

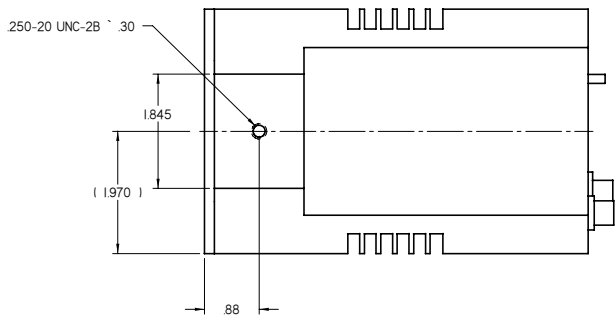
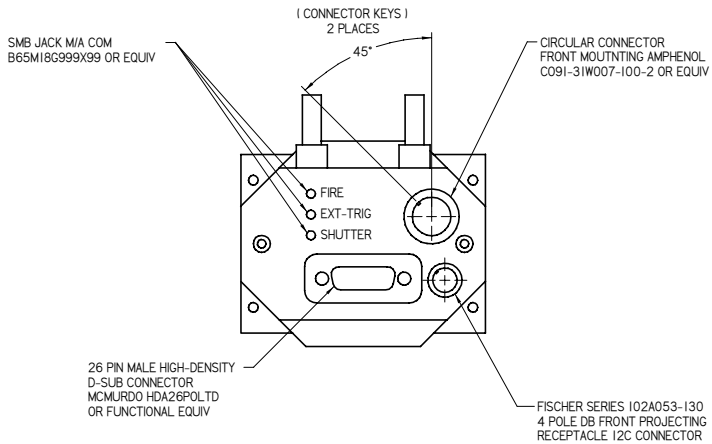
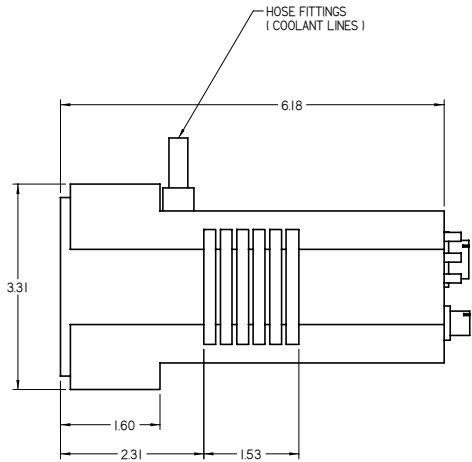
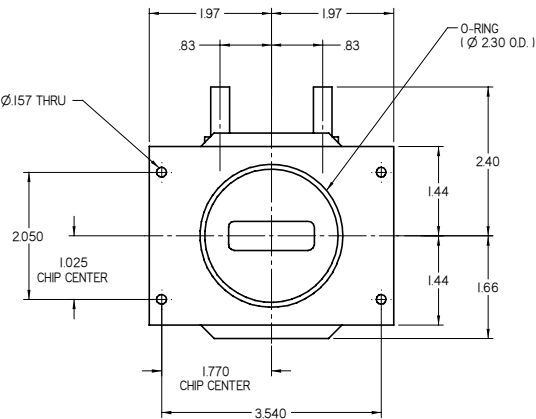
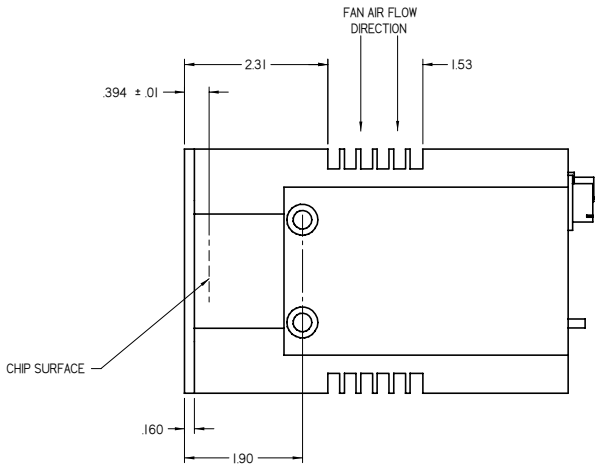
NOTES:

I SPECIFICATIONS FOR EACH MODEL ARE LISTED IN THE TABULATION BELOW :

Specification for Model					
Parameter (See Foot Note)	DV401-FI, DV420-FI, DV420-OE	DU401-FI, DU420-FI, DU420-OE	DU440-FI, DU44-BV	DU420-DD	DU420-DD-BI
Vacuum (delta T from 25°C) ¹	-85°C		-95°C		
Gain @ 30K ²		4 ecount ± 1 e			
Gain @ 60K ²		8 ecount ± 1 e			
Read noise @ 30K ³		6 e	5 e		
Read noise @ 60K ³		10 e	9 e		
Dark charge rate ⁴	≤ 1 elp/sec max @ -55°C	5 elp/sec max @ -55°C	20 elp/sec max @ -55°C	TBD elp/sec max @ -55°C	TBD elp/sec max @ -55°C
QE @ 559 nm ⁵	18% min @-55°C	20% @-70°C	88% @-70°C	TBD @-70°C	TBD @-70°C
QE @ 635 nm ⁵	40% min @-55°C	39% @-70°C	88% @-70°C	TBD @-70°C	TBD @-70°C
QE @ 950 nm ⁵	12% min @-55°C	10% @-70°C	20% @-70°C	TBD @-70°C	TBD @-70°C
Response Linearity ⁶		1% maximum deviation from straight line fit			
Response Uniformity ⁷		5% RMS deviation			
Chip centerline ⁸		Centerline of chip coincident with center of mount to ± .01"			
Chip Angle		0° ± 1° relative to centerline of window			
Clear Aperture		Able to clear #1.4 cone from edge of detection aperture			
Chip depth		± .01 from central relative to mount face			
Blemish - Dark current ⁹		Maximum 1 column			
Blemish - Response ¹⁰		Maximum 2 columns with between 10% and maximum 20% contrast			
Blemish - Charge traps ¹¹		Maximum 1 trap	Maximum 2 traps	TBD	
Ambient temp.		Operational from 10°C to 45°C			
Foot Note:					
General - specifications apply with head cable, rackable and 15 meter computer cable installed with PSU					
1 - Air exchanged. No visible icing or condensation, uniform spec applies, head is set to -100 and maximum delta is recorded.					
2 - Central region of the CCD illuminated approximately uniformly. Bin ten-row region at the center of the CCD. Take two exposures, subtract constant bias from both exposures. Scale exposures to have the same average intensity. Compute variance of the					
3 - Bin the entire CCD vertically. Take two very short exposure with the CCD dark. Subtract the two spectra. Compute the RMS noise of the difference, divide by square root of 2					
4 - Bin the entire CCD vertically. Integrate for sixty seconds. Apply cosmic ray filtering. Subtract bias. Convert to e-pixels					
5 - Use Kaiser Optical Sys CCD INTENSITY CHECK ASSY TOOL 2004753-101 Aml. PROCEDURE CAMERA CHECK 2005661					
6 - Measured from a plot of counts vs signal over the 16 bit dynamic range. Expressed as % deviation from straight line fit					
7 - RMS deviation from the average response of the CCD in fully biased operation (illuminated with uniform white light)					
8 - Use Kaiser Optical Sys CCD INTENSITY CHECK ASSY TOOL 2004753-101 Aml. PROCEDURE CAMERA CHECK 2005661					
9 - A column is considered to be defective if >10 pixels are affected, or if the column exhibits >2 times the maximum specified dark current					
10 - Columns whose signals have > 20% contrast in biased operation with uniform illuminations across the sensor. Columns with > 20% are not permitted					
11 - Pixels that absorb charge as it is clocked through the defective area.					

2 ALL UNIT ASSEMBLIES TO BE SUPPLIED AND TESTED WITH CABLES AS FOLLOWS :

COMPUTER CABLE - PART NO. 6000130 (I REQD)
HEAD CABLE - PART NO. 2005619-101 (IREQD)
RACK CABLE - PART NO. 2005620-101 (AS REQD)



VENDOR ITEM CONTROL DRAWING

SUGGESTED SOURCE OF SUPPLY			
PART NUMBER	VENDOR ADDRESS	VENDOR PART NUMBER	MODEL IDENTIFICATION
2005464-101	ANDOR TECHNOLOGY Ltd. 9 MILLENNIUM WAY SPRINGVALE BELFAST BT12 7AL NORTHERN IRELAND	DV401-FI	(1024 X 128) (FRONT ILL) (-55C)
2005464-102		DU401-FI	(1024 X 128) (FRONT ILL) (-65C)
2005464-103		DU420-DD	(1024 X 256) (FRONT ILL DEEP) (DEPLETION-65C)
2005464-104		DV420-OE	(1024 X 256) (OPEN ELECTRODE) (-55C)
2005464-105		DU420-OE	(1024 X 256) (OPEN ELECTRODE) (-65C)
2005464-106		DV420-FI	(1024 X 256) (TE COOLED) (-55C)
2005464-107		DU420-FI	(1024 X 256) (TE COOLED) (-65C)
2005464-108		DU420-DD-BI	(1024 X 256) (BACK ILL DEEP) (DEPLETION-65C)
2005464-109		DU440-FI	(2048 X 512) (TE COOLED) (-65C)
2005464-110		DU440-BV	(2048 X 512) (BACK ILL) (-65C)
6000130		TP02-1IC	2

ZONE		REV		REVISIONS		DATE		APPROVED	
X				EXPERIMENTAL RELEASE	ER 1048-152	11-29-99		RSW	
X1				REVISED DRAWING	ER 1048-153	12-17-99		RSW	
X2				REVISED DRAWING	ER 1048-156	2-18-00		RSW	

PROPRIETARY NOTICE		PARTS LIST		KAISER OPTICAL SYSTEMS, INC.		ANDOR CAMERA		TITLE	
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION MAY NOT BE DISCLOSED TO OTHERS FOR ANY PURPOSE OR USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM KAISER OPTICAL SYSTEMS, INC.		UNLESS OTHERWISE SPECIFIED INTERPRET THIS DRAWING PER: DDD-STD-100		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		CONTRACT NO.		DWG NO.	
PARTS TO BE FREE OF BURRS AND SHARP EDGES		TOLERANCES: XX ± .02 XXX ± .005 ANGLES ± 2°		SURFACE TEXTURE 125		DWG 11-5-99 GA		2005464	
SOLDER PER MIL-STD-454A REVISION 1		COMMERCIAL TOLERANCES APPLY TO STOCK SIZES		MATERIAL:		DWG 11-5-99 MFG		REV	
NON-MATERIALS PER MIL-STD-454A REVISION 1		IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE		FINISH:		DWG 11-5-99 RELBL		X2	
DIMENSIONAL LIMITS APPLY AFTER FINISH PROCESSING		APPLICATION		APVD CUSTOMER		DWG 11-5-99 PROJ MGR		SHEET	
DASH 100		NEXT ASSY		USED ON		APVD CUSTOMER		OF	