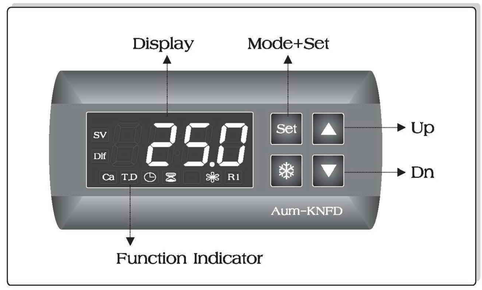
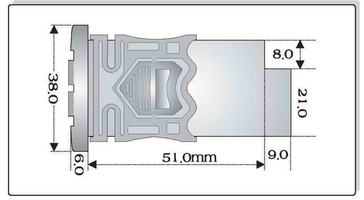
Manual for dimension & functions

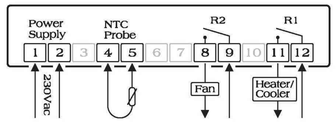
Mod. : Aum-KNFD

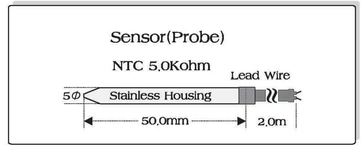




*. Color : Black
*. Drilling Template : B.:70.5xH.:30.0xD.:60.0mm

Fig. 01





Please be sure to read and fully understand the notices before using it.

Model "**Aum-KNFD**" is for **Heater/Cooler and fan/stirrer** operate together. When the heater/Cooler is off, fan/stirrer will operate for the set time and will be turned off. After heater/cooler is off, fan/stirrer will remove the remaining time.

a. When "**Aum-KNFD**" is connected to **230Vac** power supply and a sensor is connected, present temperature will be displayed on the display.
b. Whenever pressing "Set" key, "Selection Value ⇨ Temperature Differential ⇨ Calibration ⇨ Relay1 Time Delay ⇨ Relay2 Time Extension ⇨Operation Cycle ⇨ HEAt/COOL" will be displayed on the display.
When selecting functions below "Selection Value", press "Set" key, check "Selection Value" and press "❄" key for **5**seconds to set the functions.

c. After selecting a mode with "Set" key, revise the value with "▲/▼" key. After that, press "Set" key again to complete the setting. When **10**seconds pass, it will return to present temperature mode automatically. Otherwise, you can return to present temperature mode by pressing "Set" key continuously. If you press "▲/▼" key in the mode to be revised, the characters will be blinking.
d. When operating Fan/Stirrer by the output of Relay2(terminal No.8), you can set Time Delay(Max. 30:00min.) of Relay2, fan/stirror after turning "off" Relay.
e. When the temperature sensor is short or disconnected, "**-Hi-**/**-Lo-**" will be displayed on the window.

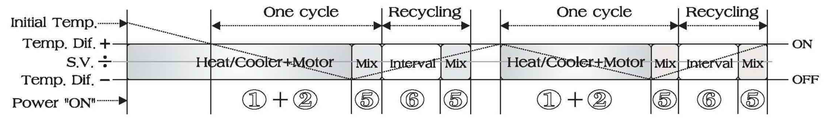
Method of program loading

Mod. : Aum-KNFD

No.1 : Selection Value(SV) Range : **-40.0~99.9°C** Apply : Heater/Cooler	a. b. c.	After checking Selection Value, set the temperature with "▲/▼" key. The range of selection value is **-40.0** <(S.V.)+(Dif)+(Ca)< **99.9°C.** Check the lighting on "**SV**" and press "❄" key for **5**seconds to select the function below Selection Value.
No.2 : Differential V(Dif) Range : **0.0 ~ 12.7°C** Apply : ± Selection Value	a.	Differential Value is applied to above and below the Selection value. For example, when No.1 selection value is 25.0, No.2 differential value is 1.5, the range of ON/OFF is **23.5~26.5°C.** At least, **0.3°C** is recommended to protect mechanical system from excessive operation.
No.3 : Calibration(Ca) Range : **0.0 ~ +/- 6.3°C** Apply : +/- Present temp.	a. b.	It is to calibrate the difference of present temperature due to resistance value of the extended line when a sensor is installed in a long distance. Keep the lead(**Shield**) wire of a sensor away from a power generator or electrical noise.
No.4 : Time Delay(TD) Range : **00:00~15:00**(m/s) Apply : Cooler mode only	a. b.	This function protects a machine from damage that can be resulted from frequent stops and restarts by delaying the operation of a relay during the set value. The relay won't operate for the set value of **T**ime **D**elay from the time of "OFF" of the relay. It protects a machine from the chattering due to electric noise.
No.5 : R2 Time Extension Range : **00:00~30:00**min. Apply : Extension of R2 after R1 "OFF"	a. b.	When Relay1(Heat/Cool) operates, relay2 will operate at the same time. Relay 2 will be "Off" after operating for the set time from the "Off" time of Relay1. It removes the remaining heat after Heater/cooler stops.
No.6 : R2 Operation Cycle Range : **00 ~ 63**min. Apply : R2 Extension after R1 "OFF"	a. b.	When Relay1(Heat/Cool) is "OFF", Relay2 will be "OFF" for the set time which is inputted in mode No.5 when the set operation cycle comes. It should be set when it needs circulation in a chamber.
No.7 : H/C + ▲/▼ Range : **HEAt/COOL** Apply : R1 Load ON/OFF	a.	When pressing "▲" key, "**HEAt**" will be displayed. When pressing "▼"key, "**COOL**" will be displayed on the window, you can check the operation by the blinking of "R2(❄)" and "R1" lamp. The load should be matched "**Heater/Cooler**".

Sensor Fault

The Cycle of Load(R1) and Motor(R2)



Note : 1. When momentary power failure takes place during the operation of Motor/Stirrer, the mixing cycle(time) will begin again from the beginning.

Cautions in use

Mod.: Aum-KNFD

1. Please avoid excessive rising of temperature, humidity and impact.
2. Please it upright to prevent water droplet at the end part of sensor. — NTC Sensor
3. Keep it away from high voltage device or power generator and motor. — Fan/Stirrer
4. Please wait for 5seconds to turning it on again to avoid electric impact.
5. Use it between 0~60°C in temperature, 60% humidity around the controllers.
6. Please install in safe from strong acids, alkalis, oil, dust & direct rays of sun.
7. Please set safe protection at the double circuit when using at expensive appliances (Freezer, Heater and motor).