

Aquastat® IQ Option Card, p/n 102720-01, 102717-01

Instruction Sheet

APPLICATION

The Aquastat IQ Option Card provides electronic temperature sensing in a UL limit-rated control with a single sensing probe. The Aquastat IQ Option Card replaces auxiliary high limit Aquastats such as L4006A, L4008A, L4006E and L4008E.

This product may be applied to either gas or oil fired steam or hot water boilers equipped with the IQ Control System. The Aquastat IQ Option card may be simply “plugged in” to the IQ Option Panel and only requires sensor and well installation to become operational.

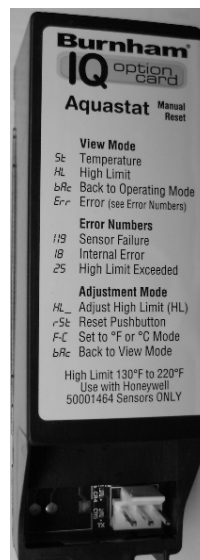
GENERAL

The Aquastat IQ Option Cards are available in automatic or manual reset models. Automatic reset versions automatically reset when temperature return to safe levels. Manual reset models require user intervention to reset a temperature condition after the temperature returns to safe levels.

SPECIFICATIONS

Listings/Approvals

- UL353 Limit Controls for both US (UL) and Canada (CUL)—Component Recognized
- UL 1998 Software Safety Standards as a Class 2 device.
- Add a Manual Reset Aquastat IQ Option Card, p/n 102720-01, to the factory mounted temperature control to be Fully compliant with **CSD-1 requirements** for temperature controls in the US and Canada



Dimensions: 4.5 in. x 1.5 in. (fits onto IQ Option Panel)

Operating temperature: -4°F to 150°F

Shipping and Storage: -40°F to 175°F

Humidity 0 to 95% R.H. Non-condensing

Input ratings: 24 VAC 60 Hz

Reset: Automatic or manual reset modes

Sensor: Dual Sensor, Limit Rated, p/n102295-01
(Honeywell p/n 50001464-004)
with sensor clip 102422-01

Well: p/n 80160456, (Honeywell p/n 123869A),
Spud Size: 1/2 inch NPT
Insertion: 3 inches
Insulation: 1-1/2 inches



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.
- Wire insulation must be rated at 221° F (105° C) or greater, over copper conductors only. 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 80° F (27° C) and to 0 psi (0 bar) before servicing. Failure to do so could result in serious burns.

Caution

Limit settings are safety parameters and adjusting them incorrectly can have serious consequences.

WARNING

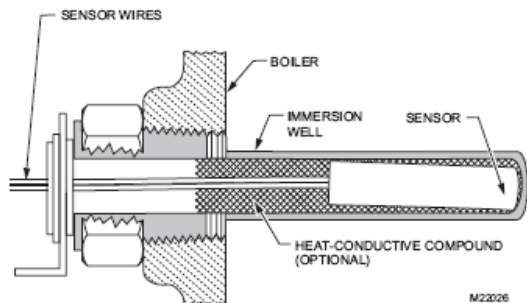
Incorrect adjustment can cause equipment damage or serious injury.

Adjustment of Limit Settings should be done by trained personnel only.

Important

Immersion well must fit sensing element and sensor bulb must rest against bottom of well.

INSTALLATION (continued)



Sensor clip



Sensor clip installed

Sensor Installation Diagrams

Well and Sensor Installation

1. Turn off all power and drain the boiler.
2. Install sensor with well that was provided with the IQ Option Card. When using an existing well ensure that the well specifications (Spud Size: 1/2 inch NPT, Insertion depth: 3 inches & Insulation: 1-1/2 inches) match the supplied well and will accommodate the supplied sensor clip.
3. Prepare a properly sized and threaded tapping near the boiler supply water outlet. Choose a location (or existing tapings) that allows the boiler water to circulate freely over the well.
4. Sparingly coat the well threads with pipe dope.
5. Install the well in the boiler tapping and tighten securely.
6. Refill boiler and check for water leakage.
7. Insert the sensor element into the well until it bottoms. See Sensor Installation diagram above for details
8. Insert sensor clip to hold the sensor against the bottom of the well.
9. Rout sensor wire and connect to Aquastat IQ Option Card
10. Turn power ON.
11. Set High Limit and High Limit Differential (see User Interface Section of this manual)

IMPORTANT

Best thermal response is obtained with a well that snugly fits the sensor. Insert the sensor until it rests against the bottom of the well. Use a well of correct length and install sensor clip. If the well is not a snug fit on the sensor, use the heat-conductive compound, p/n 8056220, (Honeywell p/n 120650)

IQ Option Card Installation

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

NOTE

Use caution not to bend the pins.

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



Insert IQ Option Card into selected slot

INSTALLATION (continued)

Checkout

Check to make certain that the Aquastat IQ Option Card has been installed and adjusted to the proper settings. Put the system into operation and observe the action of the device through several cycles to make certain that it provides proper control of the system as described in the Operations section. Further adjustments can be made to meet more exact comfort requirements.

Operation

Automatic Reset Aquastat IQ Option Cards:

1. When checking out the system, adjust the control point low enough so the temperature of the controlled medium reaches the high limit setting and the burner shuts off. When the temperature of the controlled medium drops to the high limit setting minus differential the system should be operative again.
2. Reset control to proper high limit setting.

Manual Reset Aquastat IQ Option Cards:

1. When checking out the system, adjust the control point low enough so the temperature of the controlled medium reaches the high limit setting, the burner shuts off, and the Aquastat Controller “locks out”. When the temperature of the controlled medium drops to the high limit setting minus differential, activate the manual reset button (refer to “How To Reset The Aquastat” below for reset procedure) and the system should be operative again.
2. Reset control to proper high limit setting.

USER INTERFACE

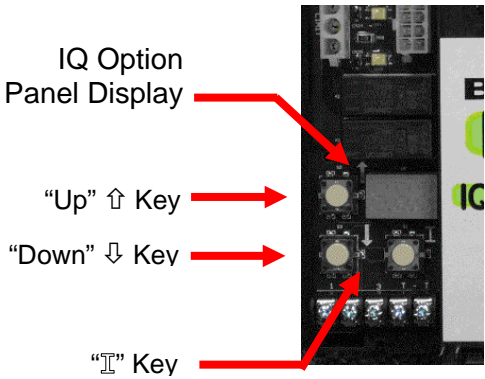
Aquastat IQ Option Card Features

LED	Description
Flashing Red	High Temperature, Lockout and manual reset required or fault indicator
Green TX	Enviracom® communication indicator

USER INTERFACE (continued)

Using IQ Option Panel Display

The IQ Option Panel display along with Up ↑, Down ↓, and “I” keys are used to view and adjust IQ Option Card settings. Please note that these keys look similar to the keys on the IQ Boiler Control but are in a different orientation, and they perform different functions.



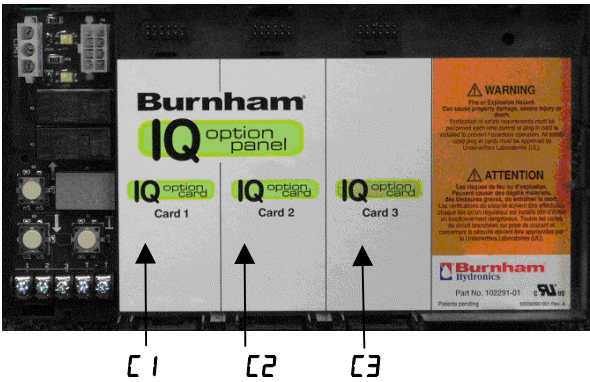
IQ Option Panel User Interface

Selecting IQ Option Card

To access an IQ Option Card:

1. Press the “I” key. The display will go from “OCF” 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 Aquastat card is installed. For example, if the Aquastat card is installed in slot one, press the Up ↑ or Down ↓ keys when “C1” is displayed.

This will switch the display to show the IQ Option Card View Mode.



IQ Option Panel Card Slot

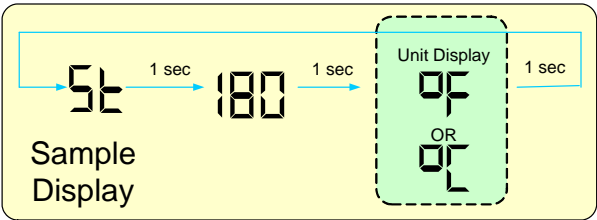
Showing View Mode Options

In view mode the user may look at (but not change) status and temperature readings. To view option 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	
HL	High limit setting of Aquastat
dF	High limit differential of Aquastat
St	Sensor temperature of Aquastat
Err	Error (Followed By Error No.)
	1B Internal Fault
	119 Sensor Failure
	25 Lockout, manual reset required (refer to Trouble Shooting Section for more information)
bAc	Return to OCP Option Card Select Menu

Each setting will alternately flash between the relevant display code, its corresponding value and units. For example, when the “I” key is pressed until “St” is displayed, it will then flash a display a number (such as “180”) and followed by either “F” (or “C”). This indicates that the sensed temperature is 180°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 IQ Option 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

In Adjustment Mode, the user can adjust the High Limit or Differential, change measurement units or reset a high temperature condition for Manual Reset models. To enter adjustment mode:

1. Press and hold the Up ↑, Down ↓, and “I” keys simultaneously for three (3) seconds while the display is in the Aquastat card 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.
4. 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.
5. Once in view mode press the “I” key until “bAc” option is displayed and press either Up ↑ or Down ↓ keys to return to the IQ Option Panel Display.

How To Reset The Aquastat

To Reset the *Manual Reset* Type Aquastat Card:

1. Make sure that the temperature has returned to normal.
2. Press “I” key until the Aquastat card slot number is displayed (C1, C2 or C3).
3. Press the Up ↑ or Down ↓ keys to enter the card's view mode
4. Press and Hold the Up ↑, Down ↓, and “I” keys simultaneously for three (3) seconds, Adjustment Mode items will be shown
5. Press “I” until the Reset (r5t) Pushbutton is shown.
6. Press the Up ↑ or Down ↓ keys to turn Reset “on”

NOTE: Resetting lockout only applies to Manual Reset Models.

The following table shows adjustable items.

Adjustment Mode Options			
Display	Factory Default	Range	Definition
HL_	200	130-220	Adjust high limit setting of Aquastat
dF_	15	5-30	Auto Reset type IQ Option Card, adjustable High Limit differential
	5	-	Manual Reset type IQ Option Card, fixed High Limit differential
F-C	F	F-C	Unit Selection (°F or °C)
r5t	-	-	Reset from lockout (manual reset only)
			on Ready to restore from lockout oFF Not Ready to restore from lockout
bAc	-	-	Return to Option Card View Mode Menu

ORDERING INFORMATION

Part Number	Description
102720-01	Aquastat Limit Control IQ Option Card, 130-220 Deg F, Manual Reset for use with Option Control Panel, temperature sensor, well, sensor clip, instructions, Unit Pack
102717-01	Aquastat Limit Control, IQ Option Card, 130-220 Deg F, 15 Deg F Adjustable Differential, Auto Reset, for use with Option Control Panel, temperature sensor, well, sensor clip, instructions, Unit Pack
102292-01	Aquastat Limit Control IQ Option Card, 130-220 Deg F, Manual Reset for use with Option Control Panel, Less well, Less Sensor, Unit Pack
102293-01	Aquastat Limit Control, IQ Option Card, 130-220 Deg F, 15 Deg F Adjustable Differential, Auto Reset, for use with Option Control Panel, Less well, Less Sensor, Unit Pack

TROUBLESHOOTING

Aquastat IQ Option Card Error Codes

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

Display		Status	Boiler / Control Action(s)
Err	18	Internal Failure	<ul style="list-style-type: none"> Replace Control
Err	19	Sensor Failure	<ul style="list-style-type: none"> Temperature sensor or interface failure (open or short connection or increased connection resistance, dual sensor mismatch) or control hardware failure
Err	25	Lockout, manual reset required	<ul style="list-style-type: none"> When a lockout occurs the boiler will shut down. The boiler will not automatically restart once the temperature has decreased below the High Limit. To Reset the control follow "Aquastat Reset Pushbutton procedure described above.



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