COS FUV Detector RIU-Direct Thermistor Limits Monitoring Values

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1. OVERVIEW OF TELEMETRY LIMITS MONITORING

As is the case with most subsystems within HST instruments, the COS FUV Detector subsystem will have specific, key telemetry items monitored by various flight and ground systems (e.g., See COS-11-0031, "COS FUV01 Detector Telemetry Values for the CS FSW 'Limits Monitoring' Task"). This document specifies the "Limits Monitoring Values" for the RIU-Direct Thermistors of the COS FUV Detector Subsystem. The specification includes the high and low limit values for these telemetry items, what the persistence value should be for an out of limit event to trigger a response, and what the appropriate response should be for out of limits events.

2. REFERENCES

1. COS SER THM-017, "Pre-Test Thermal Design and Analysis Report"
2. FUV01 T-V Data Notebook; Thermocouple and Thermistor Data Plots from the May, 2001 Thermal-Vac testing of the FUV01 Detector at CASA-ARL.

3. FUV DETECTOR RIU-DIRECT THERMISTOR LIMITS VALUES

The following tables summarize the "Limits Monitoring Values" for the RIU-Direct Thermistors of the COS FUV Detector Subsystem. The first table shows the limits values, in engineering units. The second table shows the raw telemetry values that correspond to these engineering units – in addition to the persistence values required to trip an out of limit event, and the appropriate response to safe the hardware in the event of an out of limit violation. The third table lists the polynomial coefficients for converting values for these RIU-Direct Thermistors from RAW to ENGINEERING Units.

Table 3-1 : RIU-Direct Thermistor Limits – Engineering Values

COS Mnemonic	Description	Low	High	Units
LDEBHTRT	FUV DEB Heater Frame Temperature	-20.0	50.0	ºC
LDEBMNT	FUV DEB Mount Interface Temperature	-20.0	45.0	ºC
LDVABPT	FUV DVA Back Plate Temperature	-20.0	45.0	ºC
LDVAMNT	FUV DVA Mount Interface Temperature	-20.0	45.0	ºC

Table 3-2 : RIU-Direct Thermistor Limits – Raw Values, Persistence, and Response

COS Mnemonic	Low Raw	High Raw	Persistence	Response
LDEBHTRT	222	45	1 min	Reset Detector
LDEBMNT	222	52	1 min	Reset Detector
LDVABPT	222	52	1 min	Reset Detector
LDVAMNT	222	52	1 min	Reset Detector

Table 3-3 : RIU-Direct Thermistor Calibration Coefficients

Polynomial Coefficient	Value
C0	+1.209209E+02
C1	-3.256164E+00
C2	+6.394399E-02
C3	-8.408232E-04
C4	+6.798940E-06
C5	-3.261754E-08
C6	+8.467437E-11
C7	-9.151155E-14