



HOT WATER HEAT PUMPS LTD

Advancing Water Heat Pump Technology

SINCE 1980



E35 Series Controllers

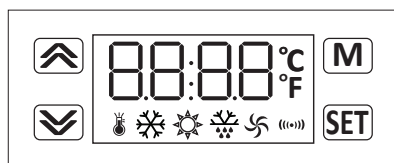
E35 Series Controllers

| 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.

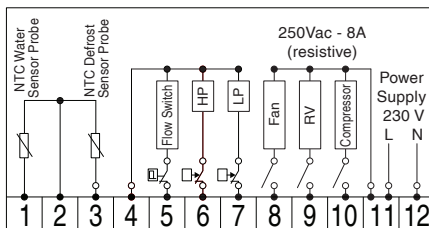
Entering advanced menu:

- 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 between heating or cooling or auto E35-1, this is set to 0 for E35 for auto Heating & 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.
 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:

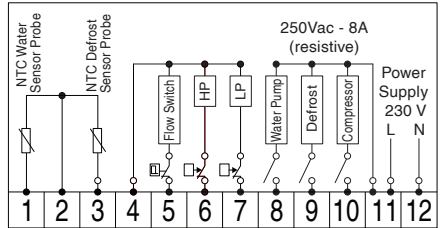
| Code | Cause |
|------|---|
| A21 | SHr means water temperature sensor short OPE means water sensor connection is open |
| A22 | SHr means defrost temperature sensor short OPE means defrost sensor connection is open |
| FL | No water flow or flow switch failure F51 (Mode 3 only) |
| HP | High Pressure 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 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 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 |

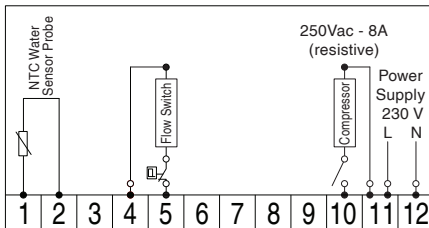
| E35 | | | Factory Defaults | |
|------|---------------------------------|-----------------------|------------------|------------|
| Code | Parameter Name | Range | Pool | Underfloor |
| F11 | Temperature Set Point | F14 to F13 (°C) | 28 | 35 |
| F12 | Temperature Differential | 0.1 to 20.0 (°C) | 0.5 | 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.

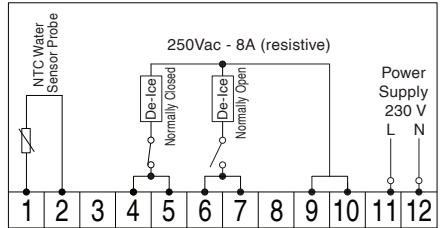
F31: Temperature at which the Defrost Cycle will trigger.

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

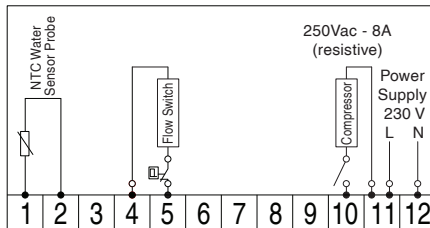
Press Set briefly (Current time displayed)

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.

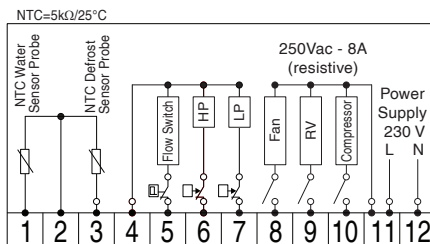
| E35-4 | | |
|-------|-------------------------------------|-------------------------|
| Code | Parameter Name | Range |
| F11 | Temperature Set Point | F14 to F13 (°C) |
| F12 | Temperature Differential | 0.1 to 20.0 (°C) |
| F13 | Maximum Temperature Setting | 20.0 to 150.0 (°C) |
| F14 | Minimum 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". 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 |

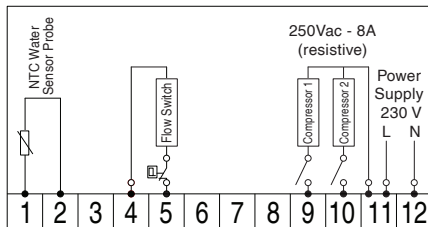
| E35-5 | | |
|-------|--|-----------------------------|
| Code | Parameter Name | Range |
| F10 | Temperature Dead Band | 0.0 to 20.0 (°C) |
| F11 | Temperature Set Point | F14 to F13 (°C) |
| F12 | Temperature Differential | 0.1 to 20.0 (°C) |
| F13 | Maximum Temperature Setting | -50.0 to 150.0 (°C) |
| 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.

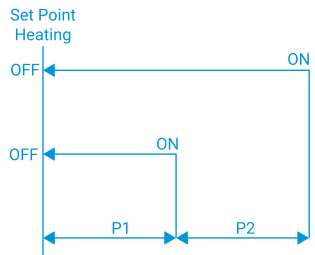
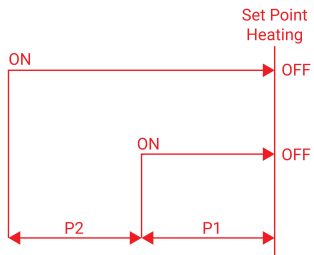
F86: Default value is NO, yes to reset F85 and F84.

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.

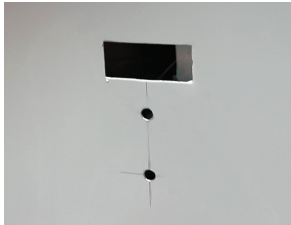


Figure 1: Cutout for E35 Controller.

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**.

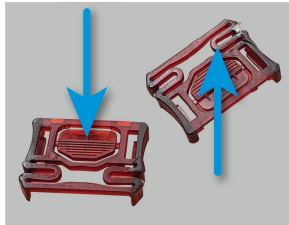


Figure 2: Ratchet clips. Press down where arrow is pointing to release.

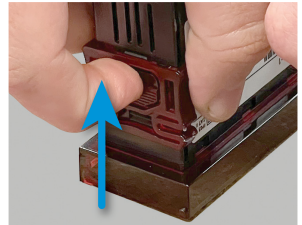


Figure 3: Pull the clips in the direction shown by the arrow.

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.

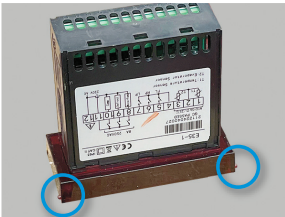


Figure 4: Place frame onto controller and move towards the LED display. Dimples circled must be to the front and top of the controller.

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.

For further information please phone Hot Water Heat Pumps Ltd
0800 33 66 33

