HEATEC TEC-NOTE

Setting Heatec (Yokogawa) UT150 burner modulation controller on Firestorm™ water heaters

This document provides information for setting the Heatec (Yokogawa) UT150 burner modulation controller used on Heatec Firestorm heaters (**Fig. 1**). The controller is located on the control panel (**Fig. 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 control the temperature of outlet water that is heated as it flows through the heater. The controller monitors a thermocouple that senses the temperature of the water in the reservoir at the bottom of the heater. It responds to any difference in actual water 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 water is to be heated.

Setting up the controller

To set up a new controller for Firestorm 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 water into the controller. Setpoints can range up to a maximum of 190 degrees F. Note: setpoint is *not* one of the settings shown in **Figure 3.**

Finally, you need to auto-tune the controller.

Figure 1. Control panel on Heatec Firestorm heater.

How to navigate the controller menus

The controller has two menus for the settings shown in **Fig. 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.

Note: Earlier panel marking FIREYE FLAME MONITOR is now BURNER DISPLAY

Figure 2. Modulation controller on control panel.

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.

Figure 3. Setting Yokogawa UT150 modulation controller for Firestorm heaters

PROMPT		DESCRIPTION	SETTINGS (USE UP/DOWN ARROW KEYS)
(what you see)	(what it means)	(what it does)	(green characters are actual settings)
Setup Parameters			
In	IN	Input type	**35**: J –300 to 2100° F
SPH	SPH	Setpoint range maximum value	**200**
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	**200**
rtL	RTL	Retransmission minimum value	**0**
AL1	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	**OFF**
dr	DR	Direct / reverse action	**0**: Reverse action
Operating Parameters			
Arm	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

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