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SAS968 Intelligent Thermostat Installation and User Guide



*SAS968FHL-7
SAS968FHL-7(C)*

435-147-01

SAS968 Installation and User Guide

It is a programmable thermostat with GFCI function, which can provide great comfort and energy saving, as well as the better safety. Main application is used for electrical heating systems.



Features

- Large LCD display with white backlight, continuous backlight option.
- Build in GFCI (Class A or Class B standard)
- Two relay for extra protection against wiring error
- 7-day programming with four separate time/temperature periods per day
- Permanent user setting and program setting retention during power loss
- Optional temperature display of Celsius or Fahrenheit scale
- Optional type of control for different heating application including room sensor, floor sensor or room sensor with floor limitation.

Caution

Always turn off power at the main power source by unscrewing fuse or switching circuit breaker to the off position before installing, removing, cleaning, or servicing this thermostat.

Read all of the information in this manual before installing this thermostat.

Only a professional contractor should install this thermostat.

All wiring must conform to local and national building and electrical codes and ordinances.

Use this thermostat only as described in this manual.

Technical Specification

Operation voltage	120/240VAC 60HZ
Maximum Load	240VAC 16A
Room temperature limit	5℃ (41℉) ~35℃ (95℉)
Floor temperature limit	0℃ (32℉) ~40℃ (104℉)
Ambient temperature-operation	0℃(32℉) ~55℃(122℉)
Ambient temperature-storage	-10℃(14℉) ~60℃(140℉)
Accuracy	±1℉ or ±0.5℃
Dimensions	120(L)x75(W)x54.2(H)(mm)
Color	White
IP class	IP20

Summary of Contents

First Time Power On.....	3
Button and Display Description.....	4
Installation.....	5
Operate Modes.....	6
Settings	8
Error Message	10

First Time Power On

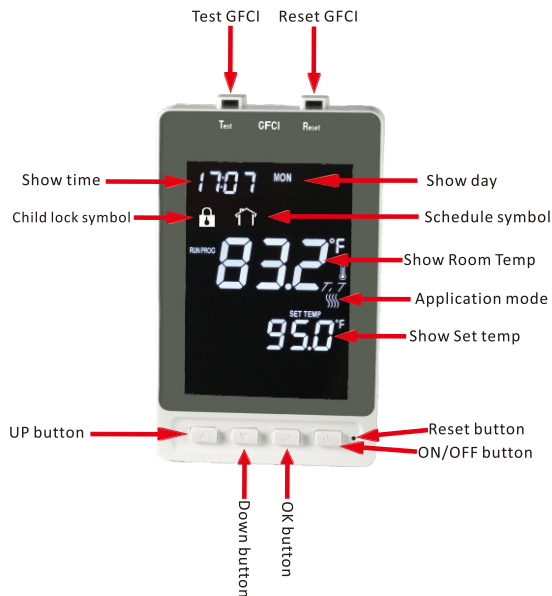
Time and day:

The first time you turn on the thermostat, time and day must be set. First the time flashes. Set the current time using the  or .

Then press the  to confirm the time. The day of the week will then flash. Select the current day using the  or .

Press the  to confirm.

Button and Display Description



Installation

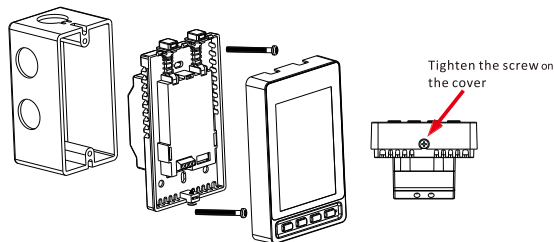


Figure 1

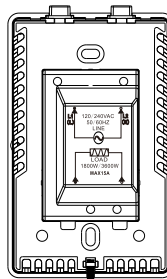


Figure 2

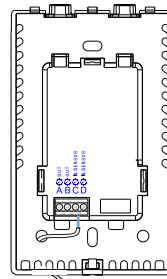


Figure 3



Figure 4

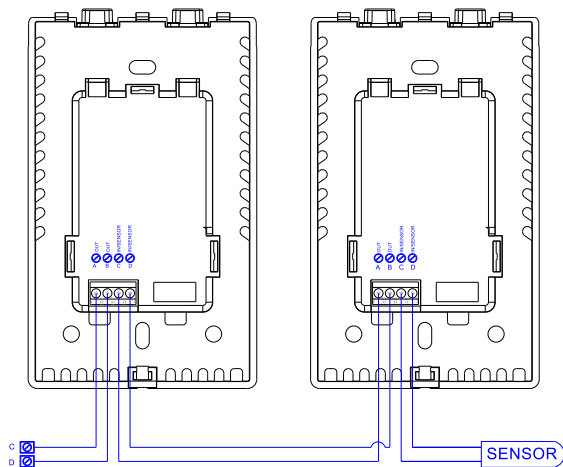


Figure 5

- Turn the heating system off at the main electrical panel.
- Loosen the bottom screw and remove the thermostat faceplate from its wallplate. (The screw cannot be completely removed.)
- Connect the thermostat to the load and to the power supply (see figure 2).
- Connect the floor sensor (see figure 3).
- If you wish to connect a remote control device, see figure 5.
- Install the wallplate to the electrical box using the provided screws.
- Set the configuration switches on the back of the faceplate, NTC10K, 12K, 100K optional (see figure 4).
- Install the faceplate back on the wall plate and tighten the screw.
- Apply power to the heating system.
- Test the ground fault protection (see page 6).

NOTE: Connect the wires using the provided solderless connectors for copper wires.

■ Floor sensor Resistance value table:

Temp. (°C)	Temp. (°F)	SASWELL10K	OJ12K	SASWELL100K
		Value(ohm)	Value(ohm)	Value(ohm)
5	41	25530	28710	255300
15	59	15710	18290	157400
25	77	10000	12000	100000
35	95	6512	8048	64970
45	113	4345	5512	43200

1. Checking the GFCI

It is important that the GFCI has been checked for correct installation and function. To check the GFCI:

Testing can only be performed if the thermostat has a heating demand.

- ① Adjust the set point until the heating symbol appears. Use **(A)** button to increase the heating demand. Wait 10 sec to let the thermostat work according to the new set point.
- ② Press the button "TEST".
- ③ The test is conclusive if the red light on the thermostat lightens, and the display signs disappear. If this does not occur, check the installation.
- ④ Press on RESET button to reset the GFCI. The red light should disappear and the display will return to normal appearance.
- ⑤ Push ok accept button (V) to cancel the previously set temperature. If the test fails, check your heating cable and the thermostat.

If the GFCI trips in normal operation, without pressing the TEST button, there could be a ground fault!

To check whether it is a ground fault or a nuisance tripping, press RESET. If this causes the red light to shot off and not comes on again, it was a nuisance tripping and the system is functioning. If this cannot be done there is a ground fault.

The GFCI function meets the latest UL943 standard, auto monitoring function tests every day.

■ Child lock

Press the **(✓)** button to active the menu

Press the **(A)** or **(V)** buttons until the SETTINGS option flashes,

Press the **(✓)** button.

Press the **(A)** or **(V)** buttons until the CHILDLCK option flashes. A padlock symbol will appear in the menu area

Press the **(✓)** button. OFF will flash in the lower part of the display

Press the **(A)** or **(V)** buttons until ON flashes

Press the **(✓)** button back to previous menu.

To unlock the child lock again, press and hold the **(A)** and **(V)** buttons simultaneously for three seconds.

■ Anti-freezing protection

SAS968FHL-7(C) does not have this function

Anti-freezing protection will be activated when you turn off the thermostat.

During anti-freezing mode, if room temperature decrease to 5°C, the unit will activate the heating system till room temperature reach to 8°C.

Run program

When you need the temperature to be controlled automatically in accordance with a program of individual temperature settings for four separate events during a day:

when I wake up in the morning 
when I am away at work 
when I come home 
and at night 

Please proceed the following steps:

- Press the  button to active the menu.
- Press the  or  buttons until the MODE option flashes.
- Press the  button.
- Press the  or  buttons until RUN PROGRAM flashes in the left part of the display.
- Press the  button. The MON will flashes in the upper part of the display.
- Press the  or  buttons until the day(s) that you wish to program flash in the upper part of the display, e.g. MONTUE WED THU FRI.
- Press the  button. The symbol for the first event (e.g. morning) will now flash.
- Press the  button. The time will flash, allowing you to set the time at which you want the period to begin. The time can be set in an interval of 15 minutes.
- Press the  or  buttons until the required time is displayed.
- Press the  button. The temperature setting will now flash in the upper part of the display.
- Press the  or  buttons to set the required temperature.
- Press the  button. The symbol for the next event (e.g. at work) will now flash, allowing you to set the time and temperature for this period of the day by repeating the above steps.

The factory default program period and temperature chart are as following:

Time period								
	Time	Temp	Time	Temp	Time	Temp	Time	Temp
Monday to Friday	6:00	21℃	8:30	18℃	16:30	21℃	22:00	18℃
Saturday to Sunday	7:30	21℃	8:30	21℃	16:30	21℃	23:00	18℃

Temporary override

If you want to temporarily set a comfort temperature for a single event, e.g. because I am not at work one day and want to maintain a higher temperature or because I am having a party.

Please proceed the following setting:

- Press the  button to active the menu.
- Press the  or  buttons until the required temperature flashes.
- Press the  button.

Please note: Override mode is a temporary temperature setting that is cancelled automatically by the next event in the scheduled 4-event program.

4.Holiday Mode

If you want to go for vacation and need to set a lower temperature during your absence, so as to save the energy. Please proceed the following setting:

- Press the  or  buttons to set the required temperature during your leaving.
- Press the  button.
- Press the  button again to active the menu.
- Press the  or  buttons until the MODE option flashes.
- Press the  button.
- Press the  or  buttons until HOLIDAY flashes in the upper part of the display.
- Press the  button.
- Press the  or  buttons to exit the menu.
- Press the  or  buttons to set the holiday days (1day~120days optional).

Permanently hold

This is the factory default operate mode, If you want to maintains a constant temperature, you can choose the permanently hold mode. Please precede the following setting:

- Press the  or  buttons until the required temperature flashes.
- Press the  button.
- Press the  button again to active the menu.
- Press the  or  buttons until the MODE option flashes.
- Press the  button.
- Press the  or  buttons until HOLD flashes in the upper part of the display.
- Press the  button.
- Follow the Exit Menu procedure to exit the menu.

Settings

Time and Week

If you want to modify the time, please proceed the following setting:

- Press the  button to active the menu.
- Press the  or  buttons until the SETTINGS option flashes.
- Press the  button.
- Press the  or  buttons until the TIME option flashes.
- Press the  button. The hour will flash in the upper part of the display.
- Press the  or  buttons to select 12h or 24h clock.
- Press the  button. The hour will begin flashing in the top left corner of the display.
- Press the  or  buttons to set the hour.
- Press the  button. Now the minutes will flash.
- Press the  or  buttons to set the minute.
- Press the  button back to previous menu.

NOTE: The thermostat will automatically return to normal display if no button is pressed for 20 seconds.

■ Temperature unit

If you want to change the temperature unit (°C/°F) used in the display, please proceed the following setting: (The factory default of SAS968FHL-7 is °F, and SAS968FHL-7(C) is °C)

- Press the button to activate the menu.
- Press the or buttons until the SETTINGS option flashes.
- Press the button.
- Press the or buttons until °C/°F flashes in the menu area. The unit currently selected will appear in the middle part of the display.
- Press the button.
- Press the or buttons until the required unit °C/°F flashes.
- Press the button back to previous menu.

■ Recalibration (The factory default is 0°C)

The recalibration is used to compensate for any difference between the thermostat and the actual room temperature. It is possible to adjust the offset by up to +/ - 4 °C.

- Press the button to activate the menu.
- Press the or buttons until the SETTINGS option flashes.
- Press the button.
- Press the or buttons until RECALIBRATION flashes in the menu area.
- Press the button.
- Press the or buttons to set the recalibration temperature (in steps of 0.5 °C).
- Press the button back to previous menu.

■ Room H-limit

You can set the Room H-limit only when the thermostat is Room sensor mode or Dual sensormode. (The factory default is 25°C/77°F)

- Press the button to activate the menu.
- Press the or buttons until the SETTINGS option flashes.
- Press the button.
- Press the or buttons until ROOM H-LIMIT flashes in the menu area.
- Press the button.
- Press the or buttons to set the maximum and minimum temperature of the room.
- Press the button back to previous menu.

■ Floor H-limit

You can set the Floor H-limit only when the thermostat is Floor sensor mode or Dual sensor mode.

- Press the button to activate the menu.
- Press the or buttons until the SETTINGS option flashes.
- Press the button.
- Press the or buttons until FLOOR H-LIMIT flashes in the menu area.
- Press the button.
- Press the or buttons to set the maximum and minimum temperature of the floor.
- Press the button back to previous menu.

■ Adaptive function (the factory default is on)

If you want to ensure that the required temperature has already been reached when I get up in the morning or come home from work. To do so, you must activate the adaptive function:

- Press the button to activate the menu.
- Press the or buttons until the SETTINGS option flashes.
- Press the button.
- Press the or buttons until the ADAPTIVE option flashes.
- Press the button. ON or OFF will now flash in the lower part of the display.
- Press the or buttons until ON flashes.
- Press the button back to previous menu.

Please note: The adaptive function is only related to the 4-event program and only works in connection with going from one event to another where the temperature is going to be raised.

■ Application

When installing the thermostat you need to choose which sensor is used for comfort temperature regulation. If you want to set the sensor type, please proceed the following settings:

- Press the button to activate the menu.
- Press the or buttons until the SETTINGS option flashes.
- Press the button.
- Press the or buttons until ROOM OR FLOOR OR RO/FL flashes in the menu area.
- Press the button back to previous menu.

■ Schedule

You can set the schedule according to your preference, there are 7days, 5+2days, and 5+1+1days optional.

5:2 will give you 5 days (Monday to Friday) with the same four events (Morning, Out, Home, Night) and 2 days (Saturday and Sunday) with the same two events (Morning and Night).

6:1 will give you 6 days (Monday to Saturday) with the same four events (Morning, Out, Home, Night) and 1 day (Sunday) with the same two events (Day and Night).

7:0 will give you individual settings for each day from Monday to Sunday.

The factory default weekly schedule is 7 days, you can change it by yourself according to the following setting:

- Press the button to activate the menu.
- Press the or buttons until the SCHEDULE option flashes.
- Press the button.
- Press the or buttons until the required program (5+2 days or 5+1+1 days) flashes at the bottom right corner of the display.
- Press the button back to previous menu.

■ Factory reset

If you want to return to the factory default settings, please proceed the following setting:

- Press the button to activate the menu.
- Press the or buttons until the FACTORY RESET option flashes.
- Press the button.
- Press the or buttons until the YES OR NO flashes in the menu area.
- Press the or buttons to choose YES, then DEF will flash in the menu area.
- Press the button.
- Press the button back to previous menu.

Error Message

- E1 = When Internal sensor is short-circuited. Please replace thermostat.
- E2 = When Internal sensor is broken. Please replace thermostat.
- E3 = When External sensor is short-circuited. Please check external sensor.
- E4 = When External sensor is broken. Please check external sensor.