



# HOT WATER HEAT PUMPS LTD

Advancing Water Heat Pump Technology

SINCE 1980



## E55 Series Controllers



# E55 Series Controllers







## Main Function

- Temperature display
- Temperature controlling (Heat or Chill)
- Compressor start delay protection
- Compressor hour counter
- HP, LP and Flow Monitoring
- Advanced High Pressure Switch Mode
- Defrost
- Sensor error alarm
- Password protection

## Technical Specification

1. Temperature display range:  
-50°C – 150°C (The resolution is 0.1°C)  
-58°C – 302°F (The resolution is 0.1°F)
2. Power supply: AC 220±10% (Refer to the wiring diagram)
3. Operating environment: temperature -30°C – 80°C, humidity≤85%
4. Relay contact capability: 8A/250VAC (pure resistive load)
5. Temperature sensor: NTC R25=5kΩ, B(25/50)=3470K

## Operating Guide

Indicator Light	Light Function	Flashing Function
	Set Temp Input	N/A
	Chilling Mode	Waiting on time delay
	Heating Mode	Waiting on time delay
	Defrost Mode	N/A
	Fan Running	N/A
		Ready to Connect



*If Set, default password = 0077*

### Change Set Point Temperature:

- Press and hold **[SET]** for **3 seconds**, display will change from reading current water temperature to reading the current set point.
- Use the **Up** or **Down** arrow buttons to change the temperature.
- Press **[SET]** to confirm the new value and resume normal operation.

### Check current defrost sensor temperature: (De-ice capable models only)

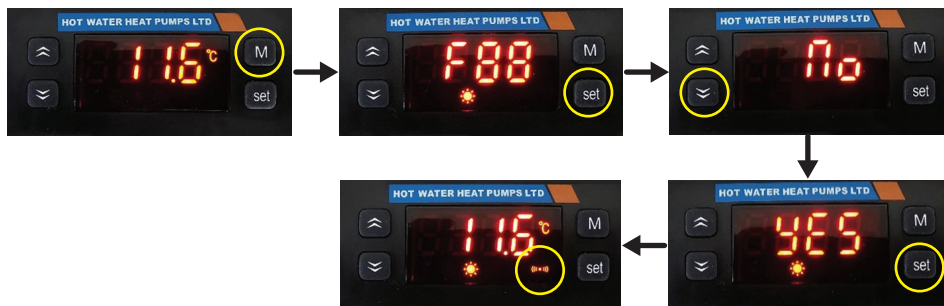
- Press and hold the **Down** arrow, this will display what the sensor is currently reading.
- Release the **Down** arrow to return to normal display.

### Entering advanced menu:

- Press and hold the **[M]** button for **5 seconds**.
- Navigate the **F** numbers using the **Up** and **Down** arrows.
- Press **[SET]** to access the options for the selected F number.
- Change the value with the **Up** and **Down** arrows.
- Press **[SET]** to confirm the new value or press **[M]** to cancel the change and return to the F menu.

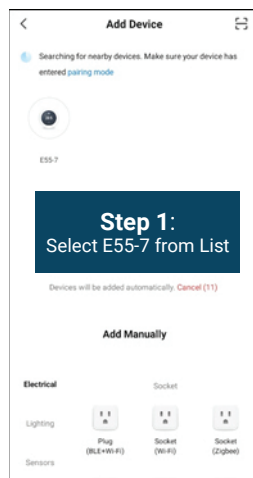
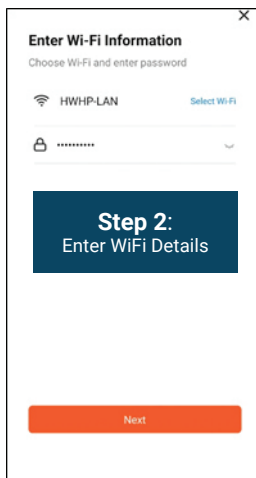
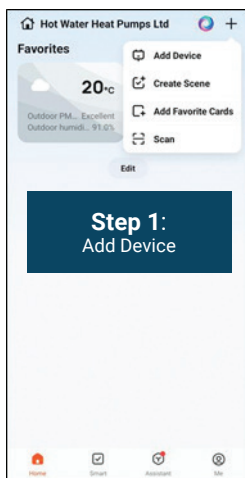
### Setting up the Controller for App connection:

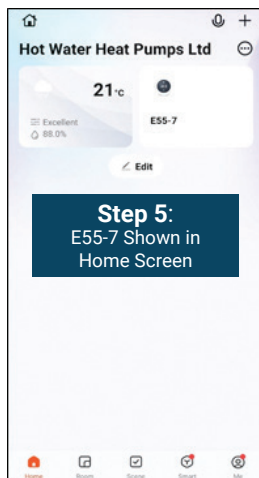
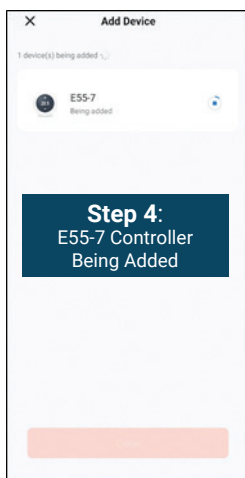
- Press and hold the **[M]** key for **5 seconds**.
- Navigate to **F88** and press **[SET]**.
- F88 default value will be **NO**, change the F88 value to **YES**.
- WiFi indicator light flashes in the display.



### Setting up the Tuya – Smart Life, Smart Living App:

- Download and install the *Tuya – Smart Life, Smart Living* App from Google Play Store or Apple App Store.
- Sign up and complete the App registration.
- In the App tap + on top right corner and click **ADD DEVICE**.
- Make sure the controller is in connecting mode (WiFi light flashing).
- Select the WiFi network and enter the WiFi credentials in the app.
- From the device list, select **E55-7**.
- Wait until the connection process is complete; this may take up to two minutes.
- Once connected, the app will confirm with the message “**E55-7 Added Successfully.**”
- Use the app to adjust the set point temperature and temperature differential.
- The app also shows the current temperature and the controller’s status (Off, Heating, Cooling, or Standby).

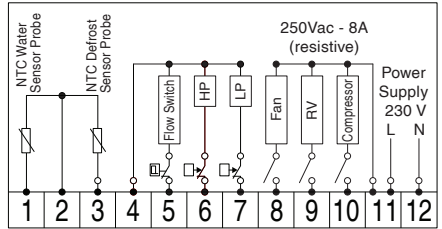




# Model E55-7

## Detailed Parameters

- F11: Temperature at which the heat pump will stop at and has a range which is dictated by the values in F14 and F13.
- F12: (Temperature Differential) Number of degrees +/- from setpoint (F11) before the compressor 1 will start.
- F13: Maximum temperature that can be set in the F11 parameter.
- F14: Minimum temperature that can be set in the F11 parameter.
- F18: (Defrost Sensor Calibration) Adjust the offset reading for the defrost temperature sensor probe in situations where the reading is higher or lower than the actual temperature.
- F19: (Water Sensor Calibration) Adjust the offset reading for the temperature sensor probe in situations of reading higher or lower than the actual temperature.
- F21: Minimum time to start after heating/ cooling signal has been called for.
- F29: Set the controller mode between heating or cooling.
- F30: Time interval between two defrost cycles.
- F31: Temperature at which the Defrost cycle will start.
- F32: Temperature at which the Defrost cycle will stop.
- F33: Time delay in minutes at which the defrost cycle will start once triggered by the F31 setting.
- F34: Maximum duration in minutes the defrost cycle will run.
- F37: Defrost Modes



Value	Description	Comp Output	Defrost Output
0	Reserved	-	-
1	Defrost	ON	OFF
2	Reserved	-	-
3	Reserved	-	-
4	Reserved	-	-
5	Reserved	-	-
6	Reserved	-	-

## F40: Water Pump Modes

Value	State	Description	F40
0	Disabled	Pump always off	
1	Enabled	The pump turns ON 1 minute before the compressor turns on and turns OFF 1 minute after the compressor turns off.	
2	Enabled	Pump always on	

- F51: Flow Switch mode options (note: Flow switch will allow compressor delay countdown if made without a break within 1 minute of pump starting, and calling for heating or cooling).

Value	State	Alarm Code [FL]	F51
0	Disabled	No flow control and no Alarm.	
1	Reserved	Not Used	
2	Reserved	Not Used	
3	Enabled	Display [FL] on contact break, resume normal operation without user interaction (auto reset).	
4	Enabled	Display [FL] on contact break, resume normal operation with user interaction (manual reset).	
5	Enabled	The display goes blank when the contact breaks, resumes temperature display and normal operation when the contact is made (auto reset).	

## F52: High Pressure Safety Switch

Value	State	Alarm Code [HP]	F52
0	Disabled	No HP control and no Alarm.	
1	Reserved	Not Used	
2	Reserved	Not Used	
3	Enabled	Display [HP] on contact break, resume normal display when contact is made (auto reset).	

Value	State	Alarm Code [HP]	F52
4.	Enabled	Display [HP] on contact break, does not auto resume when contact is made. User interaction required, press [SET] key to resume (manual reset).	

#### F53: Low Pressure Safety Switch

Value	State	Alarm Code [FL]	F51
0	Disabled	No LP control and no Alarm.	
1	Reserved	Not Used	
2	Reserved	Not Used	
3	Enabled	Display [LP] on contact break, resume normal display when contact is made (auto reset).	
4	Enabled	Display [LP] on contact break, does not auto-resume when contact is made. User interaction required, press [SET] key to resume (manual reset).	

#### F56: Advanced High Pressure Control Mode

Value	State	Alarm Code [FL]	F54
No	Disabled	Advanced mode disabled. High-pressure safety works based on the F52 setting.	
Yes	Enabled	Overrides F52 setting. When the HP contact breaks, the display shows [HP] and resumes normal operation when contact is made. If HP breaks more than 3 times within an hour user interaction is required to resume the operation.	

F80: To enter a password use the down arrow button 0000 will be displayed, press set and the first 0 will flash, up and down arrow to alter this value between 0 and 9, press set and the second 0 will begin flashing, up and down arrow to alter this value between 0 and 9, press set and the third 0 will begin flashing, up and down arrow to alter this value between 0 and 9, press set and the fourth 0 will begin flashing, up and down arrow to alter this value between 0 and 9, press set and the display will go back to the menu displaying F80. The password is now set and will be required to alter the set point temperature or enter the menu system.

Value	State	Alarm Code [FL]	F80
OFF	Disabled	No password lock out (Factory setting)	

F84: Number of times the compressor has started.

F85: Displays number of hours compressor has run.

F86: Default value is No; Yes to reset F85.

F87: Number of hours the compressor will run for before it is stopped. This needs to be reset for the heat pump to run again.

F88: WiFi On/Off

#### Alarm Codes:

Code	Cause
A21	SHr means water temperature sensor short OPE means water temperature sensor connection is open
FL	No water flow or flow switch failure F51 (Mode 4 only)
HP	High Pressure fault
LP	Low Pressure fault
A99	Compressor run time expired

E35			Factory Defaults	
Code	Parameter Name	Range	Pool	Underfloor
F11	Temperature Set Point	F14 to F13 (°C)	28	35
F12	Temperature Differential	0.1 to 20.0 (°C)	0.5	2 to 5
F13	Maximum Temperature Setting	20.0 to 150.0 (°C)	40	45
F14	Minimum Temperature Setting	-50.0 to 20.0 (°C)	10	10
F18	Defrost Temperature Offset	-20.0 to 20.0 (°C)	0	
F19	Water Temperature Offset	-20.0 to 20.0 (°C)	0	
F21	Compressor Time Delay	0 to 10 (minutes)	5	
F29	Controller Mode	Auto, Heat, Cool	Heat	
F30	Defrost Cycle	Off/1 to 999 (minutes)	15	
F31	Defrost Start Temperature	-20.0 to 20.0 (°C)	-5	

E35			Factory Defaults	
Code	Parameter Name	Range	Pool	Underfloor
F32	Defrost End Temperature	0.0 to 100.0 (°C)	15	
F33	Defrost Start Time	1 to 99 minutes	0	
F34	Maximum Defrost Duration	Off/1 to 99 (minutes)	10	
F37	Defrost mode	0, 1, 2	1	
F51	Flow switch control mode	0 to 5	5	
F52	High Pressure control mode	0 to 4	4	
F53	Low Pressure control mode	0 to 4	3	
F56	Advanced High Pressure Control Mode	Yes/No	Yes	
F80	Password	Off/0001 to 9999	Off	
F84	Compressor Start Counter	0 to 9999 displayed	–	
F85	Compressor Hour Counter	0 to 9999 displayed	–	
F86	Compressor Hour Counter Reset	No, Yes = reset	–	
F87	Limited Compressor running time	0 to 9999 hours	–	
F88	WiFi Enable/Disable	On/Off	Off	
F96	Not Used	–	–	
F97	Not Used	–	–	
F98	Not Used	–	–	
F99	Not Used	–	–	

#### Instructions to connect the controller with App:

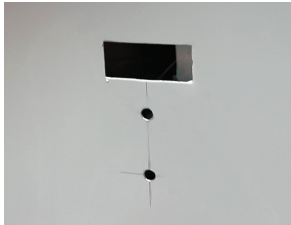
- Download and install the Tuya App from Google Play Store or Apple App Store.
- Register and complete the App setup.
- Switch the controller to WiFi mode (F88 = ON).
- In the App, tap Add Device.
- Enter your WiFi network credentials.
- From the device list, select E55-7.
- Once connected, the App will confirm with "E55-7 Added Successfully."
- Use the App to adjust the setpoint temperature and temperature differential.
- The App also shows the current temperature and the controller's status (Off, Heating, Cooling, or Standby).



# **E55 Controller Installation**

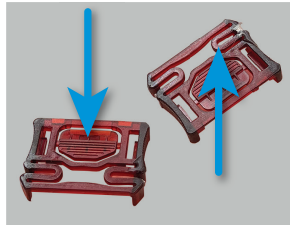
# E55 Installation Sheet

1. If an existing controller hole is not present, cut out a rectangular hole 71mm x 29mm (W x H) into a sheet metal panel for the controller to sit in. This panel should be easily viewable.

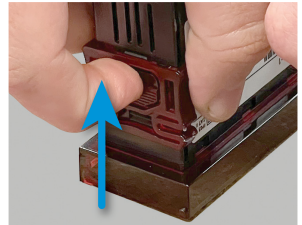


**Figure 1:** Cutout for E35 Controller.

2. Remove the ratchet clips from the controller by pressing down on the tab and sliding back until they are off the controller as shown by the arrow in **Figure 3**.

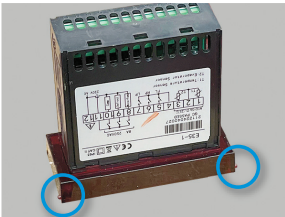


**Figure 2:** Ratchet clips. Press down where arrow is pointing to release.



**Figure 3:** Pull the clips in the direction shown by the arrow.

3. For controllers mounted on the outside of the heat pump: fit the red lid frame onto the controller. The circular dimples for the lid should be on top and close to the controller display.



**Figure 4:** Place frame onto controller and move towards the LED display. Dimples circled must be to the front and top of the controller.

4. Apply silicone to the frame, and slot it into the hole. Make sure that the silicone seals the controller and the heat pump surface.



**Figure 5:** Apply silicone around the frame as shown.



**Figure 6:** Push controller into the hole. Silicone will seal against mounting surface.

**5.** Slide ratchet clips back onto the controller and place tightly against the mounting surface.



**Figure 7:** With one hand pressing firmly on the face of the controller, push the ratchet clips and tighten the seal.

**6.** Wire up controller according to electrical diagram.

**Note:** Ensure that the installation is weather protected and properly sealed.

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