HOT WATER
HEAT PUMPS LTD
SINCE 1980

E35 Series Controllers

E35 Series Controllers

Page	Controller	Description	Temperature	De-Ice	HP/LP	Time Clock
4–5	E35	Heat and Chill	■	■	■	
6–7	E35-1	Heat OR Chill	■	■	■	
8–9	E35-2	Heat OR Chill	■			
10	E35-3	De-Ice		■		
11–12	E35-4	Heat OR Chill	■			■
13–14	E35-5	Heat/Chill OR Heat only OR Chill only	■	■	■	

Technical Index

Temperature display range:
-50°C – 150°C (The resolution is 0.1°C)
-58°C – 302°F (The resolution is 0.1°F)

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

Indicator Light	Light Function	Flashing Function
	Changing current water temperature	N/A
	Chilling Mode	Waiting on time delay
	Heating Mode	Waiting on time delay
	Defrost Mode	
	N/A	N/A
	N/A	Alarm

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.
- Press and release the up or down arrow buttons to alter temperature or press and hold to change rapidly.
- 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.

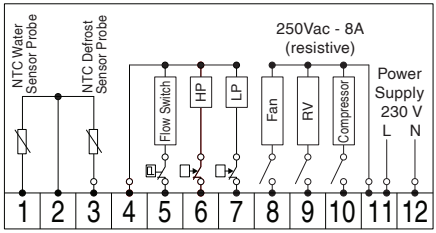
Entering advanced menu:

- Press and hold the [M] button for 5 seconds
- Navigate the F numbers using the Up and Down arrows
- Use [SET] to enter into the options for the F number you wish to alter.
- 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.

Model E35

Detailed Parameters

F10: Temperature Dead Band for Heat & Chill Controller
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: (Differential) Number of degrees + / - from set point (F11) before the heat pump will start.
F13: Maximum water temperature that can be set in F11 parameter.
F14: Minimum water temperature that can be set in F11 parameter.
F18: (Defrost Sensor Calibration) Adjusts the offset reading for the defrost sensor probe in situations of reading higher or lower than actual temperature (or consult HWHP about relocating sensor).



F19: (Water Sensor Calibration) Adjusts the offset reading for the water sensor probe in situations of reading higher or lower than actual temperature.
F21: (Compressor Time Delay) Minimum time to start after heating or cooling or auto signal has been called for.
F29: Set the controller mode for either heating or cooling or auto (E35-1), this is set to 0 for E35 for auto Heating & Cooling.

Value	Description F29
0	Auto (Heat and Cool)
1	Heat Only
2	Cool Only

F30: Minimum number of minutes between defrost cycles.
F31: Temperature at which the Defrost Cycle will trigger.
F32: Temperature at which the Defrost Cycle will terminate.
F33: Time delay in minutes at which the Defrost Cycle will initiate once triggered by F31 setting.
F34: Maximum number of minutes the Defrost Cycle will run for.
F38: Fan status in defrost mode
F41: Fan Start/Run modes

Value	State	F41
1	Fan Starts Delayed	Fan starts after compressor and stops before compressor
2	Fan Starts Ahead	Fan starts before compressor
3	Fan Always Run	

F42: Time parameter in seconds for fan Start/Delay for F41 in modes 1 & 2.
F43: Time parameter in seconds for fan Stop/Delay for F41 in modes 1 & 2.
F51: Flow Switch mode options (note: Flow switch will allow comp delay count down if made without 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.
3	Enabled	Display [FL] on contact break, resume normal display when contact is made.
5	Enabled	Display goes blank when contact breaks, resumes temperature display when contact is made.

F52: High Pressure Safety Switch

Value	State	Alarm Code [FL] F52
0	Disabled	No high pressure control and no Alarm (HP not used).
3	Enabled	Display [HP] on contact break, resume normal display when contact is made (auto reset).
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] F53
0	Disabled	No Low Pressure control and no Alarm (LP not used).
3	Enabled	Display [LP] on contact break, resume normal display when contact is made (auto reset)

F80: Password prevents alteration of the configuration menu by pressing [M].

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	Description F80
OFF	Disabled	No password lock out (Factory setting).

F81: Temperature units of measure

Value	Description F81
C	Temperatures are displayed in Degrees Celsius (Factory setting).
F	Temperatures are displayed in Degrees Fahrenheit.

F84: Number of times the compressor has started.
F85: Displays number of hour's compressor has run.
F86: Default value is No, Yes to reset F85.
F87: Number of hours the compressor will run before it is stopped, this needs to be reset for the heat pump to run again.

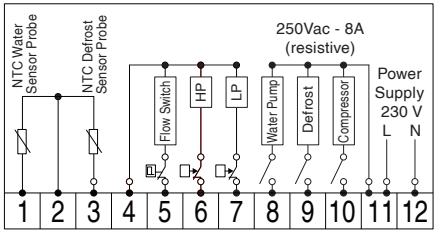
Alarm Codes:

Code	Cause
A21	SHr means water temperature sensor short OPE means water sensor connection is open
A22	SHr means defrost temperature sensor short OPE means defrost sensor connection is open
FL	No water flow or flow switch failure F51 (Mode 3 only)
HP	High Pressure Safety Switch triggered
LP	Low Pressure Safety Switch triggered
A99	Compressor run time expired

E35		
Code	**Parameter Name**	**Range**
F10	Temperature Dead Band	0.0 to 20.0 (°C)
F11	Temperature Set Point	F14 to F13 (°C)
F12	Temperature Differential	0.1 to 20.0 (°C)
F13	Maximum Temperature Setting	20.0 to 150.0 (°C)
F14	Minimum Temperature Setting	-50.0 to 20.0 (°C)
F18	Defrost Temperature Offset	-20.0 to 20.0 (°C)
F19	Water Temperature Offset	-20.0 to 20.0 (°C)
F21	Compressor Time Delay	0 to 10 (minutes)
F29	Controller Mode	Auto, Heat, Cool
F30	Defrost Cycle	Off/1 to 999
F31	Defrost Start Temperature	-20.0 to 20.0 (°C)
F32	Defrost End Temperature	0.0 to 100.0 (°C)
F33	Defrost Start TIme	1 to 99 minutes
F34	Maximum Defrost Duration	Off/1 to 99 (minutes)
F38	Fan status in defrost mode	On/Off
F41	Fan Run Mode	1, 2, 3
F42	F41 Mode 1 & 2 Start Time	0 to 99 (seconds)
F43	F41 Mode 1 & 2 Stop Time	0 to 99 (seconds)
F51	Flow switch control mode	0, 3, 5
F52	High Pressure control mode	0, 3, 4
F53	Low Pressure control mode	0, 3
F80	Password	Off/1 to 9999
F81	Temperature Unit	C or F
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

Model E35-1

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: (Differential) Number of degrees + / - from set point (F11) before the heat pump will start.
F13: Maximum water temperature that can be set in F11 parameter.
F14: Minimum water temperature that can be set in F11 parameter.
F18: (Defrost Sensor Calibration) Adjusts the offset reading for the defrost sensor probe in situations of reading higher or lower than actual temperature (or consult HWHP about relocating sensor).
F19: (Water Sensor Calibration) Adjusts the offset reading for the water sensor probe in situations of reading higher or lower than actual temperature.
F21: (Compressor Time Delay) Minimum time to start after heating signal has been called for.
F29: Set the controller mode between heating or cooling
F30: Minimum number of minutes between defrost cycles.
F31: Temperature at which the Defrost Cycle will trigger.
F32: Temperature at which the Defrost Cycle will terminate.
F33: Time delay in minutes at which the Defrost Cycle will initiate once triggered by F31 setting.
F34: Maximum number of minutes the Defrost Cycle will run for.
F37: Defrost Modes

F37				
Value	**Description**	**Running State**	**Comp Output**	**Defrost Output**
0	RV is off – heating	Heat	Yes	No
	RV is on – defrosting	Defrost	Yes	Yes
1	RV is on – heating	Heating	Yes	Yes
	RV is off – defrosting	Defrost	Yes	No
2	Bypass Valve defrost	Heat	Yes	No
		Defrost	Yes	Yes
3	Electric heat defrost	Heat	Yes	No
		Defrost	Yes	Yes

RV=Reversing Valve

F51: Flow Switch mode options (note: Flow switch will allow comp delay count down if made without 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.
3	Enabled	Display [FL] on contact break, resume normal display when contact is made.
5	Enabled	Display goes blank when contact breaks, resumes temperature display when contact is made

F52: High Pressure Safety Switch

Value	State	Alarm Code [HP] F52
0	Disabled	No high pressure control and no Alarm (HP not used).
3	Enabled	Display [HP] on contact break, resume normal display when contact is made (auto reset)
4	Enabled	Display [HP] on contact break, does not auto resume when contac tis 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 Low Pressure control and no Alarm (LP not used).
3	Enabled	Display [LP] on contact break, resume normal display when contact is made (auto reset)

F80: Password prevents alteration of the configuration menu by pressing [M].

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] F51
OFF	Disabled	No password lock out (Factory setting)

F81: Temperature units of measure

Value	Description F81
C	Temperatures are displayed in Degrees Celsius (Factory setting).
F	Temperatures are displayed in Degrees Fahrenheit.

F84: Number of times the compressor has started.
F85: Displays number of hour's 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.

Alarm Codes:

Code	Cause
A21	SHr means water temperature sensor short OPE means water sensor connection is open
A22	SHr means defrost temperature sensor short OPE means defrost sensor connection is open
FL	No water flow or flow switch failure F51 (Mode 3 only)
HP	High Pressure Safety Switch triggered
LP	Low Pressure Safety Switch triggered
A99	Compressor run time expired

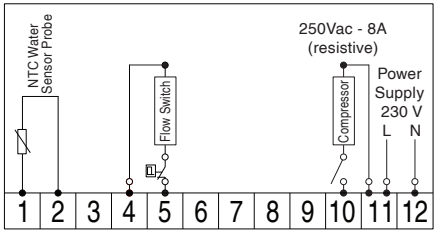
		E35	Factory Defaults	
Code	Parameter Name	Range	Pool	Underfloor
F11	Temperature Set Point	F14 to F13 (°C)	28	35
F12	Temperature Differential	0.1 to 20.0 (°C)	0.5	2.0 to 5.0
F13	Maximum Temperature Setting	20.0 to 150.0 (°C)	40	45
F14	Minimum Temperature Setting	-50.0 to 20.0 (°C)	10	10
F18	Defrost Temperature 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	Heat, Cool	Heat	
F30	Defrost Cycle	Off/1 to 999	15	
F31	Defrost Start Temperature	-20.0 to 20.0 (°C)	-5	
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, 3	1	
F51	Flow switch control mode	0, 3, 5	5	
F52	High Pressure control mode	0, 3, 4	3	
F53	Low Pressure control mode	0, 3	3	
F80	Password	Off/1 to 9999	Off	
F81	Temperature Unit	C or F	C	
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	–	

Model E35-2

(Same as E35-4 but without a time clock facility)

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: (Differential) Number of degrees + / - from set point (F11) before the heat pump will start.
F13: Maximum water temperature that can be set in F11 parameter.
F14: Minimum water temperature that can be set in F11 parameter.
F19: (Water Sensor Calibration) Adjusts the offset reading for the water sensor probe in situations of reading higher or lower than actual temperature.



F21: (Compressor Time Delay) Minimum time to start after heating signal has been called for.
F29: Set the controller mode between heating or cooling
F51: Flow Switch mode options (note: Flow switch will allow comp delay count down if made without 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
3	Enabled	Display [FL] on contact break, resume normal display when contact is made
5	Enabled	Display goes blank when contact breaks, resumes temperature display when contact is made

F80: Password prevents alteration of the configuration menu by pressing [M].

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	Description F80
OFF	Disabled	No password lock out (Factory setting).

F81: Temperature units of measure

Value	Description F81
C	Temperatures are displayed in Degrees Celsius (Factory setting).
F	Temperatures are displayed in Degrees Fahrenheit

F84: Number of times the compressor has started.
F85: Displays number of hour's 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.

Alarm Codes:

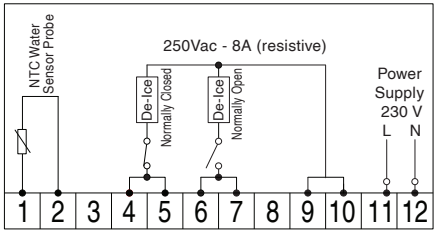
Code	Cause
A21	SHr means water temperature sensor short OPE means water sensor connection is open
A22	SHr means defrost temperature sensor short OPE means defrost sensor connection is open
FL	No water flow or flow switch failure F51 (Mode 3 only)
HP	High Pressure Safety Switch triggered
LP	Low Pressure Safety Switch triggered
A99	Compressor run time expired

E35-2		
Code	**Parameter Name**	**Range**
F11	Temperature Set Point	F14 to F13 (°C)
F12	Temperature Differential	0.1 to 20.0 (°C)
F13	Maximum Temperature Setting	20.0 to 150.0 (°C)
F14	Minimum Temperature Setting	-50.0 to 20.0 (°C)
F19	Water Temperature Offset	-20.0 to 20.0 (°C)
F21	Compressor Time Delay	0 to 10 (minutes)
F29	Controller Mode	Heat or Chill
F51	Flow switch control mode	0, 3, 5
F80	Password	Off / 1 to 9999
F81	Temperature Unit	C or F
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

Model E35-3
(Defrost controller only)

Detailed Parameters

F18: (Defrost Sensor Calibration) Adjusts the offset reading for the defrost sensor probe in situations of reading higher or lower than actual temperature (or consult HWHP about relocating sensor).
F30: Minimum number of minutes between defrost cycles.
F31: Temperature at which the Defrost Cycle will trigger.
F32: Temperature at which the Defrost Cycle will terminate.
F33: Time delay in minutes at which the Defrost Cycle will initiate once triggered by F31 setting.
F34: Maximum number of minutes the Defrost Cycle will run for.
F80: Password prevents alteration of the configuration menu by pressing [M].



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	Description F80
OFF	Disabled	No password lock out (Factory setting).

F81: Temperature units of measure

Value	Description F81
C	Temperatures are displayed in Degrees Celsius (Factory setting).
F	Temperatures are displayed in Degrees Fahrenheit

F84: Number of times the compressor has started.
F85: Displays number of hour's 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.

Alarm Codes:

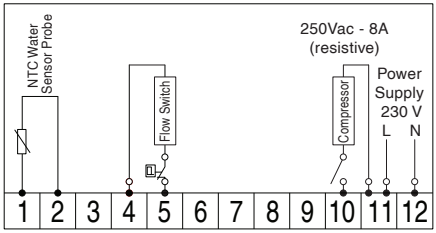
Code	Cause
A21	SHr means water temperature sensor short OPE means water sensor connection is open
A22	SHr means defrost temperature sensor short OPE means defrost sensor connection is open
FL	No water flow or flow switch failure F51 (Mode 3 only)
HP	High Pressure Safety Switch triggered
LP	Low Pressure Safety Switch triggered
A99	Compressor run time expired

E35-3		
Code	**Parameter Name**	**Range**
F18	Defrost Temperature Offset	-20.0 to 20.0 (°C)
F30	Defrost Cycle	Off / 1 to 999
F31	Defrost Start Temperature	-20.0 to 20.0 (°C)
F32	Defrost End Temperature	0.0 to 100.0 (°C)
F33	Defrost Start Time	1 to 99 (minutes)
F34	Maximum Defrost Duration	Off / 1 to 99 (minutes)
F80	Password	Off / 1 to 9999
F81	Temperature Unit	C or F
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

Model E35-4

(Replaces E35-2 with additional time clock facility)

Set time instructions:
Current temperature displayed
Press Set briefly (Current time displayed)
Press and hold s “Set” (current hours will start flashing)
Use up and down arrows to alter value to current hours and press “Set” to lock in the new value (current minutes will start flashing)
Use up and down arrows to alter value to current minutes and pres “Set” to lock in the new value (current time will now be displayed)
Press “M” to return to current temperature view.



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: (Differential) Number of degrees + / - from set point (F11) before the heat pump will start.
F13: Maximum water temperature that can be set in F11 parameter.
F14: Minimum water temperature that can be set in F11 parameter.
F19: (Water Sensor Calibration) Adjusts the offset reading for the water sensor probe in situations of reading higher or lower than actual temperature.
F21: (Compressor Time Delay) Minimum time to start after heating signal has been called for.
F29: Set the controller mode between heating or cooling
F31: Boost Temperature minimum value
F32: Boost Temperature differential
F33: Boost Temperature 167 hour interval
F34: Above Boost Temperature duration (hours)
F51: Flow Switch mode options (note: Flow switch will allow comp delay count down if made without 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
3	Enabled	Display [FL] on contact break, resume normal display when contact is made
5	Enabled	Display goes blank when contact breaks, resumes temperature display when contact is made

F60: 24 Hour Timer Control On / Off
F61: Cycle 1 Start time
F62: Cycle 1 End time
F63: Cycle 2 Start time
F64: Cycle 2 End time
F65: Cycle 3 Start time
F66: Cycle 3 End time
F67: Cycle 4 Start time
F68: Cycle 4 End time
F69: Cycle 5 Start time
F70: Cycle 5 End time
F71: Cycle 6 Start time
F72: Cycle 6 End time
F80: Password prevents alteration of the configuration menu by pressing [M].

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	Description F80
OFF	Disabled	No password lock out (Factory setting).

F81: Temperature units of measure

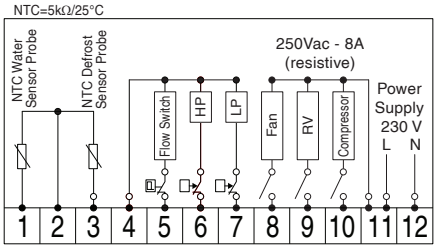
Value	Description F81
C	Temperatures are displayed in Degrees Celsius (Factory setting).
F	Temperatures are displayed in Degrees Fahrenheit

F84: Number of times the compressor has started.
F85: Displays number of hour's 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.

E35-4		
Code	**Parameter Name**	**Range**
F11	Temperature Set Point	F14 to F13 (°C)
F12	Temperature Differential	0.1 to 20.0 (°C)
F13	Maximum Temperature Setting	20.0 to 150.0 (°C)
F14	Minimum Temperature Setting	-50.0 to 20.0 (°C)
F19	Water Temperature Offset	-20.0 to 20.0 (°C)
F21	Compressor Time Delay	0 to 10 (minutes)
F29	Controller Mode	Heat or Cool
F31	Boost Temperature minimum value	0.0 to 90.0 (°C)
F32	Boost Temperature differential	0.1 to 20.0 (°C)
F33	Boost Temperature 167 hour interval	1 to 998 (hours)
F34	Maximum Defrost Duration	Off / 1 to 99 (minutes)
F51	Flow switch control mode	0, 3, 5
F60	24 Hour Timer Control Toggle	On / Off
F61	Duration 1 Start time	Time of day hh:mm
F62	Duration 1 Stop time	Time of day hh:mm
F63	Duration 2 Start time	Time of day hh:mm
F64	Duration 2 Stop time	Time of day hh:mm
F65	Duration 3 Start time	Time of day hh:mm
F66	Duration 3 Stop time	Time of day hh:mm
F67	Duration 4 Start time	Time of day hh:mm
F68	Duration 4 Stop time	Time of day hh:mm
F69	Duration 5 Start time	Time of day hh:mm
F70	Duration 5 Stop time	Time of day hh:mm
F71	Duration 6 Start time	Time of day hh:mm
F72	Duration 6 Stop time	Time of day hh:mm
F80	Password	Off / 1 to 9999
F81	Temperature Unit	C or F
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

Model E35-5

(Auto Heat / Chill OR Heat OR Chill only)



Detailed Parameters

F10: Temperature Dead Band for Heat & Chill Controller

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: (Differential) Number of degrees + / - from set point (F11) before the heat pump will start.

F13: Maximum water temperature that can be set in F11 parameter.

F14: Minimum water temperature that can be set in F11 parameter.

F18: (Defrost Sensor Calibration) Adjusts the offset reading for the defrost sensor probe in situations of reading higher or lower than actual temperature (or consult HWHP about relocating sensor).

F19: (Water Sensor Calibration) Adjusts the offset reading for the water sensor probe in situations of reading higher or lower than actual temperature.

F21: (Compressor Time Delay) Minimum time to start after heating signal has been called for.

F29: Can set three modes (0,1, 2). 0: is not change Auto Heat & Cool. 1: heat mode. It begins to heating when the temperature is under “F11-F10-F12” and stops heating when the temperature is reaching “F11-F10”. 1: only heat, not cool. 2: cool mode: It begins to cooling when the temperature is above “F11+F10+F12”, and stops cooling when the temperature is reaching “F11+F10”. Only cool, not heat.

F31: Temperature at which the Defrost Cycle will trigger.

F32: Temperature at which the Defrost Cycle will terminate.

F33: Time delay in minutes at which the Defrost Cycle will initiate once triggered by F31 setting.

F34: Maximum number of minutes the Defrost Cycle will run for.

F38: Fan status in defrost mode

F41: Fan Start/Run modes

Value	State	Description F41
1	Fan Starts Delayed	Fan starts after compressor and stops before compressor
2	Fan Starts Ahead	Fan starts before compressor
3	Fan Always Run	

F42: Time parameter in seconds for fan Start/Delay for F41 in modes 1 & 2.

F43: Time parameter in seconds for fan Stop/Delay for F41 in modes 1 & 2.

F51: Flow Switch mode options (note: Flow switch will allow comp delay count down if made without break within 1 minute of pump starting, and calling for heating or cooling or auto).

Value	State	Alarm code [FL] F51
0	Disabled	No flow control and no Alarm
3	Enabled	Display [FL] on contact break, resume normal display when contact is made
5	Enabled	Display goes blank when contact breaks, resumes temperature display when contact is made

F52: High Pressure Safety Switch

Value	State	Alarm code [HP] F52
0	Disabled	No high pressure control and no Alarm (HP not used).
3	Enabled	Display [HP] on contact break, resume normal display when contact is made (auto reset).
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 [LP] F53
0	Disabled	No Low Pressure control and no Alarm (LP not used)
3	Enabled	Display [LP] on contact break, resume normal display when contact is made (auto reset)

F80: Password prevents alteration of the configuration menu by pressing [M].
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	Description F80
OFF	Disabled	No password lock out (Factory setting).

F81: Temperature units of measure

Value	Description F81
C	Temperatures are displayed in Degrees Celsius (Factory setting).
F	Temperatures are displayed in Degrees Fahrenheit

F84: Number of times the compressor has started.
F85: Displays number of hour's 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.

Alarm Codes:

Code	Cause
A21	SHr means water temperature sensor short OPE means water sensor connection is open
A22	SHr means defrost temperature sensor short OPE means defrost sensor connection is open
FL	No water flow or flow switch failure F51 (Mode 3 only)
HP	High Pressure Safety Switch triggered
LP	Low Pressure Safety Switch triggered
A99	Compressor run time expired

E35-5		
Code	**Parameter Name**	**Range**
F10	Temperature Dead Band	0.0 to 20.0 (°C)
F11	Temperature Set Point	F14 to F13 (°C)
F12	Temperature Differential	0.1 to 20.0 (°C)
F13	Maximum Temperature Setting	-50.0 to 150.0 (°C)
F14	Minimum Temperature Setting	-50.0 to 150.0 (°C)
F18	Defrost Temperature Offset	-20.0 to 20.0 (°C)
F19	Water Temperature Offset	-20.0 to 20.0 (°C)
F21	Compressor Time Delay	0 to 10 (minutes)
F29	Controller Mode	0, 1, 2
F31	Defrost Start Temperature	-20.0 to 20.0 (°C)
F32	Defrost End Temperature	0.0 to 50.0 (°C)
F33	Defrost Start Time	1 to 99 (minutes)
F34	Maximum Defrost Duration	1 to 99 (minutes)
F38	Fan status in defrost mode	On / Off
F41	Fan Mode	1, 2, 3
F42	Fan start ahead time	0 to 99 (seconds)
F43	Fan stop delay time	0 to 99 (seconds)
F51	Flow switch control mode	0, 3, 5
F52	High Pressure control mode	0, 3, 4
F53	Low Pressure control mode	0, 3, 4
F80	Password	Off / 1 to 9999
F81	Temperature Unit	C or F
F84	Compressor start-up times	0 to 9999 displayed
F85	Compressor accumulated running time	0 to 9999 displayed (hours)
F86	Compressor start-up times and running time reset	No, Yes = reset
F87	Limited running time	Off / 1 to 9999 (hours)

Model E35-6

(Temperature based two stage heat/cool – no rotation)

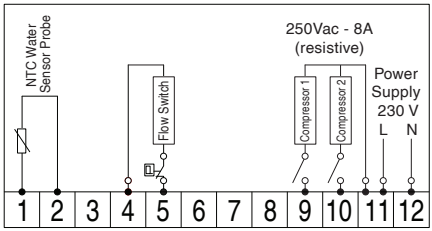
Detailed Parameters

F10: (Temperature Differential, P2) Number of degrees '-' from (F11–F12) for heating or '+' to (F11+F12) for cooling before compressor 2 will start.

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, P1) Number of degrees -/+ from set point (F11) before compressor 1 will start.

F13: Maximum temperature that can be set in F11 parameter.



F14: Minimum temperature that can be set in F11 parameter.

F19: Adjust the offset reading for the temperature sensor probe in situations of reading higher or lower than actual temperature.

F21: Minimum time to start after heating/cooling signal has been called for.

F29: Set the controller mode between heating or cooling.

F51: Flow switch mode options (note: flow switch will allow compressor delay count down if made without 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
3	Enabled	Display [FL] on contact break, resume normal display when contact is made
5	Enabled	Display goes blank when contact breaks, resumes temperature display when contact is made

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	Description F80
OFF	Disabled	No password lock out

F81: Temperature units of measure

Value	Description F81
C	Temperatures are displayed in Degrees Celsius (Factory setting)
F	Temperatures are displayed in Degrees Fahrenheit

F84: Number of times the compressor has started.

F85: Displays number of hour's compressor has run.

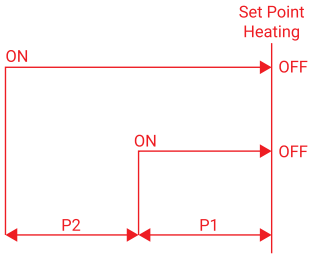
F86: Default value is NO, yes to reset F85 and F84.

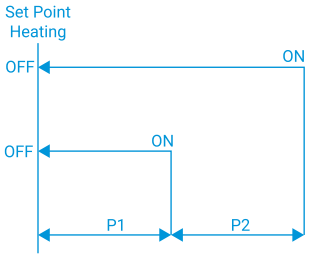
F87: Number of hours the compressor will run for before it is stopped, this needs to be reset for the heat pump to run again.

Alarm Codes:

Code	Cause
A21	SHr means water temperature sensor short OPE means water sensor connection is open
FL	No water flow or flow switch failure F51 (Mode 3 only)
A99	Compressor run time expired

E35-5		
Code	**Parameter Name**	**Range**
F10	Temperature Dead Band	0.0 to 20.0 (°C)
F11	Temperature Set Point	F14 to F13 (°C)
F12	Temperature Differential	0.1 to 20.0 (°C)
F13	Maximum Temperature Setting	28.0 to 150.0 (°C)
F14	Minimum Temperature Setting	-50.0 to 28.0 (°C)
F19	Water Temperature Offset	-20.0 to 20.0 (°C)
F21	Compressor Time Delay	0 to 10 (minutes)
F29	Controller Mode	Heat, Cool
F51	Flow switch control mode	0 to 5 (Use 0, 3, 5)
F80	Password	Off / 1 to 9999
F81	Temperature Unit	°C or °F
F84	Compressor Start Counter	0 to 9999
F85	Compressor Hour Counter	0 to 9999
F86	Compressor Hour Counter and Start Counter Reset	No, Yes = reset
F87	Limited Compressor Running Time	Off / 1 to 9999 (hours)
F95	Not used	
F98	Not used	
F99	Not used	





E35 Controller Installation

E35 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.

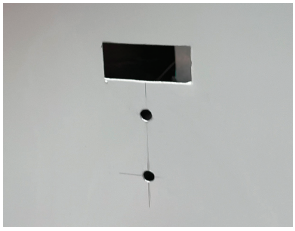


Figure 1: Cutout for E35 Controller.

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**.

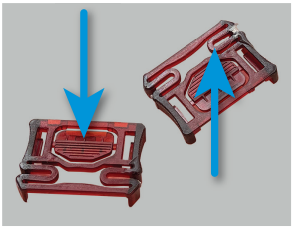


Figure 2: Ratchet clips. Press down where arrow is pointing to release.

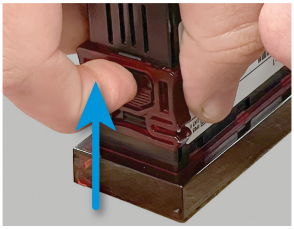


Figure 3: Pull the clips in the direction shown by the arrow.

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.

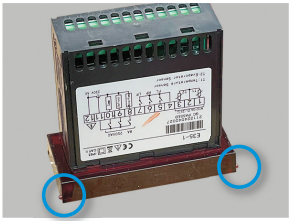


Figure 4: Place frame onto controller and move towards the LED display. Dimples circled must be to the front and top of the controller.

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.

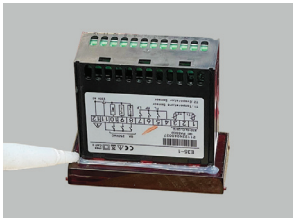


Figure 5: Apply silicone around the frame as shown.

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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