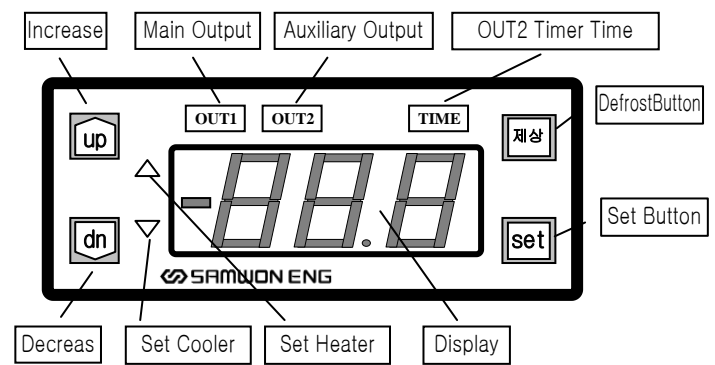


Temperature Controller SU-103SR/SU-105DA-N Manual		
Model	Temperature Range	Output
SU-103SR	Temperature(-40.0℃~99.9℃)	Relay(OUT1,OUT2)
SU-105DA-N	Temperature(-40.0℃~99.9℃)	Relay(OUT1,OUT2)

※ Thank you for purchasing Samwon ENG product. The User Manual is provided for preventing the damage and trouble of product caused by carelessness and to inform the precise usage. Please keep it in the safe place and refer to it when you have any doubt during using this product.

1. Function & Name of Parts



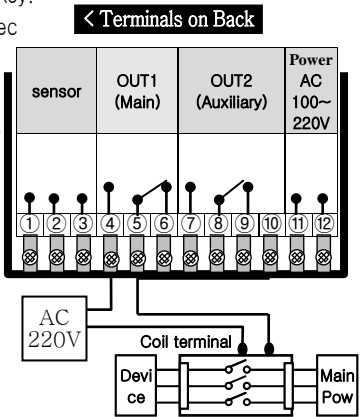
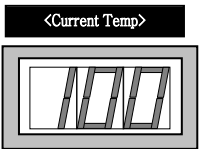
Display	Current Temp / Setting Temp	
Main/Auxiliary Output Display	Main/Auxiliary Output ON/OFF Display	
OUT2 Timer Time Display	At OUT2 Timer ON, If Display Value is set in time, Switch ON (Refer to 8. Factory default dP2 item)	
Cooler/ Heater Setting Display	OUT1 rated control (tyP)setting value display	
Setting Button	set	Temp , Installer Setting Button
Increase Button	up	Setting Value increase button
Decrease Button	dn	Setting Value decrease button
Defrost Button	제상	Manual Defrost Button

2. Main Output Set Value Change

- ▶ Supply power to the controller
Display the current temperature.
- ▶ Press **Set** button once. Main output set Temp value in the right picture flashing
- ▶ To change them, press UP & Down Key.
If you press UP/DN longer than 1 sec Increased or decrease quickly
- ※ If set temp limit function is working, the setting will be made within the range.
- ▶ If you press **Set** once again, the set temp will be saved.
Even if switched-off, the set value will not be deleted.
- ▶ The current temp displayed and Controller starts to control.
- ▶ Main Output use terminal 4~5.

※ Terminal 6 is used for OFF terminal Should not be used for Main Output.

※Auxiliary output(alarm/timer) use terminal 7, 8. Refer to 9 alarm output setting and 10 cycle timer setting.

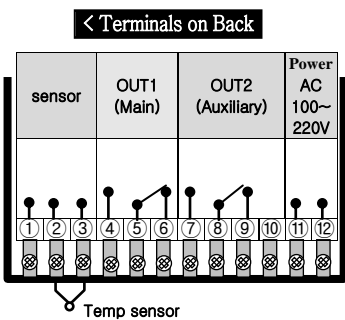


3. Functions

- ▶ Only for Heater/Cooler ON/OFF control.
Variation(dIF) 0.1~25.0℃,0~300sec delay timer, forward/converse Selection function
- ▶ For Defrost function, Max 999Minutes digital cycle timer/Manual (only for SU-105DA)
- ▶ Lock function for installer / Limit function of Set Value
 - Limit the range of set temperature by users ⇒ Set limit function
 - Hysteresis, delay time, forward/converse selection ⇒Lock function

4. Sensor Connection Method

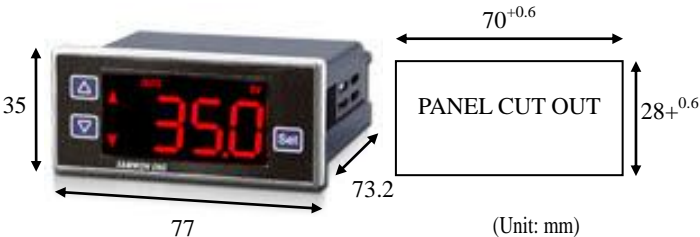
- ① sensor connection method
 - ▶ Please connect as the right picture
If you connect with the changed wired or use different type sensor 'Err' to be displayed.
- ② sensor wire extension method
 - ▶ it is possible within 100m.
You should use the shield inside cable, in order to prevent input noise
- ③ Sensor Input compensation (the current Temp is different)
 - ▶ If sensor cable is too long or sensor is old, there will be temp variation.
At that time, use current temp compensation function (rSt).
 - ▶ At the current temp displayed, press **set** for 3 seconds.
If dIF displayed, release **set**. In order to move to rSt (temp compensation), press **set** several times.
 - ▶ Input the compensation temp by using **up&dn**.
If you press **set** for 3 seconds, it will be saved and the current temp will be compensated.
For example,



Terminal sensor	①	②	③
Thermist SU-103SR		White	White
Thermist SU-105DA		white	White

Current Temp		rSt Temp		Displayed Temp
20℃	+	-5℃	=	15℃
20℃	+	10℃	=	30℃

5. External & Panel Dimension



6. Set Value Limit & Lock function

- ① It is possible that users cannot change the default setting, by using lock function.

Default setting	Item	Setting	Description
	LoC	OFF	Locking off. All function setting possible.
		ON	Only locking and setting temp function possible.
	Item	setting	Description
	StH	50	Settable high temp value 50
	StL	40	Settable low temp value 40

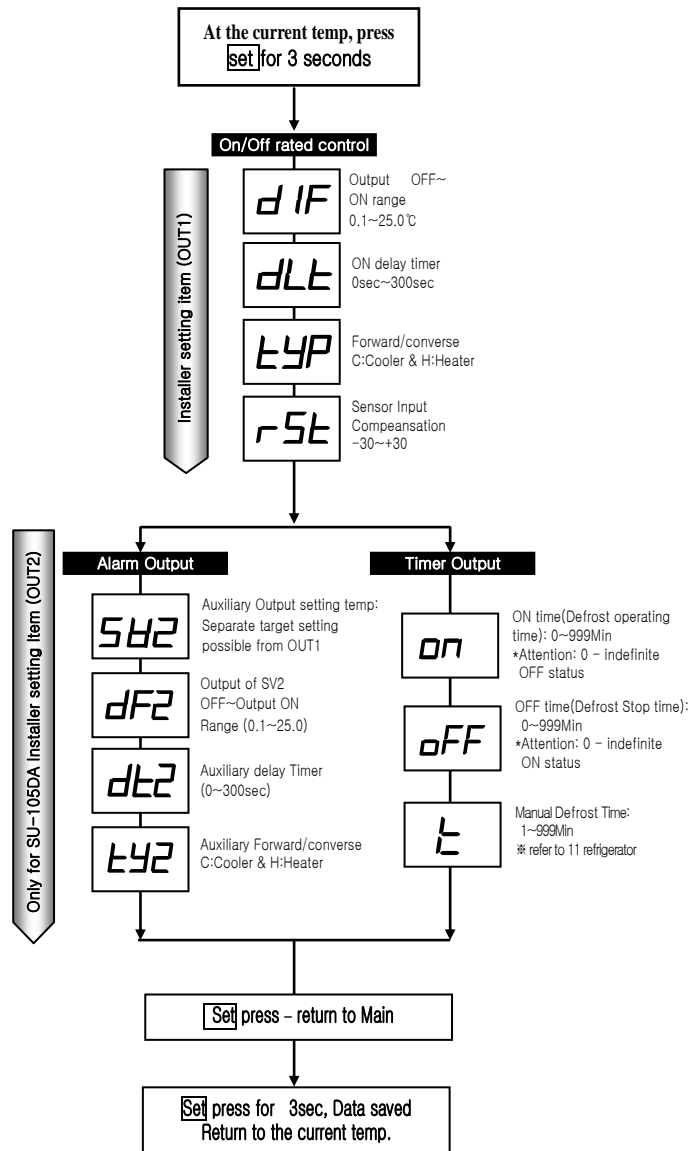
- ▶ If you press **set** for 3 seconds, the value will be saved.

After that the changed value will be applied.

※ Setting temp value will be in the range of 50~40℃.

7 Installer setting

- ▶ Main Output setting can be changed. Please change the below items appropriately.
(When you press **set** once, it will move to the next item)

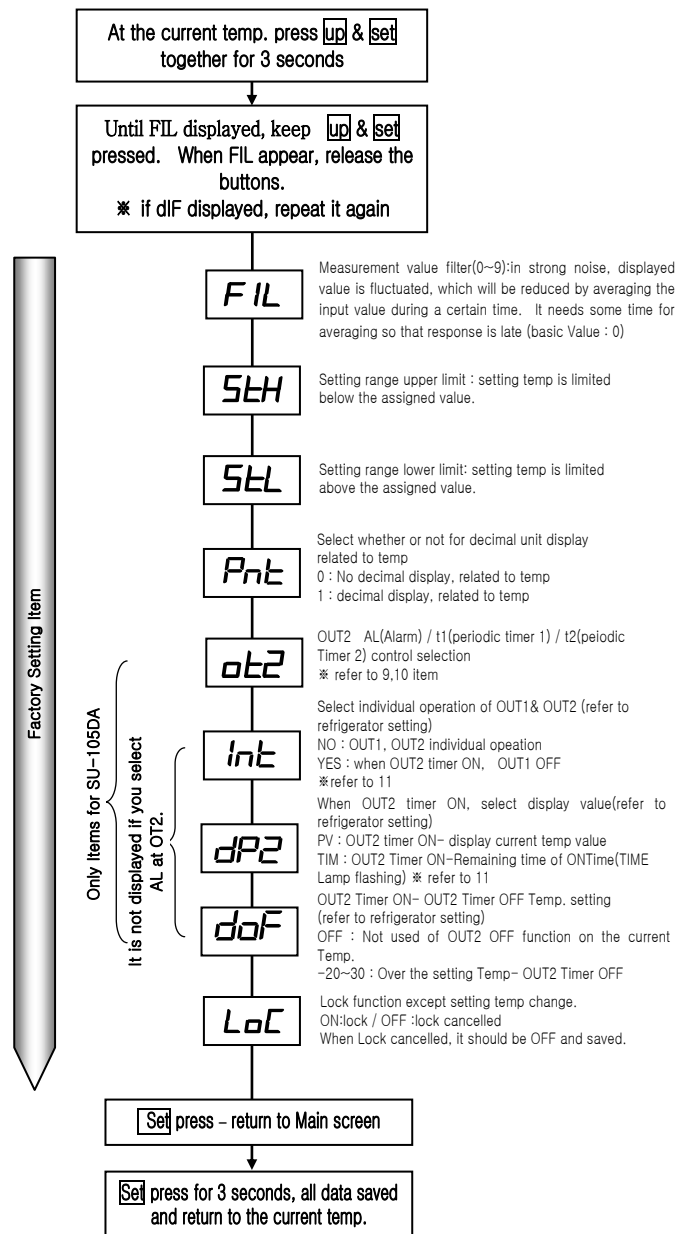


★ **DIF & TYP** Input Value example

- ① TYP = C(Cooler(Converse))
example) Set Temp. 10.0℃, DIF = 2.0
Relay ON : 12.1℃, Relay OFF : 10.0℃
- ② TYP = H(Heater(forward))
example) set temp 10.0℃, DIF = 2.0
relay ON : 7.9℃, relay OFF : 10℃

- ★ **dLt** = 10, relay on after 10 seconds
- ★ **tyP** = C(cooler), use for decreasing the temp.
- ★ **tyP** = H(heater), use for increasing the temp.

8. Factory Default



9. Alarm Output Setting (Auxiliary Output)

- ① Auxiliary Output (OUT2) is set as alarm output.
 - ▶ Auxiliary output is supposed to select one among alarm output(AL) / periodic timer input 1(t1)/ periodic timer output 2(t2). Accordingly, factory default should be set as the alarm output. (The factory default is set as AL, alarm output)
 - ▶ To change the factory default, press **up** button & **set** button at the same time for longer than 3 seconds at the current temperature status.
 - ▶ Until FIL is displayed, keep **up** button & **set** button pressed. When FIL is displayed, please release the above two buttons.
 - ▶ If you press **set** button several times, you can move to ot2.
 - ▶ When ot2 is displayed, change the setting as below by pressing (**up**) & (**dn**) buttons.

factory default	Item	Setting Value	Description
	ot2	AL	Auxiliary Output is used for Alarm output

► If you press **[set]** buttons for 3 seconds, the data will be saved.

② Alarm output temperature setting method

► In order to set the alarm output temperature, press **[set]** button for 3 seconds at the status that the current temperature displayed. If DiF is displayed, release **[set]** button.

► If you press **[set]** button several times, you can move to SV2.

► By pressing **[up]** & **[dn]**, **[set]** buttons, you can change the setting as below.

Installer Setting	Item	Setting Value	Description
	SV2	-40.0~99.9	Setting Alarm Output Temperature
	dF2	0.1~25.0	Setting the range from Alarm Output OFF ~ Output ON
	dt2	0~300 sec	Setting Alarm output ON delay time value
	ty2	H / C	Setting Alarm output heating (H/forward), cooling (C/converse) value

► If you press **[set]** button for 3 seconds, the data will be saved.

Example1) Set alarm output temperature at 20.0°C, dF2 = 5.0, dt2 = 10, ty2 = H

Relay ON : ON after 10 seconds stand-by at 14.9°C

Relay OFF : 20.0°C

Example2) Set alarm output temperature at 20.0°C, dF2 = 2.0, dt2 = 20, ty2 = C

Relay ON : ON after 20 seconds stand-by at 22.1°C

Relay OFF : 20.0°C

*** Alarm Output is working, completely separated from thermometer operation**

10. Periodic Timer Setting (Auxiliary output)

1) Setting Method

① Auxiliary output is set as periodic timer output.

► Auxiliary output is supposed to select one among alarm output (AL) / periodic timer output 1 (t1) / periodic timer output 2 (t2). Accordingly, factory default should be set as periodic timer output. (The factory default is set as t1(timer1)).

► To change the factory default, press **[up]** button and **[set]** button at the same time for 3 seconds at the status of the current temperature displayed.

► Until FIL is displayed, keep **[up]** button and **[set]** button pressed. When FIL is displayed, release these buttons.

► If you press **[set]** buttons several times, you can move to ot2.

► When ot2 is displayed, change the setting as below by pressing **[up]** & **[dn]** buttons.

Factory default	Item	Setting Value	description
	ot2	t1	Auxiliary output is used for periodic timer output1 * Refer to NO10 item and 2) periodic timer operation
		t2	Auxiliary output is used for periodic timer output 2 * refer to NO.10 and 2) Periodic timer operation

► If you press **[set]** button for 3 seconds, the data will be saved.

② Periodic timer output On/Off Time Setting Method.

► To set On/Off time, press **[set]** button for 3 seconds at the status of current temperature displayed. When DiF is displayed, release **[set]** key.

► If you press **[set]** button several times, you can move to on.

► Change the setting as below by pressing **[up]** & **[dn]** and **[set]**.

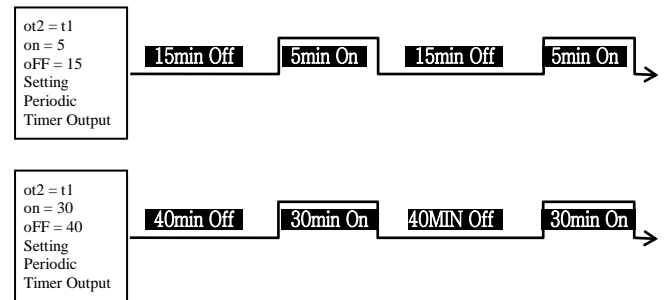
Installer setting	item	Setting value	description
	on	0 ~ 999min	Select output ON time value * Set as 0, continuously OFF without ON time
	oFF	0 ~ 999min	Select Output OFF time value * Set as 0, Continuously ON without OFF time.

► If you press **[Set]** button for 3 seconds, the data are saved.

2) Periodic Timer Operation

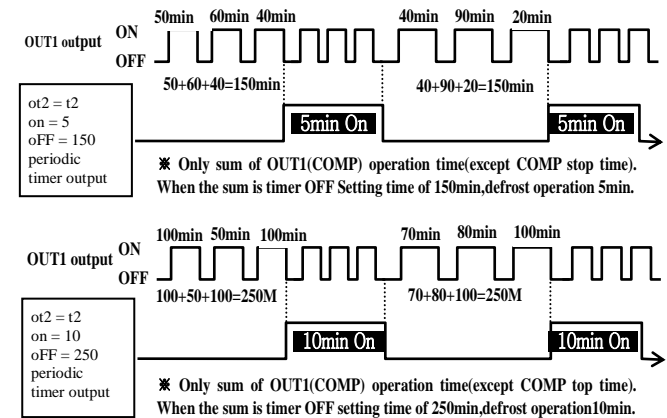
① Auxiliary Output is set as periodic output t1.

Timer output (OUT2) is OFF during OFF setting time, Timer Output(OUT2) is ON during ON setting time. It will be repeated.



② Auxiliary Output is set as periodic timer output t2

During OFF setting time, make the sum of OUT1 ON time (except OUT1 OFF time). And, at the OFF setting time, timer output (OUT2) is made during ON setting time.



11. Refrigerator Setting

1) Control Setting

① OUT1 output is connected to COMP control output of refrigerator.

② OUT2 output is connected to defrost heater control output.

2) Regulator Setting

(1) COMP(OUT1)

① Setting appropriately DIF and DLT of Installer's setting items

② Select TYP of installer's setting items as C(Cooler).

③ Set the refrigerator's operation temperature as the Main Output Setting Value.

(2) Defrost(OUT2)

① Select Factory default OT2 item as periodic timer.

② Set ON time (defrost time value) of installer setting items

③ Set normal operation time (defrost OFF time) at OFF time item of installers setting item.

④ Set factory default INT as YES, in the case of stopping COMP(OUT1) operation during defrost time value operation.

⑤ In the case of displaying the current temperature of refrigerator during Defrost function operation, set factory default DP2 item as PV.

In the case of displaying the remaining time, set DP2 as TIM.

⑥ In the case of preventing to raising the temperature of refrigerator too much during defrost function operation, set the factory default DOF item at the defrost stop temperature value of appropriately. If the temperature of refrigerator is getting higher than DOF temperature, stop immediately **defrost** and start the normal refrigeration.

※ If the current refrigerator temperature is higher than DOF setting temperature, defrost function does not work.

(3) Manual Defrost

- ① If the compelling defrost is necessary in the normal defrost operation situation, the compelling defrost output is made during the setting time.
- ② Set manual defrost time appropriately at the t item of installer's setting items.
- ③ If you press defrost key in the front of regulator in the situation of defrost output OFF, defrost output will be ON during manual defrost time.
- ④ If you press defrost key in front of regulator during defrost operation, defrost will be immediately stopped and will normally operate in the situation of defrost output OFF.

12. Product specification

Power Voltage	AC100~220V (50/60Hz) ±10%
Power Consumption	Approx. below 5VA
Input Sensor	Thermist (Allowable Line Resistance: within 5Ω)
Display Method	Temperature : ±2% +1digit of displayed value
Variation(dIF)	0.1℃ ~ 25.0℃
Control Output	Relay Contact Output: OUT1 AC250V 10A(resistance load)/contact point life time: above 300K times (rated load) OUT2 AC250V 5A(resistance load)/contact point life time : above 300K times (rated load)
Control Method	ON/OFF control selection
Setting Method	Digital Method by increase & decrease key
Other Functions	Sensor input compensation, Delay Timer forward/converse selection, Defrost Timer
Ambient Temp	0℃ ~ 50℃
Ambient humidity	Below 85% RH



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