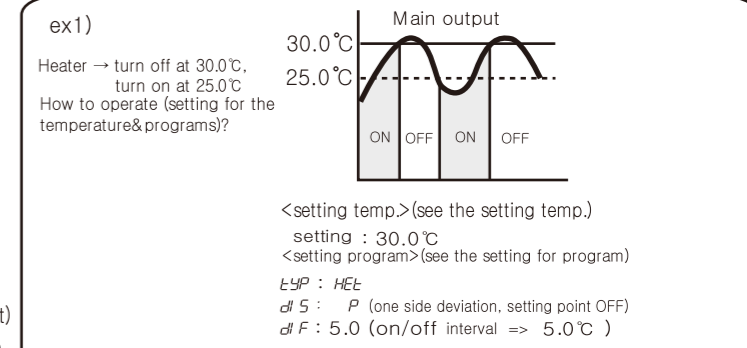
ex) real temp. : 25.0°C display : 28.0°C Cor : 0.0 → -3.0 if changing like this if 3°C differs from the real temp. screen shown in 25.0°C

- Ar-t : Refer to the Alarm, alarm operation chart
- Ar-S : Refer to the Alarm option, alarm option chart
- HPr : Refer to the Alarm high limit temperature setting, alarm
- LPr : Refer to the Alarm low limit temperature setting, alarm
- AdF : Refer to the Alarm deviation temperature setting, alarm
- LoC : Program Lock func. setting
on: Program Lock off: Program Unlock

Output specifications

output	2001CC	2002CC	2003CC	2001TX	2000TX	2003TX	2000RX
temp.	○	○	○	○	○	○	—
alarm	—	○	—	—	○	—	—
defrost	—	—	○	—	—	○	—
FAN	—	—	○	—	—	○	—
485	○	○	○	○	○	○	○

ex) Application



10 How to diagnose a breakdown

- Indicating ERROR on using items
- This Er1 is the damage of memory data for various of inner-Data due to be get noised strongly from outside while using this items. Please request us A/S by return.
- Although our controller is designed as the complementary measures regarding noise from outside, it is not endurable against noise without endlessly.
- If noise (2kv) disordering become an inflow, the inner-part will be damaged.
- When shows these letter o-E (open error), S-E (short error) error in sensor. Pls check sensor.
- Above Products information can be changed to improve it's quality without any notification. When it uses this product,pls observe the information of caution & Warning due to give rise to disordering.
- Regarding the English-language manual, please download it at our web-site.

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Main products & Development
- Digital temperature/humidity controller
- Digital timer, Current/voltage meter
- The other development products