HEATEC TEC-NOTE

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Setting Heatec (Yokogawa) UT150 burner modulation controller on Heatec HC and HCS heaters

This document provides information for setting the Heatec (Yokogawa) UT150 burner modulation controller **(Figure 1)** used on Heatec HC and HCS heaters. The controller is located on the control panel **(Figure 2)**.

This document along with Yokogawa manuals applicable to Yokogawa controllers are furnished with Heatec heaters. If you need help on how to use the buttons on the controller, please refer to the applicable Yokogawa manual. You can call Yokogawa for technical assistance at 1-800-447-9656. Their web site is www.yokogawa.com/.

The controller is used to regulate the temperature of hot oil (also called media or thermal fluid) that flows through the heater. The controller monitors a thermocouple that senses the temperature of oil flowing through the heater. It responds to any difference in actual oil temperature and setpoint (SP) by re-positioning the modulation motor, which adjusts the firing rate of the burner. Setpoint SP (in green) is the temperature to which the oil is to be heated.

Setting up the controller

To set up a new controller for Heatec HC and HCS heaters, you must first make the settings shown in **Figure 3.**

These settings are normally made at Heatec before the heater is shipped. However, if a new controller is installed in the field, these settings must be made first.

After making the settings shown in **Figure 3**, enter the setpoint for your hot oil into the controller. The usual setpoint is 325–375 degrees F. Note: setpoint is *not* one of the settings shown in **Figure 3.**

Finally, you need to auto-tune the controller.

How to navigate the controller menus

The controller has two menus for the settings shown in **Figure 3:**

Setup Parameters
Operating Parameters

If the controller is new and was not preset at our factory, its display will show that **IN** is set to **OFF** when it is first powered. Press the up arrow key repeatedly to display **35.** Press **SET/ENT** key. Thereafter, you navigate the menus as described in the following paragraphs.

To enter the Setup Parameters menu

Press and hold the **SET/ENT** button for about three seconds until display reads **A/M**. Repeatedly press the **SET/ENT** button until display reads **LOC**. Press the down-arrow button to change the value to **–1 (minus 1)**. If **LOC** is already set to **1**, press down arrow button and set **LOC** to **0**. Press **SET/ENT.** Now set **LOC** to **–1** and press **SET/ENT.** You are now in the Setup Parameters menu.

To change data use up/down arrow keys. To accept data press **SET/ENT**. To scroll to the next prompt press the **SET/ENT** button again. When finished, press and hold **SET/ENT** to return to the main display.

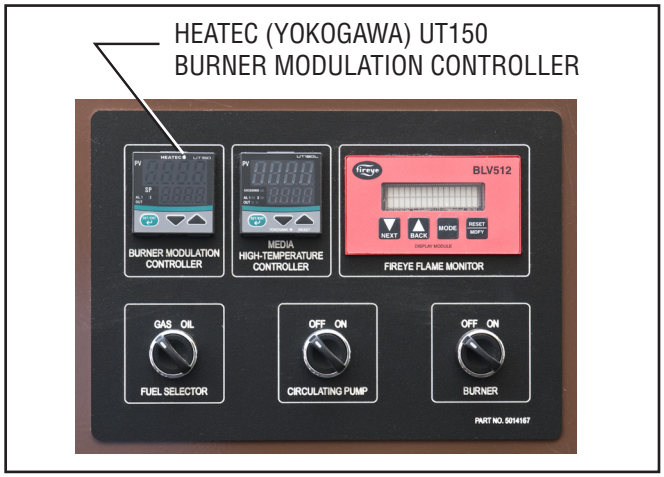

Figure 1.Burner modulation controller.

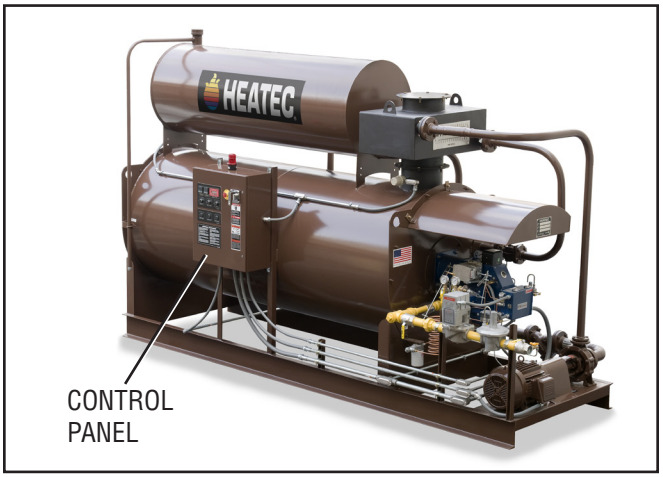

Figure 2. Control panel on Heatec HC heater

To enter the Operating Parameters menu

Press and hold the **SET/ENT** button about three seconds until display reads **A/M**. You are now in the Operating Parameters menu. To change data use up/down arrow keys. To accept data press **SET/ENT**.

To scroll to the next prompt press the **SET/ENT** button again. When finished, press and hold **SET/ENT** to return to the main display.

To Auto-Tune The Controller

Go to the Operating Parameters menu and set **AT** to **on**. The controller will auto-tune for about 30 minutes, depending on response of the system, and then set to **OFF**. You can now note the new PID parameters.

To switch between Auto and Manual

Press and hold the **SET/ENT** button for about three seconds until the display reads **A/M**. Choose either Auto or Manual with the up/down arrow keys. Press **SET/ENT** to accept and escape out to the main display.

Figure 3. Setting Yokogawa UT150 temperature controller for Heatec HC & HCS heaters

PROMPT (what you see)	PROMPT (what it means)	DESCRIPTION (what it does)	SETTINGS (USE UP/DOWN ARROW KEYS) (green characters are actual settings)
Setup Parameters			
In	IN	Input type	35: J –300 to 2100° F
SPH	SPH	Setpoint range maximum value	500
SPL	SPL	Setpoint range minimum value	0
UPr	UPR	Setpoint ramp-up rate	OFF
dnr	DNR	Setpoint ramp-down rate	OFF
tmU	TMU	Setpoint ramp-rate time unit	1: °F/min
rtH	RTH	Retransmission maximum value	500
rtL	RTL	Retransmission minimum value	0
AL 1	AL1	Alarm 1 type	5: De-energized on deviation high limit
AL2	AL2	Alarm 2 type	0: OFF
HY1	HY1	Alarm 1 hysteresis	20
HY2	HY2	Alarm 2 hysteresis	0
SC	SC	SUPER function	ON
dr	DR	Direct / reverse action	0: Reverse action
Operating Parameters			
A/M	A/M	Auto / Manual	AUT
A1	A1	A1 Value	10
A2	A2	A2 Value	0
CtL	CTL	Control mode	PID
At	AT	Auto-tuning	OFF
P	P	Proportional band	24
I	I	Integral time	256
d	D	Derivative time	64
FL	FL	PV input filter	OFF
bS	BS	PV input bias	0
LoC	LOC	Key lock	0: No key lock