

COS FUV01 Detector Calibration Coefficients

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1. OVERVIEW OF FUV DETECTOR TELEMETRY CALIBRATIONS

Telemetry values for the COS FUV Detector subsystem are converted from digital values to engineering values with the application of a simple polynomial expression. In all cases for COS FUV Detector Telemetry, the conversion is of the form:

$$y = c_0 + c_1x + c_2x^2 + c_3x^3 + c_4x^4 + c_5x^5$$

where x is the telemetry item in digital units, y is the telemetry item in engineering units, and the values c_0 through c_5 are the calibration coefficients.

2. FUV01 TELEMETRY CALIBRATION COEFFICIENTS

The following table summarizes the Calibration Coefficients for the COS FUV01 Detector Subsystem. Note: All undefined coefficients in the table below have a value of zero. These values were intentionally left blank to make the table easier to read.

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COS Mnemonic	FUV Mnemonic	C0	C1	C2	C3	C4	C5	Units	Description
LDCEDECA	LFCDECA		1					cnts/sec	Digitized Event Cntr A
LDCEDECB	LFCDECB		1					cnts/sec	Digitized Event Cntr B
LDCEFECA	LFCFECA		1					cnts/sec	Fast Event Cntr A
LDCEFECEB	LFCFECEB		1					cnts/sec	Fast Event Cntr B
LDCEPKTC	LFCPKT		1						DCE Packet Cntr
LDCESDC1	LFCSDC1		1					cnts/sec	Science Data Port Ctr 1
LDCESDC2	LFCSDC2		1					cnts/sec	Science Data Port Ctr 2
LDCTIME	LFCTIME		1						DCE Timer
LDCECMDR	LFDCMDR		1						DCE Cnds Received Counter
LDCECMDX	LFDCMDX		1						DCE Cnds Executed Counter
LDCELSTC	LFDLSTC		1						DCE Last Cmd Opcode executed
LDCEOPER	LFDOPERT		1						DCE FSW State: 0 = Boot, 1 = Operate
LDCEFSWV	LFDSWVER		1						DCE FSW version
LDCEWDOG	LFDWDOG		1						DCE Watchdog: 0 = Disable, 1 = Enable
LDCDBWAX	LFGBWKAX		1.1111						TDC Begin Walk adjustA
LDCDBWAY	LFGBKAY		1.1111						TDC Begin Walk adjustA
LDCDBWBX	LFGWBK BX		1.1111						TDC Begin Walk adjustB
LDCDBWBY	LFGWBKBY		1.1111						TDC Begin Walk adjustB
LDCDEWAX	LFGWKAX		1.1111						TDC End Walk adjust A
LDCDEWAY	LFGWKAY		1.1111						TDC End Walk adjust A
LDCDEWBX	LFGWK BX		1.1111						TDC End Walk adjust B
LDCDEWBY	LFGWKBY		1.1111						TDC End Walk adjust B
LDCDLOQA	LFGLQTA		0.0450	-0.000408	8.18e-6			pC	TDC Lower Charge Thresh A
LDCDLOQB	LFGLQTB		0.0450	-0.000408	8.18e-6			pC	TDC Lower Charge Thresh B
LDCEDIGA	LFGREFA		0.019531					V	Digitizer V ref A
LDCEDIGB	LFGREFB		0.019531					V	Digitizer V ref B
LDCDSHAX	LFGSHFAX		1.1111						TDC Image shift AX
LDCDSHAY	LFGSHFAY		1.1111						TDC Image shift AY
LDCDSHBX	LFGSHFBX		1.1111						TDC Image shift BX
LDCDSHBY	LFGSHFBY		1.1111						TDC Image shift BY
LDCESTMA	LFGSTIMA		1						STIM Setting SegA: 0 = Off, 1 = Low, 2 = Mid, 3 = Max

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COS Mnemonic	FUV Mnemonic	C0	C1	C2	C3	C4	C5	Units	Description
LDCESTMB	LFGSTIMB		1						STIM Settings SegB: 0 = Off, 1 = Low, 2 = Mid, 3 = Max
LDCDSTAX	LFGSTRAX		1.1111						TDC Image stretch AX
LDCDSTAY	LFGSTRAY		1.1111						TDC Image stretch AY
LDCDSTBX	LFGSTRBX		1.1111						TDC Image stretch BX
LDCDSTBY	LFGSTRBY		1.1111						TDC Image stretch BY
LDCDITAX	LFGTTAX		1.1111						TDC Timing threshold AX
LDCDITAY	LFGTTAY		1.1111						TDC Timing threshold AY
LDCDITBX	LFGTTBX		1.1111						TDC Timing threshold BX
LDCDITBY	LFGTTBY		1.1111						TDC Timing threshold BY
LDCDUPQA	LFGUQTA		0.0450	-0.000408	8.18e-6			pC	TDC Upper Charge threshold A
LDCDUPQB	LFGUQTB		0.0450	-0.000408	8.18e-6			pC	TDC Upper Charge threshold B
LDCFHVAN	LFHFAN		1						FHV status analog
LDCIMONA	LFHIMONA		1.1719					μA	HV Current A
LDCIMONB	LFHIMONB		1.1719					μA	HV Current B
LDCEQANA	LFHQANA		1						QHVA status analog
LDCEQANB	LFHQANB		1						QHVB status analog
LDCERMPT	LFHRAMPT		0.1					sec	HV Ramp-Time
LDCERMPA	LFHRMPA		1						HV Ramp Status SegA: 0 = Not in Progress, 1 = In Progress
LDCERMPB	LFHRMPB		1						HV Ramp Status SegB: 0 = Not in Progress, 1 = In Progress
LDCSTATE	LFHSTATE		1						HV State: 0 = Off, 1 = NOMA, 2 = NOMB, 3 = NOMAB, 4 = Low, 5 = Invalid, 6 = Set, 7 = On
LDCEHVEN	LFHVENA		1						HV Enable Status: 0 = Disable, 1 = Enable
LDCEILIM	LFHVILIM		1.1719					μA	HV Current Limit Setting
LDCHVLOA	LFHVLOA	2500	15.69					V	HV level for HVLOW, Segment A
LDCHVLOB	LFHVLOB	2500	15.69					V	HV level for HVLOW, Segment B
LDCHVMXA	LFHVMAXA	2500	15.69					V	HV Command level maximum A
LDCHVMXB	LFHVMAXB	2500	15.69					V	HV Command level maximum B
LDCHVMNA	LFHVMONA		25.68					V	HV Output V A
LDCHVMNB	LFHVMONB		25.68					V	HV Output V B
LDCHVNMA	LFHVNOMA	2500	15.69					V	HV Nominal setting A
LDCHVNMB	LFHVNOMB	2500	15.69					V	HV Nominal setting B
LDCHVPWR	LFHVPWR		1						HV Power Status: 0 = Off, 1 = On

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LDCEQPWR	LFHVQPWR		1						HV Grid Status: 0 = Off, 1 = On
LDCHVSTA	LFHVSETA	2500	15.69					V	HV Command Level A
LDCHVSTB	LFHVSETB	2500	15.69					V	HV Command Level B
LDCHVTGA	LFHVTGTA	2500	15.69					V	HV Target Level A
LDCHVTGB	LFHVTGTB	2500	15.69					V	HV Target Level B
LDCECRC	LFMCRC		1						Commanded CRC Calculated Result
LDCRPCA	LFPNTA		1					cnts/sec	CRP cnt thresh A
LDCRPCB	LFPNTB		1					cnts/sec	CRP cnt thresh B
LDCRPIA	LFPINTA		1					sec	CRP int time A
LDCRPIB	LFPINTB		1					sec	CRP int time B
LDCEAUXI	LFRAXI	2	3.589	-0.04595	0.0004313	-0.000001744	2.638E-09	mA	Auxiliary power supply current
LDCDRILM	LFRLIM	2	3.589	-0.04595	0.0004313	-0.000001744	2.638E-09	mA	Aux Current Limit Setting
LDCEACTT	LFTACT	129.42	-1.4306	0.0080158	-0.000019639			°C	Actuator temp
LDCAMPAT	LFTAMPA	129.42	-1.4306	0.0080158	-0.000019639			°C	Amp A temp
LDCAMPBT	LFTAMPB	129.42	-1.4306	0.0080158	-0.000019639			°C	Amp B temp
LDCETEMP	LFTDCE	129.42	-1.4306	0.0080158	-0.000019639			°C	DCE temp
LDCDVAAT	LFTDVAA	129.42	-1.4306	0.0080158	-0.000019639			°C	Det Vacuum Assy A Temp
LDCDVABT	LFTDVAB	129.42	-1.4306	0.0080158	-0.000019639			°C	Det Vacuum Assy B Temp
LDCHVFMT	LFTHVFM	129.42	-1.4306	0.0080158	-0.000019639			°C	HVFM temp
LDCHVPST	LFTHVPS	129.42	-1.4306	0.0080158	-0.000019639			°C	HVPS temp
LDCIPT	LFTIP	129.42	-1.4306	0.0080158	-0.000019639			°C	Ion Pump temp
LDCLVPCT	LFTLVPC	129.42	-1.4306	0.0080158	-0.000019639			°C	LVPC temp
LDCTDCAT	LFTTDCA	129.42	-1.4306	0.0080158	-0.000019639			°C	TDC A temp
LDCTDCBT	LFTTDCB	129.42	-1.4306	0.0080158	-0.000019639			°C	TDC B temp
LDCM15D	LFVM15D		-0.073529					V	DCE -15V
LDCM15TA	LFVM15TA	-44.966	0.21552					V	TDC A -15V
LDCM15TB	LFVM15TB	-44.966	0.21552					V	TDC B -15V
LDCM5TA	LFVM5TA	-18.089	0.098425					V	TDC A -5V
LDCM5TB	LFVM5TB	-18.089	0.098425					V	TDC B -5V
LDCP15D	LFVP15D		0.073529					V	DCE +15V
LDCP15TA	LFVP15TA		0.0984					V	TDC A +15V
LDCP15TB	LFVP15TB		0.0984					V	TDC B +15V

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LDCP5DA	LFVP5DA		0.02449					V	DCE-A +5V
LDCP5DB	LFVP5DB		0.02449					V	DCE-B +5V
LDCP5DC	LFVP5DC		0.02449					V	DCE-C +5V
LDCP5TA	LFVP5TA		0.02449					V	TDC A +5V
LDCP5TB	LFVP5TB		0.02449					V	TDC B +5V
LDCLVPCP	LFVPMON		0.3335					W	LVPC Power

* COS Mnemonics in **RED** have been added to the required FUV telemetry list, but are not currently implemented as mnemonics in the COS Project Database.