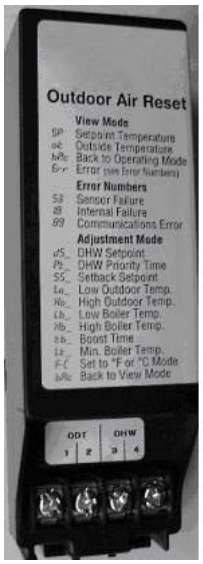
OC Panel Outdoor Air Reset Kit, p/n 233203

Instruction Sheet

CONTENTS



APPLICATION

The OC Panel Outdoor Air Reset kit is a microprocessor-based control package designed to regulate hydronic heating system heat delivery rate to match the home heat demand and building heat loss. This is accomplished by continuously adjusting the boiler supply water temperature setpoint based on outside air temperature, domestic hot water demand and “sleep” or “leave” period selections, when a Honeywell EnviraCOM enabled programmable thermostat is connected.

This product requires the use of one of the following OC (Option Control) Panel Kits:

- **PN 233200 for AWR Gas Hot Water Boilers**
- **PN 233201 for FWZ Oil Hot Water Boilers**

The OC Panel Outdoor Air Reset Card may be simply “plugged in” to the OC Panel and only requires outside air temperature and domestic hot water demand sensor connections to become fully operational.

GENERAL

Select Crown boilers can be equipped with the Crown OC Panel. Factory installed boiler control system components include a combination ignition, aquastat high limit and circulator control. Crown's OC Panel is designed to simplify the installation, operation and service of the entire boiler system and save energy. A variety of "plug-in" OC Panel Option Cards may be field installed into the OC Panel. The OC Panel provides mechanical connections (with no screws required), along with the power and interconnection wiring into the boiler control system. Only wiring to field-installed sensors is required.

Initial set up functions are performed on the OC Panel mounted display. Factory default settings are provided. However, field adjustment of these settings will improve the heating system performance. When the OC Panel Outdoor Air Reset Card is properly adjusted the following home heating improvements should be confirmed:

1. **Smooth, Continuous, Regulated Heat Delivery:** As outside temperatures get colder or warmer the amount of heat required to maintain a comfortable home changes. Using the reset card, the amount of heat supplied to the home is regulated by changing the supply water temperature setpoint rather than only turning on and off a constant temperature supply water flow (starting and stopping the system circulator). Boilers without a reset card maintain a constant supply water temperature setpoint (High Limit Setpoint) that is normally too high for the required heat load.

   The reset card matches the supply water temperature setpoint to the outdoor air temperature. By adjusting the supply water temperature setpoint, the rate of heat delivery to the home is more consistent and temperature cycles in the boiler, heat emitters and building materials are reduced. The result should be reduced expansion noises, evened out heat delivery with reduced cold spots, and reduced thermal stress.

   When using the reset card there should be less cycling of the system circulator and more consistent boiler and heat emitter temperatures.

2. **Reduced Indoor Air Temperature Fluctuations, Increased Comfort:** When the water temperature is properly matched to home heating needs there is minimal chance of room temperature overshoot. Excessive heat is not sent to the room heating elements by "overheated" (supply water temperature maintained at High Limit setting) water. Room temperature changes (as can be expected from on/off heat cycles) should not be noticeable.

3. **Energy Savings:** Reset control saves energy by: (1) reducing room over heating, (2) reducing boiler temperature & increasing combustion efficiency and (3) reducing standby losses as a boiler and system piping cool down to ambient following room over heating.

HOW IT WORKS

The OC Panel Outdoor Air Reset Card enables the heat to flow from your boiler to your home smoothly and at the right rate. The boiler operating setpoint is regulated based on the outside air temperature to change the rate of heat flow to the home. The reset card uses parameter selections to allow the heating system to match different types of heat emitters.

The following paragraphs explain the reset card functions:

Operating Setpoint Is Selected Based On Measured Outside Air Temperature

The reset card measures outside air temperature and uses the "Reset Ratio" curve to determine the right supply water temperature setpoint. While there is a heat demand, the boiler runs to maintain this new setpoint. For example, when the outside air temperature is 5°F the operating setpoint is 150 °F. Parameter factory defaults and possible ranges are provided in the Setup section of this manual.

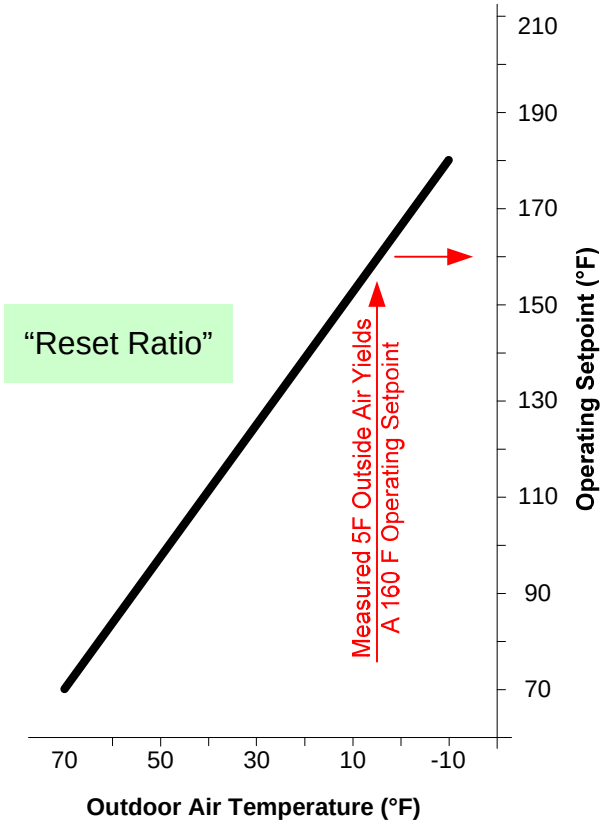
High and Minimum Temperature Restrictions

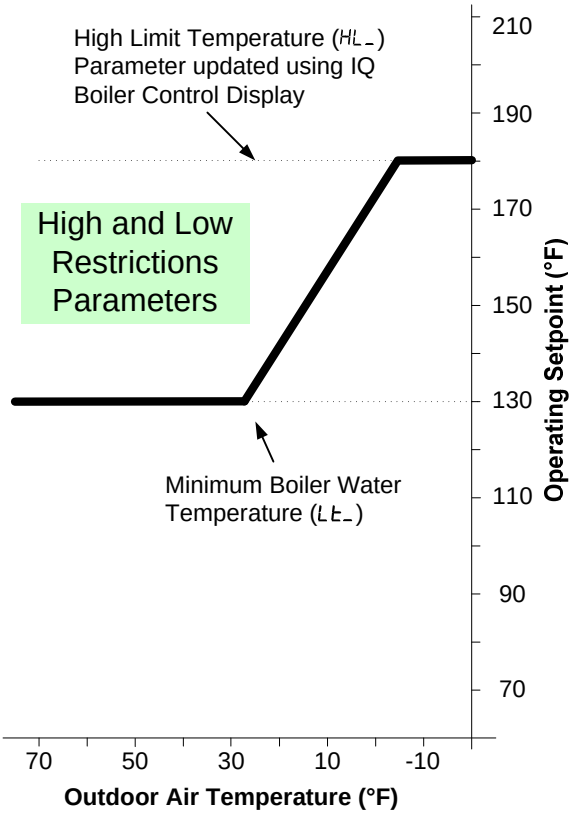
The High Limit (HL_) and Minimum Boiler Water (Lt_) Temperatures create upper and lower operating setpoint boundaries. The high temperature limit is a safety rated limit set in the Boiler Control. The boiler is stopped when the high limit is reached. The reset curve will not request an operating temperature setpoint higher than the high limit, regardless of how cold it gets outside. The Minimum Boiler Water Temperature setting establishes a lowest possible operating setpoint. The Minimum Boiler Water Temperature is set to prevent flue gas condensation in the chimney or boiler and/or ensure radiators have the minimum required temperature.

Ensured Domestic Hot Water Supply

As the supply water temperature is reduced to match home heat demand for warmer days, it is possible the operating temperature setpoint may be lower than required for an indirect water heater. To overcome this situation, a domestic hot water heat demand contact input is provided. Upon a domestic hot water heat demand (as sensed by the contact input) the operating setpoint is set equal to or greater than the Domestic Hot Water Setpoint (dS_) parameter. The supply water setpoint is now at least warm enough to satisfy the domestic hot water demand. When the domestic hot water demand is over the operating setpoint is released to follow the reset ratio as discussed above.

(continued on next page)





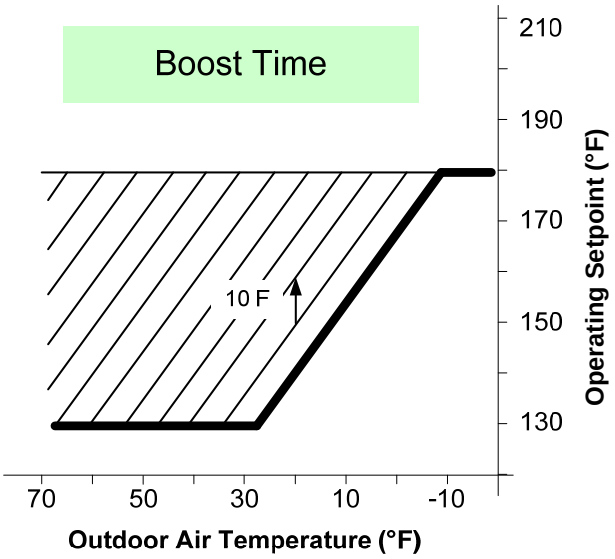
HOW IT WORKS (continued)

Ensured Domestic Hot Water Supply (continued)

Additionally, sometimes it is desirable to rapidly recover the domestic hot water temperature. For this reason it is possible to stop the system circulator during a domestic hot water heat demand. When there is a domestic hot water demand and the Priority Time (Pt_) parameter is not set to zero the system circulator is forced off for the duration of the priority time. When the priority time is set to zero the system circulator is not forced off during the domestic hot water demand.

Ensured Home Heat Supply

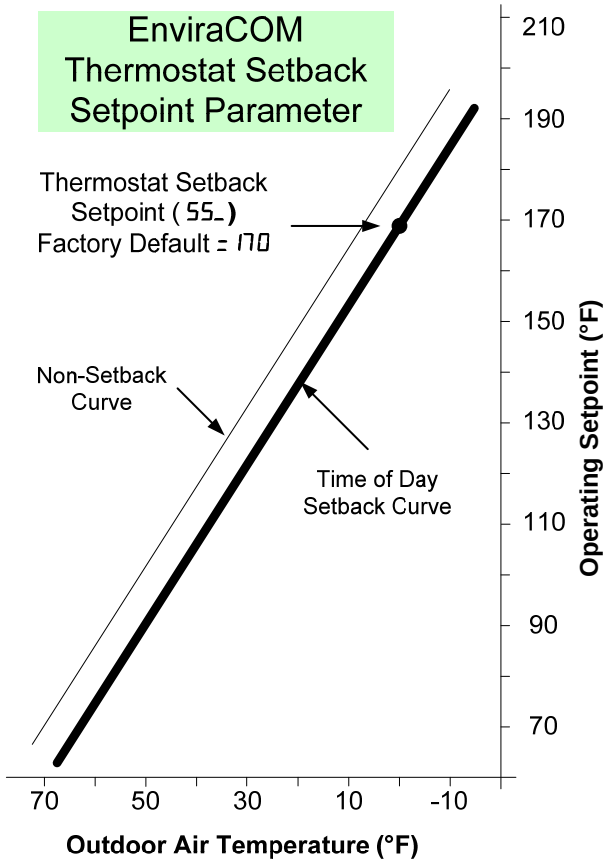
Keeping the home warm is the heating systems primary function. If the central heat demand is not satisfied for longer than the Boost Time (tb_) minutes the operating temperature setpoint is increased by 10 F. This process will continue until either heat demand is satisfied (indoor air is at desired temperature) or the High Limit is reached. Once the heat demand is satisfied, the operating setpoint reverts to the value determined by the reset ratio. If Boost Time (tb_) is zero, then the boost function is not used.



Boost Time (tb_)
(Shown with thin lines, typical)
Operating Setpoint is Increased 10 F
every Boost Time minutes
that demand is not satisfied
Factory Default is 20 minutes

Reduced Room Temperatures for Evenings and Unoccupied Periods

The OC Panel Outdoor Air Reset Card reduces the operating setpoint when a connected EnviraCOM enabled thermostat is in “leave” or “sleep” (setback) modes. When setback is “on” the Thermostat Setback Setpoint shifts the reset curve to save energy while the home is in a reduced room temperature mode. This feature is available when an EnviraCOM enabled thermostat is connected to the OC Panel’s terminals 1, 2 & 3. The Honeywell VisionPro IAQ, (part no. TH9421C1004) is a “setback” EnviraCOM enabled thermostat.



INSTALLATION

When Installing this Product….

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition. Save instructions for future use.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

⚠ Caution

Electrical Hazard

Disconnect power before beginning installation and wiring. Failure to do so may cause electrical shock or equipment damage. Wiring must comply with applicable codes, ordinances and regulations.

⚠ Warning

- Installation must be performed in accordance with all national and local codes and ordinances.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.
- When installations are complete, check for correct operation of ALL limit and operating controls.
- Use only copper conductors. Wire insulation must be rated at 221º F (105º C) or greater. Use of other wire or insulation types could result in fire causing property damage, serious injury, and death.
- Hot or pressurized boiler systems can discharge steam and hot water. Cool boiler system to 80º F (27º C) and to 0 psi (0 bar) before servicing. Failure to do so could result in serious burns.

NOTE

High Limit Settings

The Boiler Control Operating Setpoint will function as the operating limit that is reduced for energy savings. However, the Boiler Control High Limit setpoint remains as set by the user and functions as the boiler High Limit that will stop the boiler when boiler water temperature is excessive. When an OCP High Limit Aquastat Card is used it functions as an auxiliary high limit and will not be reset.

⚠ Warning

Outdoor reset lowers the average flue gas temperature over the heating season. Do Not lower the factory set Minimum Boiler Water Temperature (LL) parameter setting when condensation in exterior chimneys is a concern.

INSTALLATION (continued)

Installing the OC Panel Outdoor Air Reset Card

1. Turn off power to the boiler before installing the option card
2. Select an unoccupied OC Panel slot and carefully insert pins on the OC Panel header into the connector on the bottom of the option card.

NOTE
Use caution not to bend the pins. Align all four card guides before gently pushing card into slot.

3. Gently push the option card into the OC Panel option slot until it locks into place. The OC Panel will automatically recognize the option card and establish communication.


Insert Outdoor Air Reset Card into selected slot

Installing the Outdoor Sensor

1. Mount the sensor where:
   - There is good air circulation.
   - It can measure true outdoor ambient temperature.
   - The surface is flat
   - The wire distance between sensor and option card is less than 200 feet.

2. Do not mount the sensor:
   - In direct sunlight.
   - Where hot or cold air blows on the sensor. Discharge Line from an outdoor compressor unit, vent or fan causes inaccurate temperature readings.
   - Where snow, ice or debris can cover it.
   - Avoid placing the sensor near potential sources of electrical noise such as transformers, power lines and fluorescent lighting.

3. To attach the sensor in a desired location, refer to the instructions supplied with the sensor.

WIRING

OC Panel Outdoor Air Reset Card connections:

Rating	Terminal	Description
Low voltage	1	Outdoor Temperature
	2	Outdoor Temperature
24 Vac supplied by card	3	DHW Demand, 24 Vac -
	4	DHW Demand, 24 Vac +

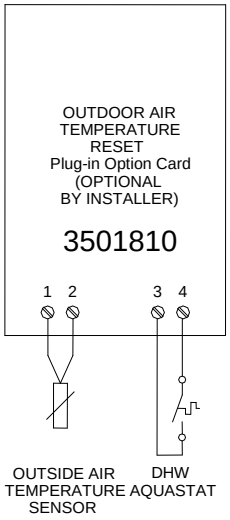
CAUTION

Electrical Interference (Noise) Hazard. Can cause erratic system operation. Keep wiring at least one foot away from large inductive loads such as motors, line starters, lighting ballasts and large power distribution panels. Use shielded cable to reduce interference when rerouting is not possible.

IMPORTANT

Erratic temperature readings from a sensor can occur as a result of any of the wiring practices described below. Avoid these practices to assure correct operation. Use shielded cable to reduce interference if rerouting of sensor wiring is not possible.

- Be sure wires have a cable separate from the thermostat cable.
- Do not route temperature sensor wiring with building power wiring, next to control contactors or near light dimming circuits, electric motors or welding equipment.
- Avoid poor wiring connections.
- Avoid intermittent or missing building earth ground.



OCP Outdoor Air Reset Card Connections

Wiring Procedure:

1. Wire the Outdoor Air Sensor Input:
- Wire the p/n 350082, (Tasseron p/n TSA00AA) Outdoor Sensor to terminals 1 and 2 on the reset card.
- The use of 18-22 gauge color-coded thermostat wire is recommended.
- As with the sensor, the wiring should be routed away from sources of electrical noise. Where it is impossible to avoid such noise sources, wire the sensor using a 2 conductor, UL Type CM, AWM Style 2092, 300Volt 60°C shielded cable and connect one end of the shielding on this cable to ground.
- Plug wiring hole using non hardening caulk or putty.

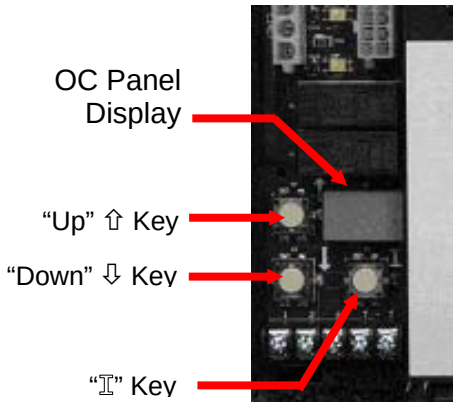
2. If there is an indirect water heater, connect the DHW thermostat (or relay contacts which close upon a call for DHW) to terminals 3 and 4 as shown above.

IMPORTANT: Contacts connected to terminals 3 and 4 must be “dry” (without external sources of voltage). Refer to boiler and /or zone panel installation instructions for correct wiring of heating and DHW circulators.

USER INTERFACE

Using OC Panel Display

The OC Panel display along with Up ⇧, Down ⇩, and "𝕀" keys are used to view and adjust OC Panel Option Card settings. **Please note that these keys look similar to the keys on the Boiler Control but are in a different orientation, and they perform different functions.**



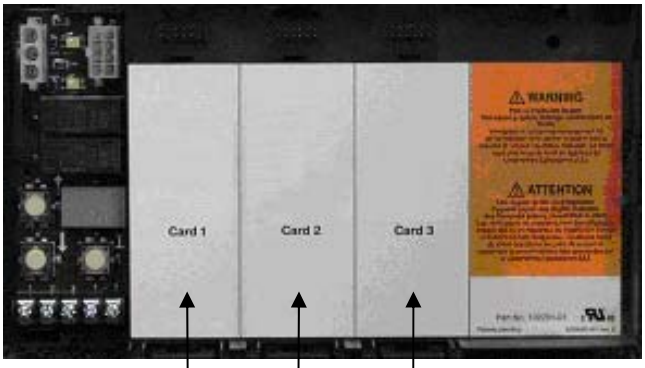
OC Panel User Interface

Selecting OC Panel Option Card

To access an OC Panel Option Card:

1. Press the "𝕀" key. The display will go from "OCP" to C1, C2 and C3 (when cards are installed) to provide access to each of the card slots and the card plugged into that slot.
2. Press either the Up ⇧ or Down ⇩ keys when the display shows the card number where the reset card is installed. For example, if the reset card is installed in slot one, press the Up ⇧ or Down ⇩ keys when "C1" is displayed.

This will switch the display to show the OC Panel Card View Mode.



OC Panel Card Slot Identification

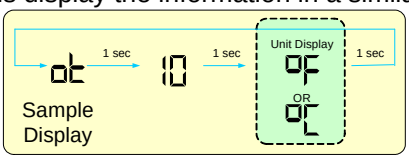
Selecting View Mode Options

In view mode the user may look at (but not change) status and temperature readings. To view card information:

1. Press and release the "𝕀" button. The following table shows the items that will be displayed in view mode.

View Mode Options	
SP	Operating Setpoint Temperature
ot	Outside Air Temperature
bAc	Return to OC Panel Menu
Err	Error (Followed By Error No.) 53 Temp Sensor Failure 18 Electronics Failure 89 Communication error (refer to Trouble Shooting Section for more information)

Each setting will alternately flash between the relevant display code, its corresponding value and units. For example, when the "𝕀" key is pressed until "ot" is displayed, it will then flash a display a number (such as "10") and followed by either "F" (or "C"). This indicates that the outside air temperature is 10°F. Other view mode items display the information in a similar fashion.



Please note that in view mode to hold the display on the value the user can press and hold either the Up ⇧ or Down ⇩ keys and the value will be continuously shown. This may be helpful in watching a value "live".

To exit view mode and return to the OC Panel menu:

1. Press the "I" button to select the "bAc" menu item.
2. Press either the Up ⇧ or Down ⇩ keys to exit the card menu.

USER INTERFACE (continued)

Entering Adjustment Mode
The OC Panel Outdoor Air Reset Card is factory programmed to include basic outdoor air reset functionality. To view or adjust these settings:

1. Press and hold the Up ⇧, Down ⇩**,** and "𝕀" keys simultaneously for three (3) seconds while the display is in View Mode. While holding the buttons the display will change to an Adjustment mode label signifying to the user that installer mode has been entered. This procedure is intended to discourage unauthorized or accidental changes to parameter settings.
2. After entering Adjustment Mode, Press the "𝕀" key to view the item to be adjusted.
3. Press the Up ⇧ or Down ⇩ keys to adjust the displayed setpoint to the desired value.

The following table shows adjustable items:

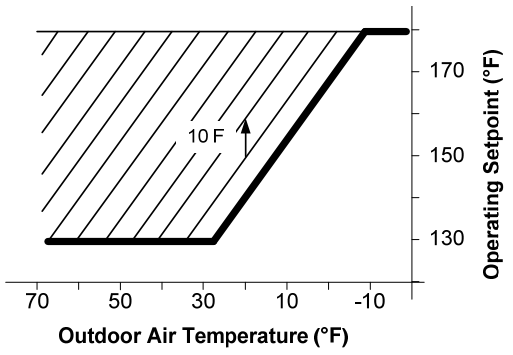
Adjustment Mode Options	
dS_	Domestic Hot Water Setpoint
Pt_	Priority Time
SS_	Thermostat Setback Setpoint
tb_	Boost Time
Lo_	Low Outdoor Temperature
Ho_	High Outdoor Temperature
Lb_	Low Boiler Temperature
Hb_	High Boiler Temperature
Lt_	Minimum Boiler Temperature
F-C	Set F or C Mode
bAc	Return to Option Card View Mode Menu

For example, to adjust the Priority Time (Pt_) perform the following steps from the OC Panel display:

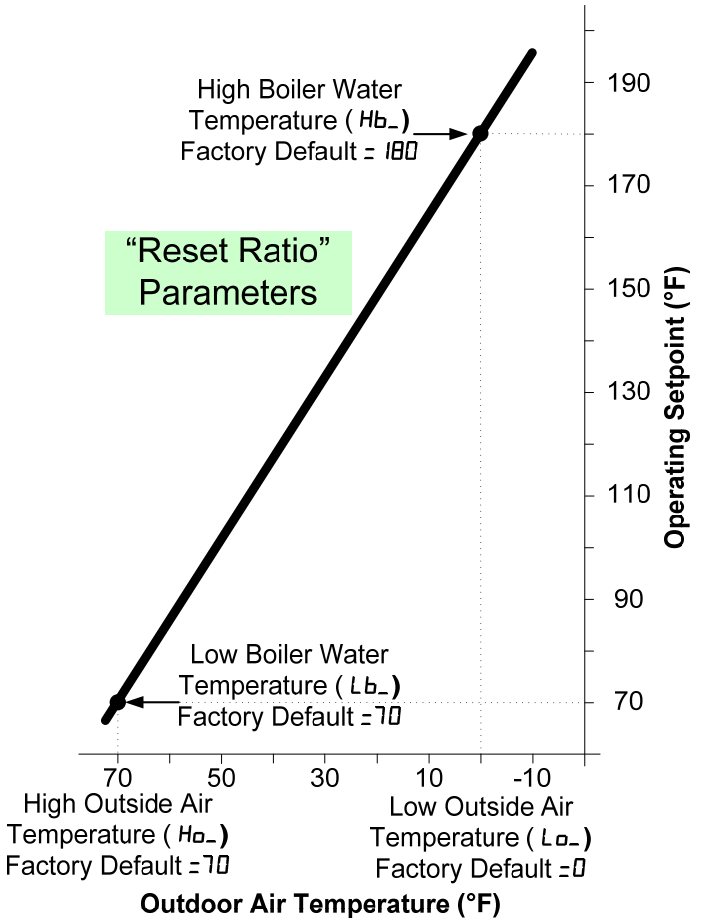
1. Press "𝕀" key until the OC Panel Outdoor Air Reset Card slot number is displayed (C 1, C2 or C3).
2. Press the Up ⇧ or Down ⇩ keys to enter the card's view mode.
3. Press and Hold the Up ⇧, Down ⇩**,** and "𝕀" keys simultaneously for three (3) seconds, the first item of adjustment mode is shown.
4. Press "𝕀" until the Priority Time (Pt_) is shown on.
5. Press the Up ⇧ or Down ⇩ keys to adjust the parameter.
6. Exit adjustment mode by one of the following means:
    a. Press the "𝕀" key until "bAc" option is displayed and press either Up ⇧ or Down ⇩ keys
    b. Press and Hold the Up ⇧, Down ⇩**,** and "𝕀" keys until the first item of view mode is shown.
    c. If no keys are pressed, after five (5) minutes the display will automatically return to the view mode.
2. Once in view mode press the "𝕀" key until "bAc" option is displayed and press either Up ⇧ or Down ⇩ keys to return to the OC Panel Display.

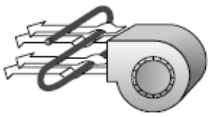
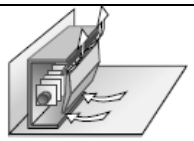
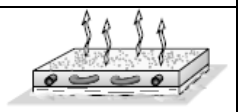
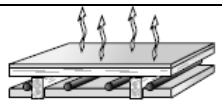
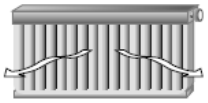
ADJUSTING PARAMETERS

Before adjusting the reset card settings be sure to read the **How It Works** section of this manual to ensure that you know how the reset card operates. The following describes how to adjust the reset card parameters once the adjustment mode has been entered. For instruction on how to access adjustment mode please refer to the "**Entering Adjustment Mode"** section of these instructions:

Display	Factory Default	Range	Instruction
dS_	180	150 to 180°F	**Domestic Hot Water Setpoint** The Domestic Hot Water (DHW) Setpoint parameter is used to create a minimum boiler water temperature setpoint that is used when DHW heat demand is "on" (OC Panel Outdoor Air Reset Card input terminal 3 and 4 sense a contact closure). When the DHW heat demand is not "on" (the contact is open or not wired) this setpoint is ignored.
Pt_	0	0 to 101 minutes	**Domestic Hot Water Priority Time** When the Domestic Hot Water Priority Time parameter is non-zero and Domestic Hot Water (DHW) heat demand is "on" the DHW demand will take "Priority" over home heating demand for the specified time. During DHW Priority the system circulator will be forced "off". DHW Priority ends and the system circulator is released to service home heating demand when Domestic Hot Water Priority Time is exceeded. If this parameter is set to zero, there is no domestic hot water priority and the system circulator is not forced "off".
SS_	170	130 to 220°F	**Thermostat Setback Setpoint** Thermostat setback setpoint is used when the EnviraCOM thermostat is in "leave" or "sleep" modes and sensed at E-COM terminals 1,2,3. When setback is "on" the thermostat setback setpoint shifts the reset curve to save energy while home is in a reduced room temperature mode. The reset curve is shifted by the difference between the High Boiler Water Temperature and the Thermostat Setback Setpoint. Honeywell VisionPro IAQ part number TH9421c1004 is a "setback" EnviraCOM enabled thermostat. When connected, it allows boiler water setback cost savings.
tb_	20	0 to 30 minutes	**Boost Time** The Boost Time parameter is used to increase the operating setpoint when the home heat demand is not satisfied after the Boost Time setting is exceeded. When heat demand has been "on" continuously for longer than the Boost Time parameter the reset card will increase the operating setpoint by a 10°F. This process will continue until either the heat demand is satisfied (indoor air is at desired temperature) or the High Limit setting is reached. Once the heat demand is satisfied, the operating setpoint reverts to the value determined by the reset ratio. If Boost Time is zero, then the boost function is not used. 

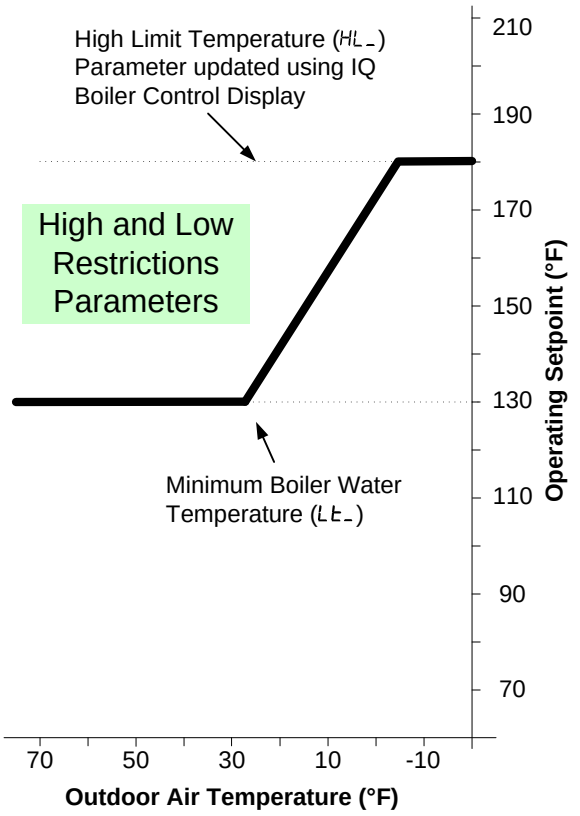
ADJUSTING PARAMETERS (continued)

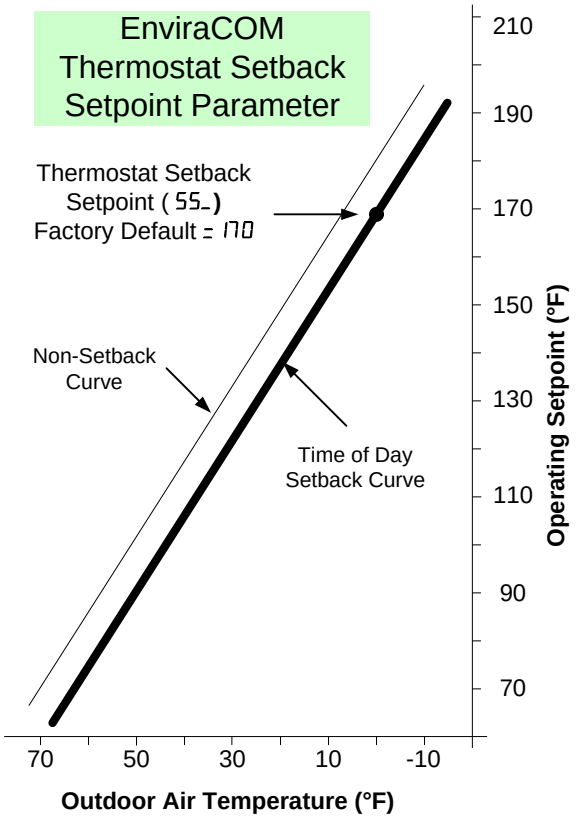


High Boiler Water Temperature (Hb_)	Heating Element Type
180 to 200°F	Fan Coil 
160 to 190°F	Convection Baseboard Fin tube Convective 
130 to 160°F	Radiant Baseboard 
100 to 140°F	In Slab Radiant High Mass Radiant 
130 to 160°F	Staple-up Radiant Low Mass Radiant 
140 to 160°F	Radiators 

Display	Factory Default	Range	Definition
Lo_	0	-50 to 32°F	**Low <u>Outdoor</u> Temperature** The Low Outdoor Temperature parameter is also called "Outdoor Design Temperature". This parameter is the outdoor temperature used in the heat loss calculation. It is typically set to the coldest outdoor temperature.
Ho_	70	35 to 100°F	**High <u>Outdoor</u> Temperature** The High Outdoor Temperature parameter is the outdoor temperature at which the Low Boiler Water Temperature is supplied. This parameter is typically set to the desired building temperature.
Lb_	70	70 to 180°F	**Low <u>Boiler Water</u> Temperature** The Low Boiler Water Temperature parameter is the operating setpoint when the High Outdoor Temperature is measured. This is typically set to the desired building temperature. If the home feels cool during warm outdoor conditions, the Low Boiler Water Temperature parameter should be increased.
Hb_	180	70 to 220°F	**High <u>Boiler Water</u> Temperature** The High Boiler Water Temperature parameter is also known as "Boiler Water Design Temperature". This parameter is the operating setpoint required to satisfy the building heat loss during the coldest outdoor temperature. This adjustment typically depends on the type and quantity radiation (heating element) installed in the home. Parameter setting suggestions for different heating element types are found in above High Boiler Water Temperature table.

ADJUSTING PARAMETERS (continued)





Display	Factory Default	Range	Definition
Lt_	130	70 to 180°F	**Minimum Boiler Temperature** The Minimum Boiler Temperature parameter sets a low limit for the Reset setpoint. Set this parameter to the lowest supply water temperature that will prevent chimney or boiler flue gas condensation. Always consider the type of radiation when adjusting this parameter. Factory Default is 130 F.
F-C	°F	°F or °C	**Temperature Units** The Temperature Units parameter determines whether temperature is represented in units of Fahrenheit or Celsius degrees.

TROUBLE SHOOTING

When a problem occurs with the operating setpoint or reset card the Crown OC Panel provides specific, valuable information to help resolve the issue quickly and easily. The display on the OC Panel should be the first place to check.

Status	Boiler / Control Action(s)
Boiler not responding to Domestic Hot Water Heat Request	• Boiler is not sensing Domestic Hot Water Heat Request. Check reset card wiring for loose connection, miswiring, or defective indirect water heater aquastat.
Boiler Running but Circulator is not running	• Check wiring for loose connection, miswiring • When there is a Domestic Hot Water Heat Request wired to the Outdoor Air Reset card the System Circulator will be forced "off" for the duration of the DHW Priority Time. This to allow all of the heat to be provided for fast indirect water heater recovery. Check Priority Time (pt_) function using OCP Outdoor Air Reset Card Adjustment Mode (see Adjustments Parameters section for more information).
Home is cold during mild weather days	• Increase Low Boiler Water Temperature parameter 5°F per day.
Home is cold during cold weather days	• Increase High Boiler Water Temperature parameter 5°F per day.
Operating Setpoint is not responding to outside air temperature changes	• Refer to OC Panel Outdoor Air Reset Card Error Codes listed below

OC Panel Outdoor Air Reset Card Error Codes

The following errors are reportable via both EnviraCOM and the OC Panel Display. Errors will be displayed in view mode.

Display		Status	Boiler / Control Action(s)
Err	18	Electronics Failure	• Replace Control
Err	53	Temperature Sensor failure	• Temperature sensor or interface failure (open or short connection or increased connection resistance) or control hardware failure
Err	89	Communication Error	• Loose wire between OC Panel and the Boiler Control or control failure

Checking Sensor Resistance

When checking sensor resistance values it is extremely important to follow the guidelines below or erroneous readings may occur.

1. Use a low volt ohm meter.
2. Check the resistance of the ohm meter leads by connecting them together. Excessive resistance in the test leads will cause inaccurate results. Resistance in test leads should be less than 1 ohm.
3. The sensor should be at a stable temperature for at least 3 minutes before checking the resistance.
4. Assure that a thermometer or thermocouple has a reasonable accuracy before depending on it for the reference temperature.
5. Remove the sensor connection at the OC Panel Outdoor Air Reset Card and, using alligator type clips on the end of the test leads, check the resistance between the two wires. **Important: Holding the wires with your hands can cause significant errors.**

6. Take the reading as soon as possible as the current flow from the meter through the sensor will cause the sensor to heat and you will get erroneous results.
7. Use the Sensor Resistance Temperature Table below to determine the corresponding temperature.

Sensor Resistance at Outdoor Temperature

Outdoor Temperature		Ohms of Resistance
°F	°C	
-20	-28.9	106926
-18	-27.8	100923
-16	-26.7	95310
-14	-25.6	90058
-12	-24.4	85124
-10	-23.3	80485
-8	-22.2	76137
-6	-21.1	72060
-4	-20.0	68237
-2	-18.9	64631
0	-17.8	61246
2	-16.7	58066
4	-15.6	55077
6	-14.4	53358
8	-13.3	49598
10	-12.2	47092
12	-11.1	44732
14	-10.0	42506
16	-8.9	40394
18	-7.8	38400
20	-6.7	36519
22	-5.6	34743
24	-4.4	33063
26	-3.3	31475
28	-2.2	29975
30	-1.1	28558
32	0.0	27219
34	1.1	25949
36	2.2	24749
38	3.3	23613
40	4.4	22537
42	5.6	21516
44	6.7	20546
46	7.8	19626
48	8.9	18754
50	10.0	17926

Outdoor Temperature		Ohms of Resistance
°F	°C	
52	11.1	17136
54	12.2	16387
56	13.3	15675
58	14.4	14999
60	15.6	14356
62	16.7	13743
64	17.8	13161
66	18.9	12607
68	20.0	12081
70	21.1	11578
72	22.2	11100
74	23.3	10644
76	24.4	10210
78	25.6	9795
80	26.7	9398
82	27.8	9020
84	28.9	8659
86	30.0	8315
88	31.1	7986
90	32.2	7672
92	33.3	7372
94	34.4	7086
96	35.6	6813
98	36.7	6551
100	37.8	6301
102	38.9	6062
104	40.0	5834
106	41.1	5614
108	42.2	5404
110	43.3	5203
112	44.4	5010
114	45.6	4826
116	46.7	4649
118	47.8	4479
120	48.9	4317

SPECIFICATIONS

Dimensions: 4.5 in. x 1.5 in. (fits into any Crown OC Panel card slot)
Operating temperature: -4°F to 150°F
Shipping and Storage temperature: -40°F to 175°F
Operating Humidity: 0 to 95% R.H. non-condensing
Input ratings:

Rating	Terminal	Description
Low voltage	1	Outdoor Temperature
	2	Outdoor Temperature
24 Vac at 5 ma Max current Supplied By Card	3	DHW Demand
	4	DHW Demand

Crown Boiler Company
Manufacturer of Hydronic Heating Products
P.O. Box 14818
3633 I Street
Philadelphia, PA 19134
www.crownboiler.com

980771 – 10-13