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CCD PERFORMANCE

System Overview

Description	Model						Serial Number
CCD Head ◸	D	U	9	34P	-	BEX2-DD	CCD-25079

TE Cooler performance (✔)	High		Ultra-high	✔

Accessories	Power Supply Unit (PS -24)	PS -25
	--	✔
	SO-	LM-	MFL-
Serial/Batch Number		
Other		

◸ Sensor types are defined in Table 1 using the last two letters in box Model Number.

CCD Details

Manufacturer / Model No.		Pixels	Serial Number
E2V	CCD47-10	1024x1024, 13μm x 13μm	12371-05-10
E2V	CCD57-10	512x512, (FT), 13μm x 13μm	
E2V	CCD77-00	512x512, 24μm x 24μm	

Special Feature	(✔)		(✔)
NIMO	✔	Custom Mounting Flange	
Fringe Suppression		Custom Cables	
Shielded Anti-Blooming			

Window Variant	(✔)		(✔)
VUV-UV Parallel		NUV-Enhanced Parallel	
Broadband VUV-NIR Wedged	✔	Broadband VUV-NIR Parallel	
Broadband VIS-NIR Wedged		Broadband VIS-NIR Parallel	
VIS-NIR Enhanced Wedged		Bose-Einstein 780nm Wedged	
None		Other	

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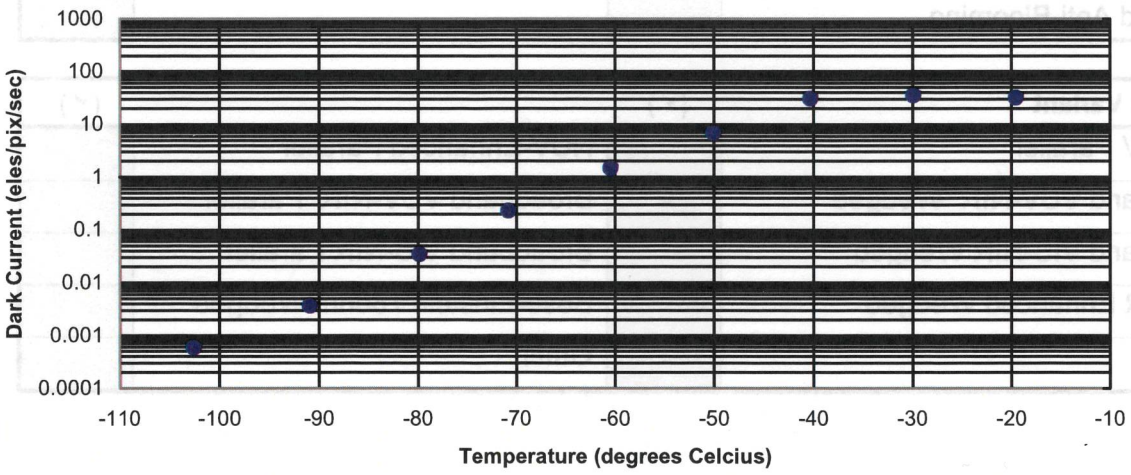
Summary of System Test Data

Readout Noise ♦1 *and* Base Mean Level

A/D Rate (MHz All 16 bit)	Preamp setting	CCD Sensitivity ♦3 eles per A/D count	Single Pixel Noise electrons	Full Vert Bin Noise electrons	Base Level ♦2 (Counts)
5	x1	6.7	34.3	32.5	960
5	x2	2.5	15.1	14.2	1475
5	x4	1.5	13.5	12.4	2679
3	x1	5.6	18.3	17.6	1070
3	x2	3.0	12.3	11.9	2000
3	x4	1.3	9.1	8.8	3276
1	x1	5.2	10.6	10.5	869
1	x2	2.6	7.4	7.3	1747
1	x4	1.3	6.3	6.2	3599
0.05	x1	5.3	5.0	5.0	560
0.05	x2	2.6	3.7	3.7	1433
0.05	x4	1.2	3.2	3.3	3306
Saturation Signal per pixel			127729	Electrons/pixel	

CCD Dark Current



Minimum Dark Current Achievable ♦4	0.000583	electrons/pixel/sec		
@ Sensor Temperature of ♦5	-102.60	°C	16	°C cooling Water
		With PS-25		
CCD Dark Current Uniformity better than ♦6	5.2360	electrons/pixel/sec		

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Test Conditions

Readout Noise tested at	-80	°C with	16	°C water
Base Mean Level measured at	-80	°C with	16	°C water
Dark Current Uniformity tested at	-65	°C with	16	°C water
Blemishes tested at	-65	°C with	16	°C water

Custom Testing

System Passed for Shipping

Signed	**Date**
D.MCINTYRE	**MAY 2020**

	HEADBOARD	FPGA
Hardware Version #	AH	20.24

	SOLIS	SDK
Shipping Software Version #	--	--

	SOLIS	SDK
Testing Software Version #	4.32.30000.0	2.104.33000.0

∇ Table 1; Key code to define the meanings of the last two letters in the Model Number

Sensor Options			
OE	Open electrode	BU2	Back Illuminated (BI) + 250nm UV optimised
FI	Front illuminated (FI)	BU	BI + UV (350nm) optimised
UV	FI+UV coating	BV	BI + VIS (550nm) optimised)
FO	FI + Fibre optic	BR-DD	BI + NIR +deepdepletion
FI-DD	FI + deep depletion	BN	BI with no AR coating

CCD PERFORMANCE

Linearity and Uniformity

Linearity better than ♦7	1	% over 16 bits
Response Uniformity better than ♦8	1.82	%

Response Defects

White/Black Spots ♦9						(X,Y)
Centroid			**Number of Pixels**	**Centroid**		**Number of Pixels**
(X	,	X)	X	(	,	)
(	,	)		(	,	)
(	,	)		(	,	)
(	,	)		(	,	)
(	,	)		(	,	)
(	,	)		(	,	)
White/Black Columns ♦10	Column numbers indicated			X		X
				X		X
Trap ♦11			(X,Y)	(X	,	X)

Dark Current Defects

Hot Spots ♦12						(X,Y)
Centroid			**Number of Pixels**	**Centroid**		**Number of Pixels**
(X	,	X)	X	(	,	)
(X	,	X)	X	(	,	)
(	,	)		(	,	)
(	,	)		(	,	)
(	,	)		(	,	)
(	,	)		(	,	)
Hot Columns ♦13	Column numbers indicated			X		X