

## SAS803WHL-7 Thermostat for floor heating

SAS803WHL-7 is a 7-day programmable thermostat designed for floor warming application or helping to limit floor temperature. This thermostat can conform to electrical heating or water heating system.

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### SPECIFICATION:

Power source ..... 100-240VAC 50/60Hz  
Relay contact:.....250VAC 3A  
Room temperature setting range.....5°C to 70°C  
Floor temperature control range..... 5°C to 70°C  
Accuracy..... ±0.5°C  
Dimensions.....86mm X 86mm X18mm  
Color.....White

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### FEATURE:

- Large LCD display
  - Permanent user setting retention during power loss,
  - The thermostat has an intelligent recovery function that brings your room temperature to the set temperature at exactly the pre-set time by turning on the Heating earlier.
  - Optional economic operation or comfort operation
  - Optional type of control for different heating application including room thermostat; floor thermostat or room thermostat with floor limitation
  - Optional programming Period: 7 individual day or Separate 5-day (weekday) and 1-day/1-day (Saturday/Sunday) programming with 6 or 4 separate time/temperature periods per day.
  - Display temperature recalibrates
  - Anti-freezing protection
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### IMPORTANT SAFETY INFORMATION:

- 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.
- If system is not operating properly, check wiring and replace fuse if necessary.
- Use this thermostat only as described in this manual.

## KEYBOARD, DISPLAY AND SWITCH DESCRIPTION

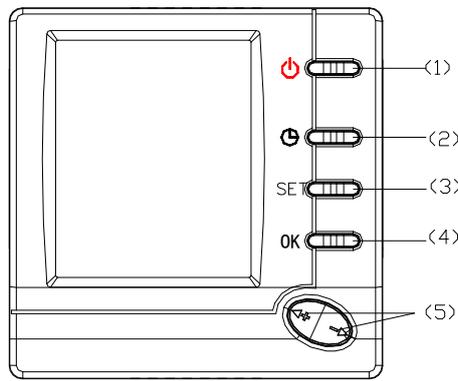


Figure 1

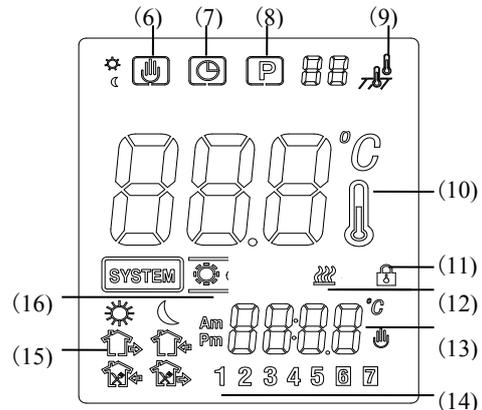
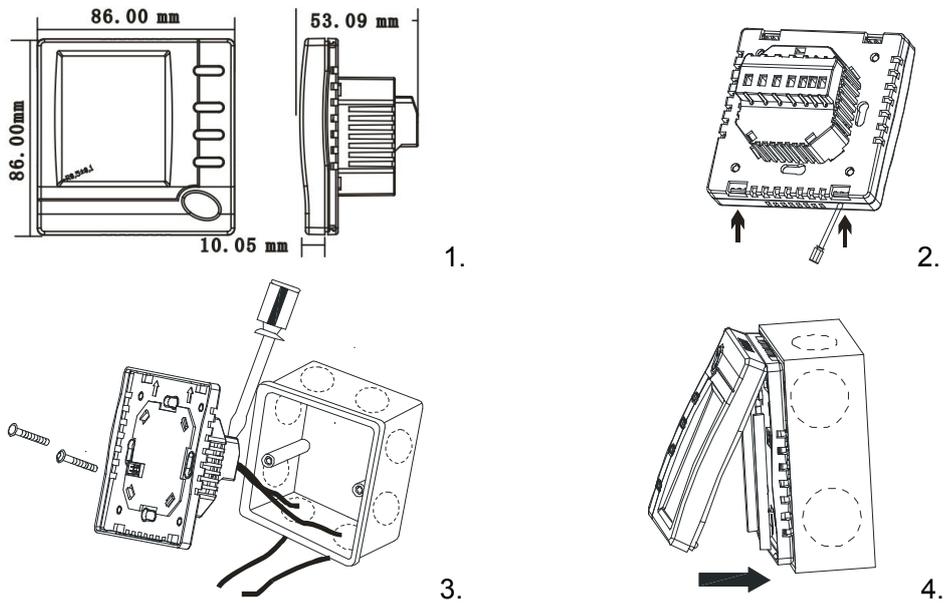


Figure 2

- (1) SYSTEM button
- (2) Time Clock
- (3) Set button
- (4) OK button
- (5) + Raise temperature setting  
- Lower temperature setting
- (6) Shows when thermostat is in temporarily override mode
- (7) Shows current time clock
- (8) Shows when thermostat is in program operation
- (9) MODE IN Shows when thermostat is in room temperature sensor control mode
- MODE OUT Shows when thermostat is configured in floor temperature sensor control mode
- MODE ALL Shows when thermostat is configure in dual sensor control mode
- (10) Shows current room temperature
- (11) Lock function
- (12) Shows when there is a call for heating
- (13) Shows set temperature or time clock
- (14) Shows weekdays setting.
- (15) Time to get up time to go out in the morning time to go back for lunch  
 Time to go out in the afternoon time to return in the afternoon time to sleep
- (16) Press SYSTEM button, Shows system in heating mode ; **OFF** Shows stand-by state.

## INSTALL THE THERMOSTAT

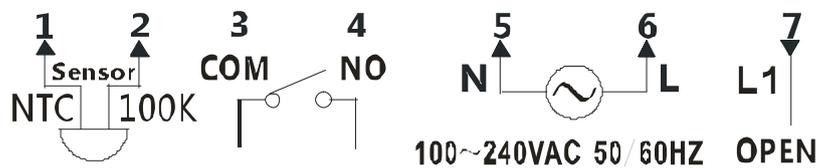
### ATTACH THERMOSTAT BASE TO WALL



**Figure 3**

1. Remove the packing material from the thermostat. Gently pull the control panel straight off the base. Forcing or prying on the thermostat will cause damage to the unit. See figure 3-2.
2. The floor sensor cable must be installed to terminal block. (See figure 4 ) in heating type F or RF,
3. Connect wires beneath terminal screws on power base using appropriate wiring schematic. See figure 3-3.
4. Push power base into conduit box. See figure 3-4.
5. Using two mounting screws mount the power base to the wall. Place a level against bottom of base, adjust until level, and then tighten screws. (Leveling is for appearance only and will not affect thermostat operation.)
6. Replace control panel on the power base by snapping it in place. See figure 3-4.

### WIRING DIAGRAM



**Figure 4**

**Attention :**

**N: Neutral Wire ; L: Live Wire.**

**Item 1-2: Connected with sensor (NTC100K). Item 3-4: Connected with heating boiler**

**Item 5-6: Connected with power. Item 7: Connected with valve actuator.**

## OPERATION

### 1. Configuration Menu

The configuration menu allows you to set certain thermostat operating characteristics to your system or personal requirements. When the display shows OFF stand-by state, Hold button **SET** for 3 seconds to enter the configuration menu. The display will show the first item in the configuration menu. Press **SET** button to shift to the next menu item. Use + or - to select. To exit the menu, press **OK** button. If no button is pressed within 20 seconds, the thermostat will exit the configuration menu.

Item	Press buttons	Displayed (factory default)	Press + or - to select	Descriptions
1	SET 3 sec.	CL ( 0.0 )	-6.0 --- +6.0	Select temperature display adjustment higher or lower
2	SET	AH (35°C)	20°C—70°C	Select maximum room setting temperature
3	SET	AL (5°C)	5°C—20°C	Select minimum room setting temperature
4	SET	FH (40°C)	20°C-70°C	Select maximum floor temperature limitation
5	SET	FL (5°C)	5°C—20°C	Select minimum floor temperature limitation
6	SET	SEN (IN);	ALL/IN /OUT	Temperature control mode option: ALL:Room sensor with floor limiter sensor control mode. IN: Room sensor control mode OUT: Floor sensor control mode.
7	SET	BL(2)	1/2/3	Select display backlight mode 1. light off ; 2. light on ; 3. Keep lighting.
8	SET	CH(FA)	FA/SL	Select fast heating or slow heating
9	SET	PS1(0)	7/3/2/0	Programming day in one week option
10	SET	PS2(6)	6/4	Programming period per day option
11	SET	OC(24)	12/24	Selection of time scale
12	SET	ES(OFF)	ON/OFF	Intelligent Recovery Option
13	SET	An(OFF)	ON/OFF	Anti-freezing protection option
14	SET	FA (NC)	NO/NC	Select the valve output mode: NO: Cooperate with the normally open type drive is used; NC: Cooperate with normally closed type drive is used
15	SET	SEN1 (100)	100/10	Sensor selection 100: 100 k thermistor 10: 10 k thermistor

The configuration menu chart summarizes the configuration options. An explanation of each option as follows:

**1) Select temperature recalibrates adjustment 6LO to 6 HI –**

You can adjust the room temperature display up to 6 higher or lower. Your thermostat was accurately calibrated at the factory but you have the option to change the display temperature to match your previous thermostat. The current or adjusted room temperature will be displayed on the right side of the display.

**2) Select maximum set point**

For room sensor control mode, This feature provides a maximum set point temperature for room setting. The default setting is 35°C, It can be changed between 20°C to 90°C.

**3) Select minimum set point**

For room sensor control mode, This feature provides a minimum set point temperature for room setting. The default setting is 5°C, It can be changed between 5°C to 20°C.

**4) Select maximum floor temperature limitation**

Press + or - to select you desire maximum floor temperature limitation. It can be changed between 20°C-99°C, factory default setting is 40°C. If floor temperature over the limitation, then stop output work.

**5) Select minimum floor temperature limitation**

Press + or - to select you desire minimum floor temperature limitation. It can be changed between 5°C-20°C, factory default setting is 5°C.

**6) Select Type of heating.**

There are 3 temperature control modes: Mode ALL, Mode IN and Mode OUT.

**Mode ALL** is room sensor with floor limiter sensor control mode.

Assuming that the floor temperature is below the maximum floor temperature limit, the heating should begin to operate if the set temperature is 1°C or 2°F higher than the actual room temperature. If the floor temperature is above the upper floor limit, the thermostat will shut off heating. High temperature warning lights is flashing, display is showing "HI"

**Mode IN** is room sensor control mode.

Press + to adjust thermostat setting above room temperature 1°C or 2°F. The heating should begin to operate immediately.

**Mode OUT** is Floor sensor control mode.

Press + to adjust thermostat setting above floor temperature 1°C or 2°F. The heating should begin to

operate immediately.

#### **7) Select display backlight mode**

The display backlight improves display contrast in low lighting conditions. Factory default is 2.

Select 1 the display will keep the light off.

Select 2 the light will be on when any button of the thermostat is touched.

Select 3 the display will keep the light on continuously.

#### **8) Select fast heating or slow heating**

Select FA to start heating immediately when the set point is 1°C above the room temperature.

Select SL to start heating only when the set point is 3 °C above the room temperature.

#### **9) Programming day in one week option**

There are 2 options for how to program the day in one week.

7: You can program in 7 individual days

3: You can program in 5 weekday and 1Saturday and 1Sunday.

2: You can program in 5 weekday and 1 day mode, both the same setting on Saturday and Sunday.

0: Non-programmable.

#### **10) 4 or 6 period per day program option**

There are 2 option for how to program the period in one day

P4: You can program 4 period per day

P6: You can program 6 period per day

#### **11) Select displayed clock format**

Select 24h. Display will show 24-hour clock time

Select 12h. Display will show 12-hour clock time

#### **(12) Intelligent Recovery Option**

The thermostat has an intelligent recovery function that brings your room temperature to the set temperature at exactly the pre-set time by turning on the Heating earlier.

Select ON to activate the intelligent recovery function,. In configuration ES mode, the thermostat is start heating 5days in advance.

Select OFF to deactivate the intelligent recovery function.

#### **(13) Anti-freezing protection option**

ON: Open the anti-freezing function

OFF: Close the anti-freezing function

#### **(14)Select the valve output mode:**

NO: Cooperate with the normally open type drive is used:

NC: Cooperate with normally closed type drive is used

(15) Sensor selection

100: 100 k thermistor

10: 10 k thermistor

Such as  from Monday start heating:

Heating program setting as following:

												
	Time	Temp	Time	Temp	Time	Temp	Time	Temp	Time	Temp	Time	Temp
1	6:00	27°C									22:00	18°C
2	6:00	27°C									22:00	18°C
3	6:00	27°C									22:00	18°C
4	6:00	27°C									22:00	18°C
5	6:00	27°C									22:00	18°C
6	6:00	27°C									22:00	18°C
7	6:00	27°C									22:00	18°C

Program Running:

DAY	Time	Setting Temp	Room Temp	Schedule Time arrival	Schedule Temp arrival	The first heating when stopped	ITEM	Advanced Time calculation
1	Before 6:00	15°C	25°C	6:00	27°C	Take 40 min'	TIME 1	
2	Before 5:44	15°C	25°C	5:44	27°C	Take 30 min'	TIME 2	TIME 2= TIME 1×0.4
3	Before 5:40	15°C	25°C	5:40	27°C	Take 18 min'	TIME 3	TIME 3= TIME 1×0.2+ TIME 2×0.4
4	Before 5:39	15°C	25°C	5:39	27.5°C	0	TIME 4	TIME 4= TIME 1×0.2+ TIME 2×0.2+ TIME 3×0.4+
5	Before 5:46	15°C	25°C	5:46	27°C	Take 5 min'	TIME 5	TIME 5= TIME1×0.1+ TIME2×0.2+ TIME3×0.2+ TIME4×0.4
6	Before 5:47	15°C	25°C	5:47	27°C	Take 10 min'	TIME 6	TIME 6= TIME1×0.1+ TIME2×0.1+ TIME3×0.2+ TIME4×0.2+ TIME5×0.4
7	Before 5:50	15°C	25°C	5:50	27°C	Take 10 min'	TIME 7	TIME 7= TIME2×0.1+ TIME3×0.1+ TIME4×0.2+ TIME5×0.2+ TIME6×0.4

13) Anti-freezing protection option

When the climate is warm enough, you can choose to switch off or activate the anti-freezing mode. The default set temperature for anti-freezing mode is 5°C. 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.

Select ON to activate Anti-freezing protection .

Select OFF to deactivate Anti-freezing protection .

## 2. Manual Operation

### 1) Set current day and time

- Press **SET** button once again. The display will only show minutes flashing
- Press and hold either +, - until you reach the correct minutes
- Press **SET** button. The display will show the hour flashing.
- Press and hold either +, - until you reach the correct hour
- Press **SET** button once again. The display will show the day of the week flashing.

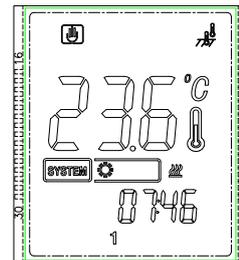
Press +, - until you reach the correct day of the week

Press button **OK** button once. The display will show the correct day of the week and the time.

If no keys are pressed within 20 seconds, the thermostat will revert to program operation.

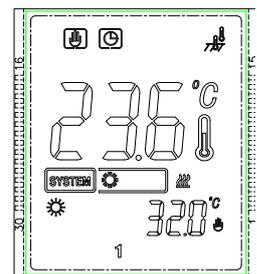
### 2) Permanent hold temperature setting

When thermostat is in program operation, hold OK button for 3 second to change to permanent hold temperature setting.  Shows simultaneously indicate permanent hold operation. Press +, - to change set temperature. The thermostat will permanent hold the room temperature at the selected setting until you press **OK** button to restart the program operation.  Shows when thermostat is in program operation.



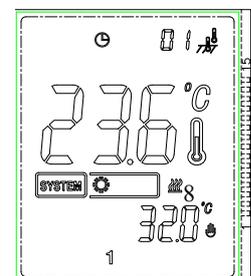
### 3) Temporary hold temperature

When thermostat is in program operation, press +, - to check current set temperature. Blink digit means set temperature. If the set point is your desired temperature, just push **OK** button to revert to program operation. If the set point is not your desired temperature, press +, - to temporary change the set point.   shows in temporary temperature override. The thermostat will override the current programming setting and keep the room temperature at the selected temperature until the next program period begins. Then the thermostat will automatically revert to the program operation.



### 4) Vacation Temperature hold

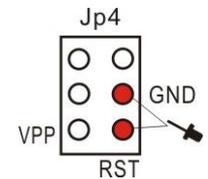
Continue pressing button SET over 3 seconds until display shows , when unit is active it displays a number in the top right corner, by pressing set it ranges from 01-99 . It means the thermostat is in Vacation hold mode. Display shows count



back day and set point alternately. Use + or - to adjust number of the days (from 1 to 99 days) when display showing count back day and adjust the setting temperature when display showing the set temperature. Thermostat will revert to program operation when count back day expires or when OK button is pressed anytime in vacation mode.

### 5) Reset display operation

If the display garbled appeared, to power off thermostat. Then gently pull the control panel straight off the base, find the six tiny holes in display PCB panel, to use small pins inserted both two holes simultaneously. That will revert to normal display.



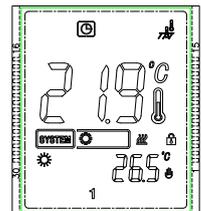
NOTICE: Don't operate in normal mode.

### 6) Lock Function

In normal running mode, long press + & - switches for 3 seconds simultaneously, the display will show a lock icon in it.

It means locking. Anyone can't amend the setting.

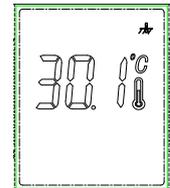
Press +& - again, the display is unlocking.



### 7) Inquiry about floor temperature

This feature is only available in MODE ALL. When system mode is in OFF.

Hold the  button for 5 seconds, the thermostat will display floor temperature. Pressing OK button to revert to program operation with room temperature shown in the display. If no key is pressed after inquiry about floor temperature for 20 seconds, the display will be changed from showing floor temperature to show room temperature.



### 8) Planning your program

Look at the factory preprogrammed times and temperatures shown in the sample schedule. If this program will suit your needs, simply press the SET button to begin running the factory preset program.

If you want to change the preprogrammed time and temperature, follow these steps.

Determine the times period and temperature for your program. You can set program for 7 individual day or 5 workday and 1 Saturday and 1 Sunday. (See configuration menu item 9)

Use the table to plan your program time periods and the temperatures you want during each period. Fill in the complete table to have a record of your program.

#### Samples Heating Schedule Plan for 7 individual day; 6 period per day

#### (Factory default program setting)

												
	Time	Temp	Time	Temp	Time	Temp	Time	Temp	Time	Temp	Time	Temp
<b>All 7 days</b>	<b>6:00</b>	<b>21°C</b>	<b>8:00</b>	<b>16.5°C</b>	<b>12:00</b>	<b>21°C</b>	<b>14:00</b>	<b>16.5°C</b>	<b>18:00</b>	<b>21°C</b>	<b>22:00</b>	<b>16.5°C</b>

**Heating Schedule Plan**

												
	Time	Temp	Time	Temp	Time	Temp	Time	Temp	Time	Temp	Time	Temp
<b>1</b>												
<b>2</b>												
<b>3</b>												
<b>4</b>												
<b>5</b>												
<b>6</b>												
<b>7</b>												

**Enter 7 days Heating Program**

1). Hold **SET** for 3 seconds. **1** flashing (indicating you are now planning Monday program) with other **2 3 4 5 6 7** lighted in the display. If the display shows **1 2 3 4 5** flashing, it indicates that the 5-day program will be modified. You selected a 5+1+1 day program mode before. (See configuration menu item 9).

2). Press +, - to change the day you about to make program.

3). Press **SET** button again, the selected day for programming will be shown.. Also be displayed are the currently programmed start times (flashing) for the 1st heating period and the currently programmed temperature, icon  indicates 1<sup>st</sup> program period (Get up) setting.

4). Press +, - until your selected time appears. The time will change in 15-minute increments.

5). Press **SET** button, the programmed temperature will flash, press +, - until your selected temperature appears.



6). Press **SET** button, icon indicates 2<sup>nd</sup> program period (Go out) setting. The currently programmed start time and set point temperature for the 2nd heating program period will be shown. Repeat step 4 and 5 to select the start time and heating temperature for the 2nd heating program period.

7). Press **SET** button. Repeat steps 4 through 6 to set the 3rd;4th;5th;6th heating program. If you have only 4-period programming per day, you might have configured 4-period per day option. (See configuration menu item 10)

8). After you finish the whole day period programming, still press **SET** button, the day next to the just programmed day will flash with other 6 days lightening in the display. If the display shows 6 7 flashing with 1 2 3 4 5 lightening in the display, you might selected the 5+1+1 day program mode before. (See configuration menu item 9).

9). Repeat 2)~8) to complete the all days of the week programming.

10). When you have completed entering your heating program, pressing **OK** to revert to program operation.

## **REVERT TO CONFIGURATION MENU FACTORY DEFAULT SETTING**

When display showing normal running status or Error mode, according to **CONFIGURATION MENU** mode to operate, then long press the **OK** button. When display shows "dEF" blinking several times, this will reset the thermostat to configuration menu factory default setting.

### **Error Code**

**LO** flashing in the display: Below lowest limitation temperature is detected by floor sensor in MODE OUT or ALL. Thermostat turn on heating system until the floor temperature is over lowest limitation.

**HI** Over high limitation temperature is detected by floor sensor in MODE OUT or ALL. Thermostat shut down all output

**Err** flashing in the display:

#### **MODE OUT / MODE ALL:**

- 1) Floor sensor not installed or broken in MODE OUT or ALL. Thermostat shut down all output.
- 2) Floor sensor short cut. Thermostat shut down all output

#### **MODE IN:**

- 1) Room sensor short circuit. Thermostat shut down all output
- 2) Room sensor broken. Thermostat shut down all output.

## **CUSTOMER ASSISTANCE**

After reading this guide, if you have any question about the operation of your thermostat, please contact your installer or service provider.