Reference: DME In-House Only Tech. Note
Hot Runner Controller Oscillating Loads Observations and New SSM Gain Cut Feature
Date: 3/23/2007

Electronic Engineering notes on Hot Runner Nozzle Oscillations observation Issues from In-House Prototypes Only.

With the advent of DME Hot Runner Nozzles getting smaller and the new challenges of faster responding Drop/Nozzles, DME Electronics has added a new feature to the SSM1512 which has been known to significantly help with some In-House Prototype testing.

Historically, DME Company has used designs where the heater loads and t/c thermal responses where in a tightly controlled region of operation. The thermal mass was targeted between 20 to 30 Watts per cubic inch of Steel. The thermal couple was located where there was little thermal response lag time and temperature difference between the steel material being heated and the actual heater. This has been known to change on newer prototype versions of Hot Runner Components.

When loads start to oscillate, seen as much as +/- 30 Degrees F, the new SSM1512 controllers with the Gain Cut feature seems to help manage this problem. This is usually found only in Drop/Nozzles. The DSS controller, even though it has Autotuning, seems to not be able to Autotune during these very fast responding loads and defaults to the factory tuning parameters.

The following picture shows the current status of the Gain Cut Feature in the New SSM surface mount Controller. This is for your reference.

NEW SURFACE MOUNT SSM1512 Controllers with REV C software.

INDICATES NEW VESION (OLD VERSION WAS 0)

FUNCTION ENABLE SWITCHES

S1-1 Remote Boost Enable
S1-2 Add 10% Boost
S1-3 Add 20% Boost
S1-4 Auto Boost Enable
S1-5 Power Off Enable
S1-6 Gain Cut
S4-1 Standby Heat Enable (Idle)
S4-2 Smart Start (SS) Override Disable
S4-3 Lights Out Enable
S4-4 Auto Bumpless Enable
S4-5 SHO Long
S4-6 SHO Disable
S4-7 Deg F/C

Figure 4 – Function Enable Switches

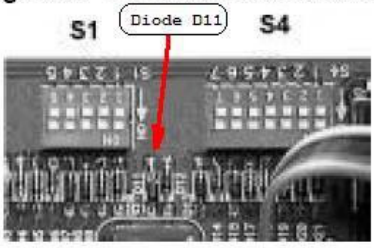
S1-6 Gain Cut

PREVIOUS THRU HOLE MOUNT SSM1502 Controllers without REV C software

FUNCTION ENABLE SWITCHES

S1-1 Remote Boost Enable
S1-2 Add 10% Boost
S1-3 Add 20% Boost
S1-4 Auto Boost Enable
S1-5 Power Off Enable
S4-1 Standby Heat Enable (Idle)
S4-2 Smart Start (SS) Override Disable
S4-3 Lights Out Enable
S4-4 Auto Bumpless Enable
S4-5 SHO Long
S4-6 SHO Disable
S4-7 Deg F/C

Figure 4 – Function Enable Switches



PREVIOUS VERSIONS DO NOT INCLUDE THIS NEW GAIN CUT FEATURE. THE GAIN CUT FEATURE CAN BE DONE FOR A SPECIAL FEE TO CUSTOMER BY REPLACING THE MICROPROCESSOR WITH A CUSTOM REV C THRU HOLE PART AND THEN LIFTING ONE END OF THE D11 DIODE TO INVOKE THE FEATURE AND SOLDERING IT BACK IN TO HAVE NORMAL SSM CONTROL. THIS ITEM IS NOT STOCKED AND MAY TAKE A MONTH OR TWO OR MORE TO PROCESS. DME EE DOES NOT RECOMMEND DOING THIS AND RECOMMENDS BUYING THE NEW SSM SURFACE MOUNT VERSIONS WITH THE FEATURE DESIGNED INTO IT.

Hope this helps clarify this feature. DME Electronics Department.