



2506 South Elm Street
 Greenville, IL 62246
 www.enertechmfg.com
 (888)-436-3783

Technical Bulletin

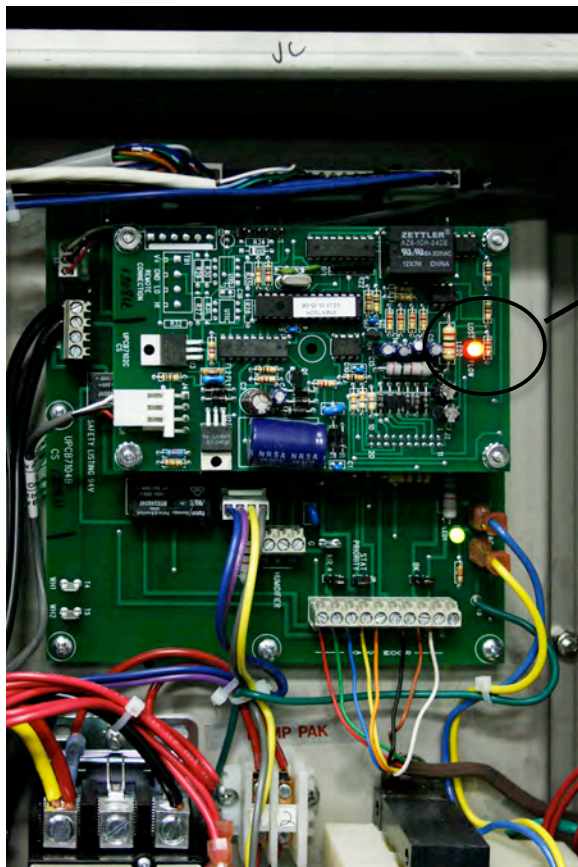
01CB30: Single Light Control Board
 Diagnostics & Troubleshooting

Date: 20 August 2008

Bulletin #: TB08.003

Bulletin Scope:

Recently, the vendor of our 01CB30 board (used in two-stage and combo units) has made some changes to the layout of the board. The picture below shows that the new board no longer includes the plastic cover over the top board. In addition, the diagnostic lights have been changed to a single LED. This bulletin defines the new, single light board lockout information and describes troubleshooting methods for each lockout.



Diagnostic LED

SYSTEM MONITOR	
GREEN	- POWER ON, 24V
GREEN (BLINK)	- LOCK-OUT INFORMATION
	1 = HI, 2 = LO, 3 = FLOW
RED	- HOLD, LOCK OUT
RED (PULSING)	- LOCK OUT DELAY
RED/GREEN ALT	- BAD DUCT SENSOR
UAI018 C	

New Label

NOTE: New label (above) is located on the unit corner post, and describes the operation of the LEDs on the corner post.

Lockout #1: High Pressure

The Main Board will not start the sequence unless the high pressure switch circuit is closed. High pressure switch settings (R-410A) are as follows: opens at 610 psi and closes at 420 psi. Once the high pressure switch circuit is opened the system monitor will flash red rapidly due to a lockout delay. The third time the switch opens the system monitor light will show a solid red for a lockout hold. During the lockout hold, green blinking of the system monitor light will designate the reason for the lockout. In the case of a high pressure lockout, one green blink will be displayed in between periods of solid red on the system monitor LED.

Lockout #2: Low Pressure

The Main Board will not start the sequence unless the low pressure switch circuit is closed. Low pressure switch settings (R-410A) are as follows: opens at 50 psi and closes at 95 psi. Once the low pressure switch circuit is opened the system monitor will flash red rapidly due to a lockout delay. The third time the switch opens the system monitor light will show a solid red for a lockout hold. During the lockout hold, green blinking of the system monitor light will designate the reason for the lockout. In the case of a low pressure lockout, two green blinks will be displayed in between periods of solid red on the system monitor LED.

Lockout #3: Flow

The sequence of operation will start with the flow switch circuit open. This circuit is not evaluated until after a 30 second delay. Once the 30 second delay is over, the board checks the flow switch and condensate overflow circuits for continuity. The condensate overflow is wired in series with the flow switch. If either switch is opened for 5 seconds the unit will light up the flow light and a rapid red flashing will be displayed by the system monitor. Once the red rapid flashing begins, the unit is in a lockout delay. The third time that either switch opens, the system monitor light will show a solid red for a lockout hold. During the lockout hold, green blinking of the system monitor light will designate the reason for the lockout. In the case of a flow lockout, three green blinks will be displayed in between periods of solid red on the system monitor LED.

Troubleshooting: False Diagnostics

In certain cases, the diagnostics indicated by the flashing of the system monitor can lead to a false diagnosis if the operation is not fully understood. The low pressure switch, high pressure switch, and flow switch make up the safety switch circuit of the control board. Pressure switches within this circuit can open and close at key points in the cycle. Once the 30 second delay of the flow switch circuit has timed out, all the safeties are checked by the control board. At this point, the pressure switches can open and close in the same manner as the flow switch. If either of the pressure switches open and close before the lockout delay time has lapsed, the control can show a false diagnosis of low flow. After three repetitions of either pressure switch opening and closing the unit will go into a lockout hold. The lockout hold will indicate a flow lockout by flashing three green flashes in between periods of solid red on the system monitor LED. A true pressure switch fault can occur if either pressure switch opens without closing during the lockout delays.

Recommendations

Voltage checks across the switches or after the switches will be the best method for troubleshooting a possible false diagnosis. Once all the lockout and anti-short cycle delays have lapsed, voltage checks across the two leads of each individual switch should read 0V (and 0 ohms). 0V indicates the switch is closed (no difference in polarity within the circuit). Also, the voltage can be checked from the back side of each switch to ground or common. This voltage check should only be done after all lockout and anti-short cycle delays. The best way to check this is with the 6-pin plug plugged into the control board. Voltmeter probes can be inserted above each wire on the 6-pin plug. From left to right the wires are as follows: 1 & 2 are brown (flow switch), 3 & 4 are black (high pressure switch), and 5 & 6 are blue (low pressure switch). Wires 2, 3, & 5 are all sending voltage back to the control board when all switches are closed. The 24VAC signal can be checked at pin 2 for the flow switch circuit, pin 3 for the high pressure switch circuit, and pin 5 for the low pressure switch circuit.