

Fan Controller

Operations Manual

This manual assumes that you have and know how to use the tools and equipment necessary to safely perform service operations on your vehicle. This manual assumes that you are familiar with typical automotive systems and basic service and repair procedures. Do not attempt to carry out the operations shown in this manual unless these assumptions are correct. Always have access to a factory repair manual. To avoid injury, follow the safety precautions contained in the factory repair manual.



Pursuing the Ultimate in Engine Performance and Efficiency.
HKS Company Limited.

E05151-K00070-00
Ver. 020105

The HKS Fan Controller improves cooling control efficiency, optimizes temperature management, and prevents engine overheating. It displays water temperature, controls one or two electric cooling fans, and a water sprayer for the intercooler. It has following functions.

- Real time display of water temperature with peak hold and over-temp warning. (Use factory coolant temperature sensor.)
- Two additional temperature inputs with peak hold, and over-temp warning. (Additional sensors required.)
- Independent control function of main and sub electric fans. If an external fan is connected, a high voltage 20/30 amp relay must be used.
- User adjustable start and stop temperatures.
- Water spray function. (Extra components required for the water spray function)
- ◎Spray patterns: manual spray, auto spray with 2 user selectable patterns, and three of fixed spray patterns.
- ◎Auto spray temperature ranges are between 40~120 degrees C. (1degree increments)
- ◎Select function of spray condition. The water spray can be activated by:
 - Water temp or an additional HKS Temperature Sensor (Part # 45999-AK002).
 - Vehicle speed.
 - Manual switch.
- ◎Manual operation can be activated by the unit's switch or optional HKS Scramble Switch (Part # 45999-AK001).
- ◎The Fan Controller can also control the factory vehicle's water spray. (If equipped).
- For use on 12V negative ground vehicles only.
- Connection to vehicles with 24V systems will result in damage to the unit.

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- ②Press the D button to select a spray pattern.
- ③Spray Pattern 1, 2, and 3
- The number of the spray pattern and the number of the spray times are displayed on the monitor.



- Press the U button to set the number of the spray times.

- Spray Pattern 4 and 5
- The number of the spray pattern and the time of spray are displayed on the monitor.



- Press the U button to set the spray time.
- Press the D button to select the time to stop the spray.



- Press the U button to set the time to stop the spray.
- Press the D button to select the number of the spray times.
- Press the U button to set the number of the spray times. (The illustrations above are showing Spray Pattern 1.)

- ④Pressing the S button shows next spray pattern. Pressing the D button starts setting.
- ⑤For manual spray under Auto Spray mode, press the U button to set the spray time.



- Under Auto Spray mode, the spray will work when pressing the switch. The spray keeps working while the switch is pressed and for the time set beforehand after the button was released.

5. Spray Function Condition Select Mode

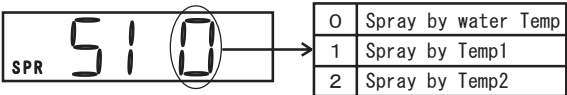
In this mode, you can :

- ①Setup auto spray start temperature
- ②Select water temperature and temperature 1and 2 for spray.
- ③Setup spray to turn on when vehicle is stopped.
- ④Setup spray to turn on at a certain vehicle speed
- ⑤Setup pulse number of vehicle speed.



Operation :

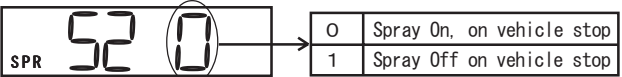
- ①Press the M button to select spray mode. Press the U or D button to set temperature to start spray function. Auto Spray Start Temperature Setting Range: 40~120°C (104~248° F) Initial Value: 90°C (194° F)
- ②Press the S button to select which temp sensor to control spray.
- Press the U or D button to select control by water temperature, or temperature 1 or 2. Initial setting is water temperature



- Initial Setting : 0.

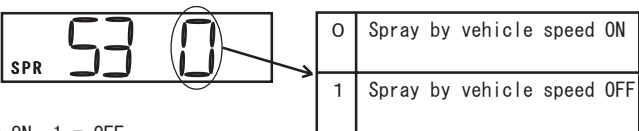
- ③Press S to select water spray on vehicle stop.
- Select On or Off by U switch.

- Initial setting is spray on vehicle stop. If it set to off, there is no spray on vehicle stop even if it exceeds the spray start temperature.



- Initial Setting : 0.

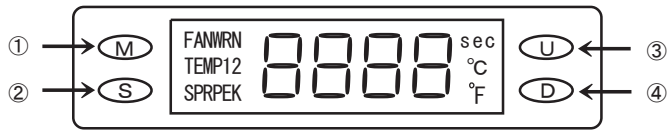
- ④Press the S button to setup spray by vehicle speed.
- Press the U button to turn on or off.



- 0 = ON, 1 = OFF
Initial setting is ON

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Display Buttons

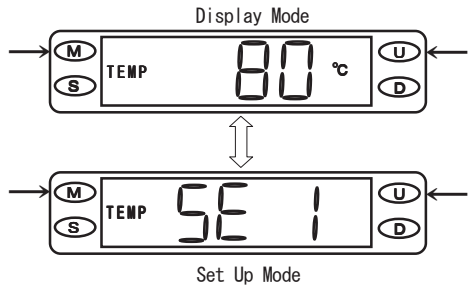


- ① M : Mode
② S : Select
③ U : Up
④ D : Down

Operations

The Fan Controller has a display setup mode and a setting mode for function number change.

- Change of display mode and setup mode
Simultaneously press buttons M and U to change from the Display Mode to the Setup Mode.

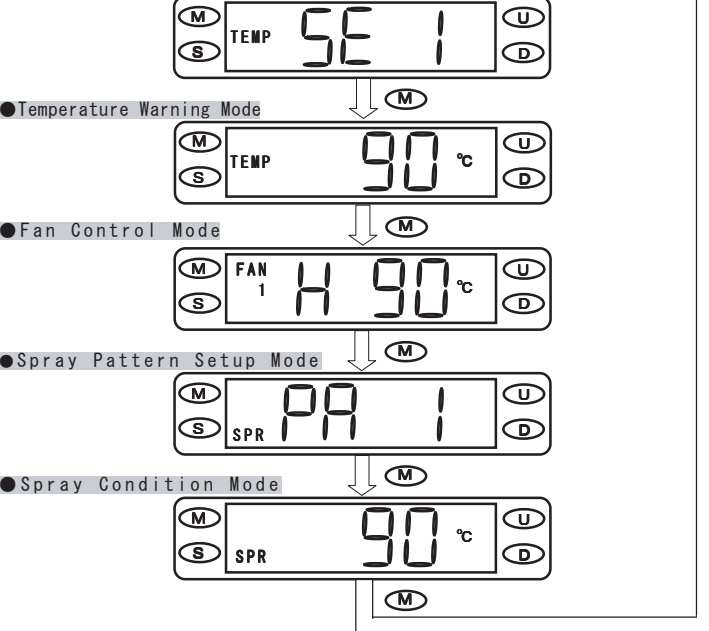


- After setup is complete, press the M and U buttons at the same time to return to the display mode. If the ignition is turned off without returning to the display mode, the setup will be invalid.

Flow Chart of Setup Modes

- Factory Water Temp Sensor

Selection Mode



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1. Water Temperature Sensor Select Mode

Functions :

- ①Selecting the type of the factory water temperature sensor.
 - You can choose the appropriate type of the sensor for your vehicle.
 - Selecting the type of temperature unit, Centigrade(°C) or Fahrenheit(° F).

Procedure :

- ①Simultaneously press the M and U buttons if not already in the setup mode.
- ②Press the U button to select the appropriate sensor referring to the chart below.
- ③Press the S button to change to the temperature unit display. Press the U button to select Centigrade or Fahrenheit unit display.

- Verify that the Fan Controller displays the correct engine temperature. Otherwise incorrect fan operation may occur possibly overheating and damaging the engine.



Centigrade temperature unit display



Fahrenheit temperature unit display

NOTE: To select the type of the factory water temp. sensor for Toyota and Mazda, refer to the installation manual.



Sensor Type	Make
1	Toyota1
2	Nissan
3	Honda
4	Mitsubishi
5	Subaru
6	Mazda1
7	Toyota2
8	Mazda2

Factory Temp Type

2. Temperature Warning Mode

Functions :

- ①Setting the water temperature warning value.
 - ②Setting 2 warning values.
 - TEMP 1: Setting the warning value from the additional temperature sensor 1.
 - TEMP 2: Setting the warning value from the additional temperature sensor 2.
- *Using the additional temperature sensor can display other temperature (e.g. Oil temp).
- You can connect up to 2 sensors. The sensor is available separately.

Procedure :

- ①Press M to switch to the Temperature Warning Mode
 - ②Set temperature to trigger warning by pressing the U or D button.
 - a. Pressing the S button will select the TEMP1 and TEMP2 warning functions. This is used for extra warning alerts if additional temperature sensors are connected.
- Initial Warning Setting Value 100°C (212° F).
 - Water Temperature Warning Setting Range 60~120°C (140~248° F)
 - Temperature 1, Temperature 2, Warning Setting Range 20~150°C (68~302° F)
 - Setting Temp Step 1°C (1° F)



Temperature Warning Mode.



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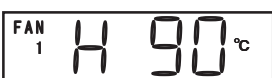
3. Fan Control Mode

Functions :

- ①Setting the starting temperature (H) of FAN 1 and 2.
- ②Setting the stopping temperature (L) of FAN 1 and 2.
- ③Selecting the fan control method, by the stock ECU or by Fan Controller.

Procedure :

- ①Press M to select the Fan Control Mode.
- ②Set Fan turn on (H) temperature by pressing the U or D button.
- ③Press S to select the fan turn off (L) temperature. Use U or D to adjust.



FAN1 Starting Temp



FAN1 Stopping Temp



FAN2 Starting Temp



FAN2 Stopping Temp

- ④Press S again to setup fan on and off temps for a second fan.
- ⑤Pressing S once more selects the fan control method.
 - a. Press the U button to select fan control by the stock ECU, or by the Fan Controller.
 - 0 – fans controlled by stock ECU
 - 1 – fans controlled by Fan Controller

- Start and Stop Temperature Range 40~100°C (104~212° F).
- Temp Setting Step 1°C (1° F).
- Fan 2 starting temperature cannot be set below Fan 1's starting temperature.
- Stopping temperature cannot be set less than 3°C (3° F) from starting temperature.



Select the fan control method.

- Initial setting : 1.

0	Control by the stock ECU
1	Control by HKS Fan Controller
2	Control by Temp Sensor 1
3	Control by Temp Sensor 2

4. Spray Pattern Setup Mode

Function :

- Setup interval time and spray time of manual spray pattern and auto spray setting 1~5.
- Spray Pattern: spray intermittently following below.

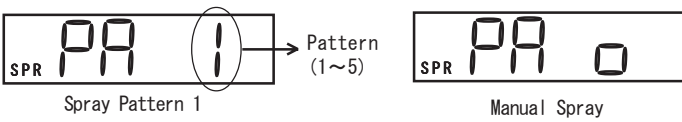


Spray Patterns :

- Pattern 1 (PA1): Auto Spray 1:
 - Spray – 1 sec, Stop-0.5 sec, Number of Spray – 1~20 times, Initial Value – 5 times
- Pattern 2 (PA2): Auto Spray 2:
 - Spray – 1.5 sec., Stop-1.0 sec, Number of Spray – 1~20 times, Initial Value – 5 times
- Pattern 3 (PA3): Auto Spray 3:
 - Spray – 1.5 sec., Stop-1.5 sec, Number of Spray – 1~20 times, Initial Value – 5 times
- Pattern 4 / 5 (PAA・PA5): Auto Spray 4 / 5:
 - Time of spray and stop can be set between 0 to 10 sec. (Default time is 1.0 sec.)
 - Number of Spray – 1~20 times, Initial Value – 5 times
- Pattern 6: Manual Spray
 - The sprayer works while pressing the button.
- Manual spray by Auto Spray mode:
 - Under Auto Spray mode, the sprayer can work while pressing the button and for the set time after releasing the button. Spray time can be set between 0~10 sec. (Default time is 2.0 sec.)

Setting of Spray Pattern:

- ①Select spray pattern by pressing the S button.
 - Pattern # 1-5
 - Auto Spray Mode
 - Manual Spray Mode
 - Spray OFF



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3. Temperature Peak Hold Display

- ①Pressing the U button in the peak hold mode resets the peak value to the current temp.
- ②Press S button to save the peak value to memory.

- The peak value will be displayed and will be erased if ignition power is turned off. Pressing the S button to saves it to memory.
- The peak value in memory is called "Memory Peak Value." This value will not be deleted if the ignition is turned off.
- When the ignition is turned on, the memory peak value will be displayed.
- Fan Controller reads the displayed peak value as a temporally value, and the memory peak value as a past peak value while the ignition is on.
- The initial setting value is 0°C (32° F) .

4. Spray Pattern Selection

- ①Select spray off, auto spray 1~5, or manual spray by the S button.



Spray Pattern 1



Spray off



Manual spray

- If left in this mode for 3 seconds, it returns to the water temperature display.
- The spray is ready to activate when turned on and flashes SPR in the display.

5. OFF Mode

- All displays disappear.
- Fan control changes to the stock ECU.
- Spray is off.

Note: The setting of the fan and spray control returns to the setting before OFF mode when the mode is switched to Display Mode.

〔Warning〕

- Warning function activates when the warning function is on and the temperature exceeds the setup value.
- While Warning function is working, the temperature activated the warning function will be displayed.
- While Warning function is working, the display will flash showing **WRN** and a buzzer will sound.
- While Warning function is working, if the display flashes red, the temperature is going up; if the display flashes blue, the temperature is going down.

〔Fan〕

- Fan starts working when the temperature exceeds the setup value. You have to select controlling by Fan Controller in Fan Control Mode.

〔Spray〕

- Auto Spray Mode
 - The spray works when the selected temperature (water, Temp 1 or 2) exceeds the setup value. The spray works when the speed exceeds the setup speed. (If you selected to spray by speed, the temperature setting has no effect on the spray function.)
- Note: The spray works while pressing the D button or the spray switch even if Auto Spray Mode is selected. (The spray switch is available separately.) The spray also works while pressing the button and for the setup time after releasing the switch.

- Manual Mode
 - The spray works while pressing the D button or the spray switch. (The spray switch is available separately.)

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1. Temperature Display

- ①Water temperature mode takes water temperature signal from vehicle ECU, and displays the engine cooling water temperature in real time.
- ②Temperature 1, temperature 2 display modes (e.g. Oil temperature) can be displayed by additional temperature sensors (optional).
- ③Temperature Display Range Water Temperature 0~130°C (32~266° F), Temperature1 and 2 ~30~150°C (22~302° F)
- ④If no temperature sensor is attached, there is no reading, and display shows bars.



2. Warning ON/OFF

- ①Warning can be turned on or off by the S button in the temperature display mode.
- ②WRN will be displayed if turned on.
- ③When the temperature exceeds the setup value, the display will flash red and a buzzer sounds.
- ④Warning can be turned on or off for each of the temperature sensors.

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