

Bulletin: MFD-2014-01

Date: 03/12/2014

Supersedes: N/A

SERVICE BULLETIN



ALL LIMIT POINTS ALARM (ALPA) R7 RELAY LIGHT TROUBLESHOOTING ON MODU-FIRE® FD BOILERS (LATE 2005 - MID 2009)

When there has been a call for heat for greater than 5 minutes and the burner has not advanced to main flame, the all limit points alarm (ALPA) is triggered. This removes power to terminal 6 of the combustion control shutting down the burner. The ALARM relay (R7) on the front panel energizes, illuminating the amber LED. To reset the ALPA you must press and hold the red inverter reset button until the R7 indicator light goes out.

Anything that can stop the boiler from starting within 5 minutes of receiving a call for heat can cause this.

If you have to reset any safety in addition to the ALPA – then that component and its function is what you need to look at. If only the Red reset button on the sheet metal needs reset then we get into the following troubleshooting. This is not a simple or easy fix as it can be a few items. ALPA alarms can cause untold frustration, be patient and diligent in your troubleshooting.

Flow switch:

This one is easy to rule out. 1st make sure the boiler is controlling the pump. Then if a motor starter is used, set it to Hand or On for troubleshooting for a few days/weeks.

Do NOT run the power for the pump through the dry contact on the boiler! It will destroy the Tekmar on the boiler. Or if the coil on the motor starter goes bad it can cause more of an amp draw and cause problems as well.

Logic stick:

This one is tuff.

Parameter#55-58 in the VFD are the last fault codes. Tr.t097 or C.acc codes indicate the VFD is not reading the logic stick.

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WARNING

BEFORE doing any work with the logic stick or removing the cover on the VFD, lockout the 220 volt power to the boiler. The switch on the front of the boiler is only for the 120 volt control circuit portion of the boiler. Wait until the Red LED display goes blank as the display is what dissipates the residual power stored in the capacitors. They can cause bodily injury or death.

- 1 - Clean the contacts on the logic stick and on the inside of the VFD with rubbing alcohol on a Q-Tip.
- 2 - Take the stick cover apart and place 2 pieces of paper behind the circuit board. Then reassemble the stick and reinstall it. Do not force the logic stick into the VFD. If a problem, remove a piece of paper. Then turn the power back on.
- 3 - Replace the logic stick

Airflow switch:

This one is very interesting:

Make sure you do a VERY thorough cleaning of the burner with soap and water.

(The way they are set up is lower the boiler to low fire, turn the adjustment screw to the right and allow the airflow switch to trip the boiler off, then usually a ½ to ¾ turn sometimes a full turn is needed. If the boiler is working and the burner is clean then you could just give it a ¼ turn to the left. (left is less air required to make the switch))

Make sure the Blue/white tubing is clear and properly connected (blow through the tubes, inspect for cracks at the connection points, run a drill bit or allen key down through the connection points on the mixing head at the blower inlet.)

Make sure the SS tubing from the gas valve to the back wall of the cabinet is not compromised.

Inlet gas pressure:

Static Gas pressure? What does it drop to @ Ignition?

We have a Service Bulletin out about gas pressure drop.

If the gas pressure drops enough it can cause a large pulse/drop in airflow – Which can cause the airflow switch to drop out. You can see this on a water tube manometer while monitoring the gas pressure. You can hear the pulse or the whoosh, whoosh, whoosh. Or you can see the flame pulse on/off/on/off the face of the burner.

The airflow switch circuit can quickly open with this pulse, causing the boiler to shut down and then tripping the boiler out on an ALPA. The Dungs valve also has a filter on its inlet. Make sure it is clean.

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The Inlet gas pressure must be measured on the bottom of the 2 tapings on the Dungs valve body. The key is to make sure the boiler lights smooth.

Relays:

The R1 and R2 and R7 relays can cause this. As we all know boilers can be cycled to death – And so can the relays. Installing new R1 and R2 120 volt relays and a R7 24 volt relay have fixed some ALPAs in the past.

Cycling:

Stop it/reduce it. PERIOD. Extend the off differential, low fire hold, adjustments on the sequencer (Heat-Timer, Tekmar or some building automation system)

If a Boiler is running it is hard to have an ALPA! Because the ALPA generally happens during startup!

How you can inadvertently cause an ALPA:

From Engineering = "Pressing the reset button on the Honeywell RM7895 combustion control interrupts the timing program in the Inverter. The inverter is running a program with several timers for the All Limit Points Alarm (ALPA) which is relay R7. This timing is reset when the rm7895 reaches the run mode. Pressing the reset button on the RM7895 prior to this will cause an ALPA on the next ignition cycle unless the red inverter reset button is pressed. This only happens due to the abnormal recycle of the burner. All normal modes of shutdown that remove the call for heat from the combustion control will not cause this. If the call for heat is removed before reaching the run state you will not have this occur it only happens because the burner is cycled with the button on the RM7895. This button is only used during service."

In English = If you reset the boiler for testing..... WAIT.... for the boiler to light and drive to LOW FIRE.... **before** resetting the boiler. This applies to using the Red reset button on the sheet metal which is labeled improperly as inverter reset or if you use the reset button on the 7800 series Honeywell.

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