Manual de la cámara infrarroja doble (CID) proporcionado por IRLabs.
(Segunda parte)

Recopilado por Loiret Alejandría Dosal Trujillo.

Julio 3 de 2003.

Internal Wiring

Circuit board # IRL F16-A

JI - Clock connector

LCC		Fanout Board		CONNECTING CABLE		
LCC - Name / Function	SBRC pad #	FPA SOCKET #	MDM -21- Pins	MDM -21- Sockets	WIRE TYPE	26 pin case connector
P1 Fast		14	11	11	S1-coax - center	X
GND		3,42,47	21	21	S1-coax - shield	W
P2 Fast		13	10	10	S1-coax - center	V
GND		3,42,47	20	20	S1-coax - shield	U
Psync Fast		12	9	9	S1-coax - center	T
GND		3,42,47	19	19	S1-coax - shield	S
PRST		11	8	8	S1-coax - center	R
GND		3,42,47	18	18	S1-coax - shield	P
Psync Slow		10	7	7	S1-coax - center	N
GND		3,42,47	17	17	S1-coax - shield	M
P2 Slow		9	6	6	S1-coax - center	L
GND		3,42,47	16	16	S1-coax - shield	K
P1 Slow		8	5	5	S1-coax - cc	J
GND		3,42,47	15	15	S1-coax - sh	H
GND (not common to case)		3,42,47	4	4	0.005 Copper	G
V3		7	14	14	0.005 Constantan	F
Vgg		46	3	3	0.005 Constantan	E
Vdd uc		45	13	13	0.005 Constantan	D
Vdet R		43	2	2	0.005 Constantan	C
Vdet Gate R		44	12	12	0.005 Constantan	B
Vdd out		37	1	1	0.005 Constantan	A

Circuit board # IRL F16-A

J2 - OUTPUT

LCC		Fanout Board			CONNECTING CABLE	
LCC - Name / Function	SBRC pad #	FPA SOCKET #	MDM -21- Sockets	MDM -21- Pins	WIRE TYPE	18 pin case connector
V out 4		38	11	11	S1-coax - center	P
GND		3,42,47	21	21	S1-coax - shield	N
V out 3		39	10	10	S1-coax - center	M
GND		3,42,47	20	20	S1-coax - shield	L
V out 2		40	9	9	S1-coax - center	K
GND		3,42,47	19	19	S1-coax - shield	J
V out 1		41	8	8	S1-coax - center	H
GND		3,42,47	18	18	S1-coax - shield	G
		JP 1 thru JP 4	3	3	0.005 Copper	F
GND (not common to case)		3,42,47	14	14	0.005 Copper	E
Temp diode +		22	2	2	0.005 Constantan	D
Temp diode +		22	2	2	0.005 Constantan	C
GND		3,42,47	13	13		N/C
Temp diode -		24	1	1	0.005 Constantan	B
Temp diode -		24	1	1	0.005 Constantan	A
GND		3,42,47	12	12		N/C

If extra MDM connectors are used this section also applies , IF NO OTHERS ARE USED DISREGARD THIS SECTION

	Fanout MDM	connections for EXTRA MDM connector(s) if used			
Temp diode +	2	2	2	0.005 Constantan	D
Temp diode +	2	13	13	0.005 Constantan	C
Temp diode -	1	1	1	0.005 Constantan	B
Temp diode -	1	12	12	0.005 Constantan	A

J1 - Clock connector	Fanout Board		CONNECTING CABLE		
LCC - Name / Function SBRC pad #	FPA SOCKET #	MDM -21- Pins	MDM -21- Sockets	WIRE TYPE	26 pin case connector
P1 Fast	14	11	11	S1-coax - center	X
GND	3,42,47	21	21	S1-coax - shield	W
P2 Fast	13			S1-coax - center	
GND	3,42,47			S1-coax - shield	
Psync Fast	12			S1-coax - center	
GND	3,42,47			S1-coax - shield	
PRST	11			S1-coax - center	
GND	3,42,47			S1-coax - shield	
Psync Slow	10			S1-coax - center	
GND	3,42,47			S1-coax - shield	
P2 Slow	9			S1-coax - center	
GND	3,42,47			S1-coax - shield	
P1 Slow	8			S1-coax - center	
GND	3,42,47			S1-coax - shield	
GND (not common to case)	3,42,47			0.005 Cu	
V3	7			0.005 Co	
Vgg	46			0.005 Co	
Vdd uc	45			0.005 Co	
Vdet R	43			0.005 Co	
Vdet Gate R	44			0.005 Co	
Vdd out	37			0.005 Co	

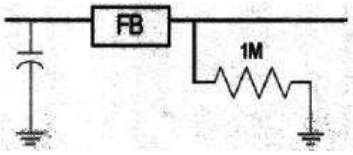
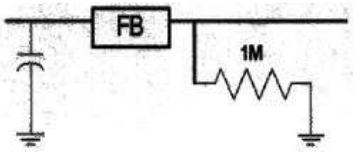
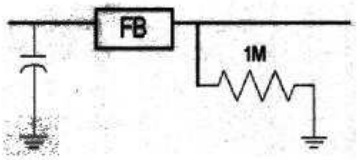
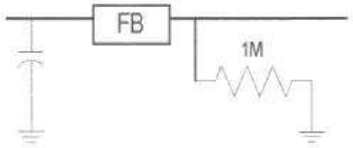
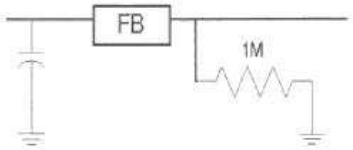
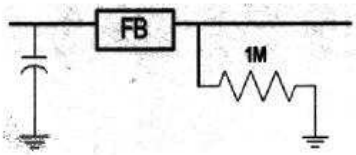
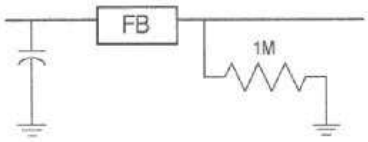
J2 - OUTPUT	Fanout Board		CONNECTING CABLE		
LCC - Name / Function SBRC pad #	FPA SOCKET #	MDM -21- Sockets	MDM -21- Pins	WIRE TYPE	18 pin case connector
V out 4	38	11	11	S1-coax - center	P
GND	3,42,47	21	21	S1-coax - shield	N
V out 3	39			S1-coax - center	
GND	3,42,47			S1-coax - shield	
V out 2	40			S1-coax - center	
GND	3,42,47			S1-coax - shield	
V out 1	41			S1-coax - center	
GND	3,42,47			S1-coax - shield	
	JP 1 thru JP 4			0.005 Co	F
GND	3,42,47			0.005 Co	E
Temp diode +	22			0.005 Co	D
Temp diode +	22			0.005 Co	C
GND	3,42,47				N/C
Temp diode -	24			0.005 Co	B
Temp diode -	24			0.005 Co	A
GND	3,42,47				N/C

J1 - Clock connector		Fanout Board		Internal connecting cable		
LCC - Name / Function		FPA SOCKET #	MDM -21- Pins	MDM -21- Sockets	WIRE TYPE	26 pin case connector
P1 Fast	01F	14	11	11	S1-coax - center	X
GND		3,42,47	21	N/C	S1-coax - shield	W
P2 Fast	02F	13		10	S1-coax - center	V
GND		3,42,47		N/C	S1-coax - shield	U
Psync Fast	0 SYNC F	12		9	S1-coax - center	T
GND		3,42,47		N/C	S1-coax - shield	S
PRST	0 RST	11		8	S1-coax - center	R
GND		3,42,47		N/C	S1-coax - shield	P
Psync Slow	0 SYNC S	10		7	S1-coax - center	N
GND		3,42,47		N/C	S1-coax - shield	M
P2 Slow	02 S	9		6	S1-coax - center	L
GND		3,42,47		N/C	S1-coax - shield	K
P1 Slow	01 S	8	5	5	S1-coax - center	J
GND		3,42,47	15	N/C	S1-coax - shield	H
GND		3,42,47	4	N/C		
V3		7	14	14	0.005 Co	F
Vgg		46	3	3	0.005 Co	E
Vdd uc		45	13	13	0.005 Co	D
Vdet L , Vdet R		5 & 43	2	2	0.005 Co	C
Vdet Gate L , R		4 , 44	12	12	0.005 Co	B
Vdd out		37	1	1	0.005 Co	A

J2 - OUTPUT	Fanout Board		Internal connecting cable		
LCC - Name / Function	FPA SOCKET #	MDM -21- Sockets	MDM -21- Pins	WIRE TYPE	18 pin case connector
V out 4	38	11	11	S1-coax - center	P
GND	3,42,47	21	N/C	S1-coax - shield	N
V out 3	39		10	S1-coax - center	M
GND	3,42,47		N/C	S1-coax - shield	L
V out 2	40		9	S1-coax - center	K
GND	3,42,47		N/C	S1-coax - shield	J
V out 1	41		8	S1-coax - center	H
GND	3,42,47		N/C	S1-coax - shield	G
	JP 1 thru JP 4	3	N/C	0.005 Co	F
GND	3,42,47	14	14	0.005 Cu	E
Temp diode +	22	2	2	0.005 Co	D
Temp diode +	22	2	2	0.005 Co	C
GND	3,42,47	13	N/C		
Temp diode -	24	1	1	0.005 Co	B
Temp diode -	24	1	1	0.005 Co	A
GND	3,42,47	12	12		

J1 - Clock connector		Fanout Board		Internal connecting cable		
LCC - Name / Function		FPA SOCKET #	MDM -21- Pins	MDM -21- Sockets	WIRE TYPE	26 pin case connector
P1 Fast	01F	14	11	11	S1-coax - center	X
GND		3,42,47	21	N/C	S1-coax - shield	W
P2 Fast	02F	13		10	S1-coax - center	V
GND		3,42,47		N/C	S1-coax - shield	U
Psync Fast	0 SYNC F	12		9	S1-coax - center	T
GND		3,42,47		N/C	S1-coax - shield	S
PRST	0 RST	11		8	S1-coax - center	R
GND		3,42,47		N/C	S1-coax - shield	P
Psync Slow	0 SYNC S	10		7	S1-coax - center	N
GND		3,42,47		N/C	S1-coax - shield	M
P2 Slow	02 S	9		6	S1-coax - center	L
GND		3,42,47		N/C	S1-coax - shield	K
P1 Slow	01 S	8	5	5	S1-coax - center	J
GND		3,42,47	15	N/C	S1-coax - shield	H
GND		3,42,47	4	N/C		
V3		7	14	14	0.005 Co	F
Vgg		46	3	3	0.005 Co	E
Vdd uc		45	13	13	0.005 Co	D
Vdet L , Vdet R		5 & 43	2	2	0.005 Co	C
Vdet Gate L , R		4 , 44	12	12	0.005 Co	B
Vdd out		37	1	1	0.005 Co	A

J2 - OUTPUT		Fanout Board		Internal connecting cable		
LCC - Name / Function		FPA SOCKET #	MDM -21- Sockets	MDM -21- Pins	WIRE TYPE	18 pin case connector
V out 4		38	11	11	S1-coax - center	P
GND		3,42,47	21	N/C	S1-coax - shield	N
V out 3		39		10	S1-coax - center	M
GND		3,42,47		N/C	S1-coax - shield	L
V out 2		40		9	S1-coax - center	K
GND		3,42,47		N/C	S1-coax - shield	J
V out 1		41		8	S1-coax - center	H
GND		3,42,47		N/C	S1-coax - shield	G
		JP 1 thru JP 4	3	N/C	0.005 Co	F
GND		3,42,47	14	14	0.005 Cu	E
Temp diode +		22	2	2	0.005 Co	D
Temp diode +		22	2	2	0.005 Co	C
GND		3,42,47	13	N/C		
Temp diode -		24	1	1	0.005 Co	B
Temp diode -		24	1	1	0.005 Co	A
GND		3,42,47	12	12		

In:Sb 256 x 256 Array Function:	FPA pin #	Circuit board schematic info.	MDM #
Clocks and Bias section CONTINUED			
0 SYNC F	12		9
			19
	13		10
			20
	14		11
			21
V DET GATE L,R	4, 44		12
			n/c
VDD, UC	45		13
			n/c
V3	7		14
			n/c
	3, 42, 47		4
	41		

IRL F16 - A

external connecting cable

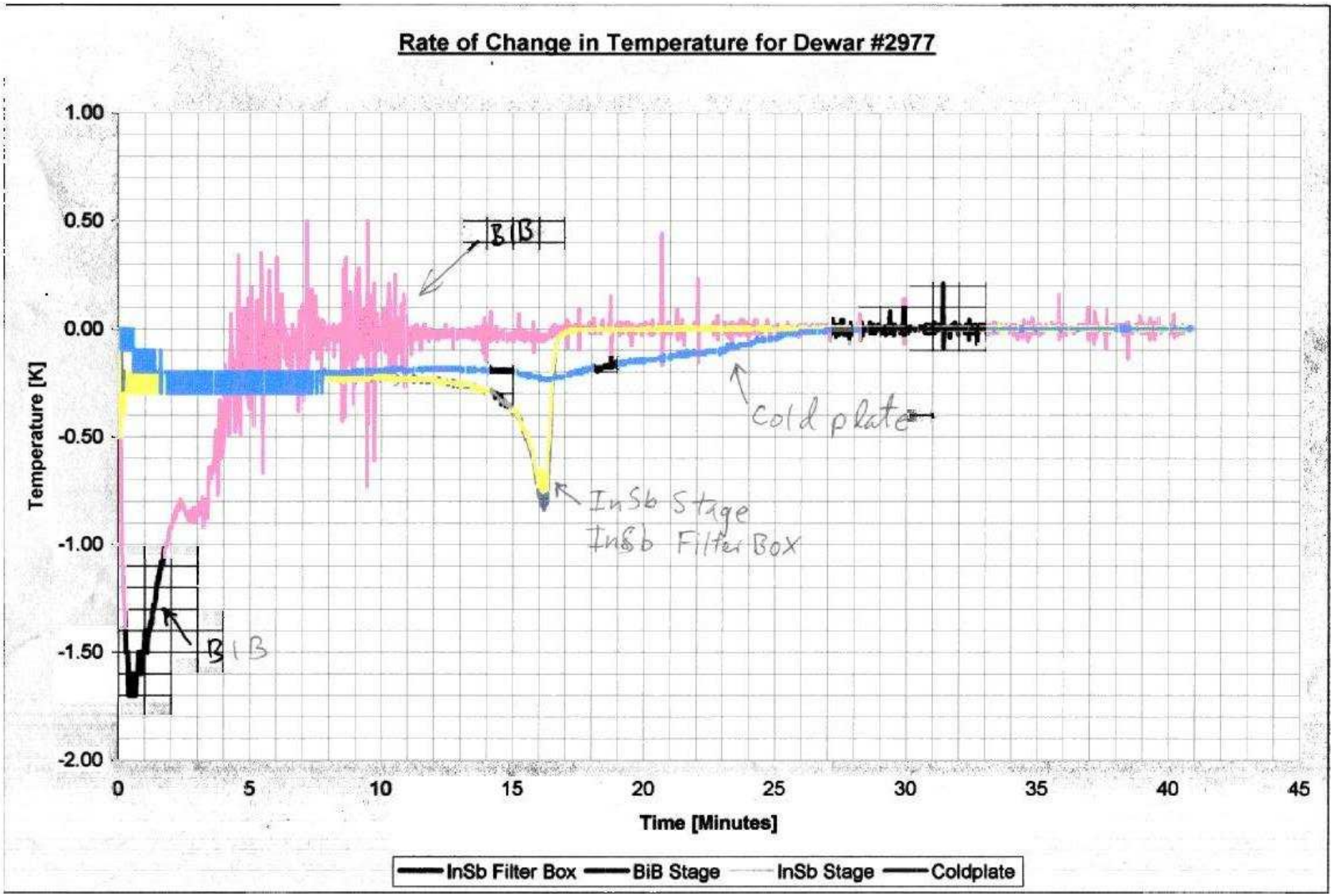
26 pin case connector	WIRE TYPE	Camera Electronics DB-25	Wire continuety from this side to FPA socket pin
	RG-174		8.4 ohms
V	RG-174 -coax - center	10	8.3
U	RG-174 -coax - shield	15	
	RG-174 -coax - center		8.3
	RG-174 -coax - shield		
	RG-174 -coax - center		8.3
	RG-174 -coax - shield		
	RG-174 -coax - center		8.3
	RG-174 -coax - shield		
	RG-174 -coax - center		8.5
	RG-174 -coax - shield		
	RG-174 -coax - center		8.4
	RG-174 -coax - shield		
			0.4
F	22 AWG wire	14	
E	22 AWG wire	3	
D	22 AWG wire	13	
C	22 AWG wire	2	
B	22 AWG wire	12	
A	22 AWG wire	1	

IREM1-A Preamp circuit board

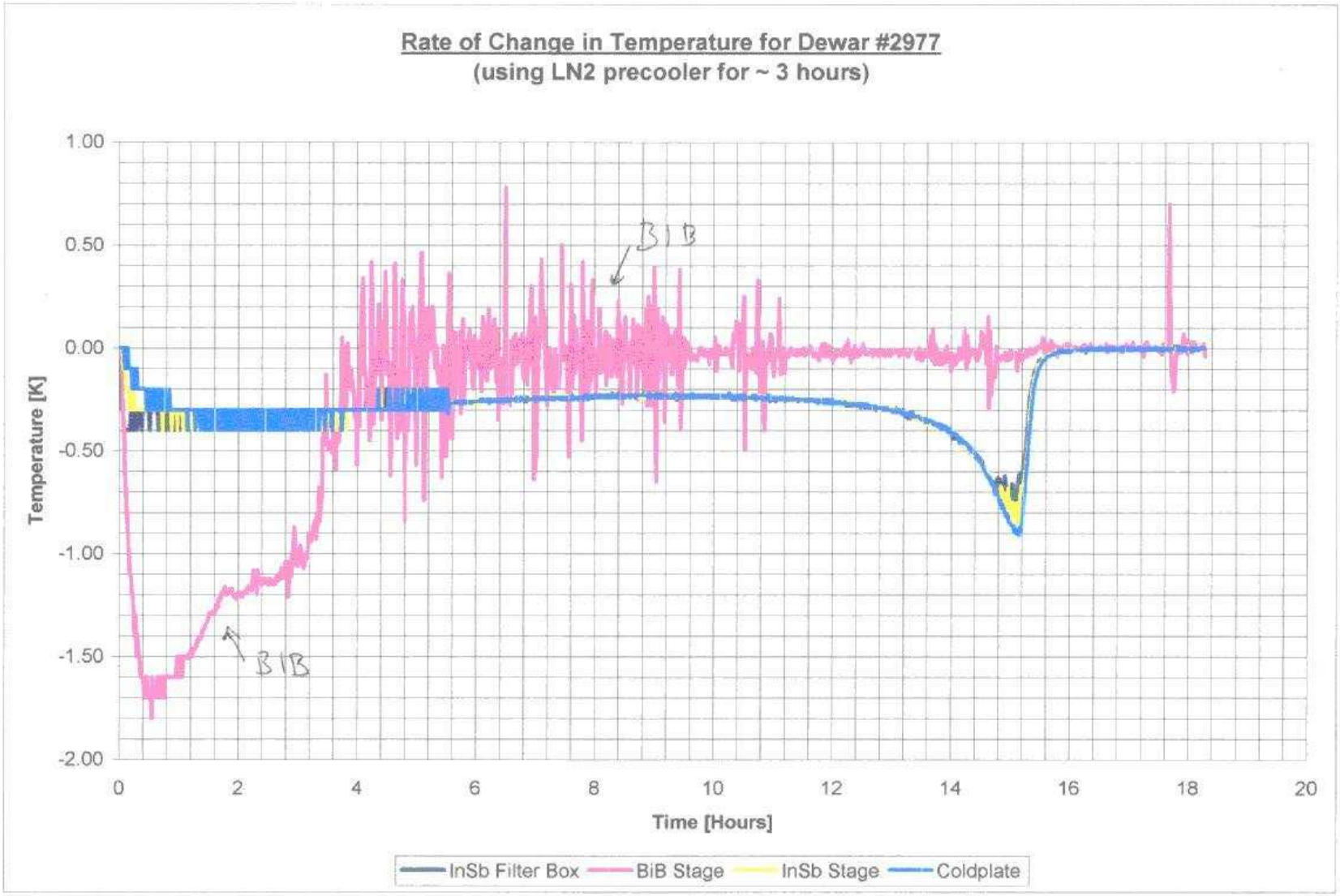
18 pin case connector		26 pin	
P	22 AWG wire	C	pin 3 on OP AMP # 4
N	22 AWG wire		
M	22 AWG wire	D	pin 3 on OP AMP # 3
L	22 AWG wire		
	22 AWG wire	E	pin 3 on OP AMP # 2
	22 AWG wire		
	22 AWG wire	F	pin 3 on OP AMP # 1
	22 AWG wire		
E	22 AWG wire	B	preamp ground
N/C			
N/C			
N/C			
N/C			

Dewar case (mechanical connection)

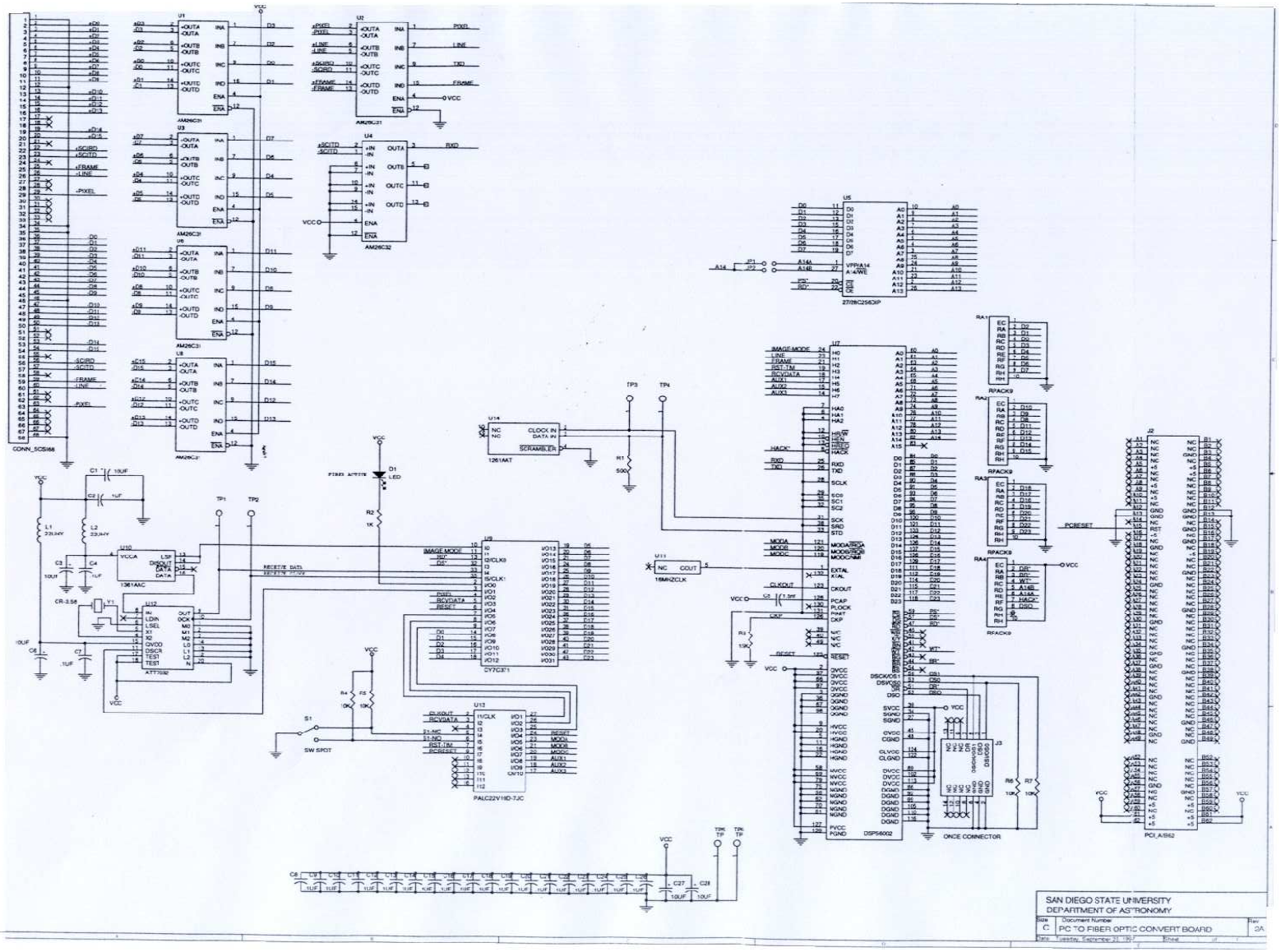

Cooldown of Dewar #2977
(No LN2 Precooling)
Temperature [K]
300
250
200
150
100
50
0
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
Time [Minutes]
BiB stage
InSb Filter Box
InSb stage
Cold plate
InSb Filter Box
BiB Stage
InSb Stage
Coldplate

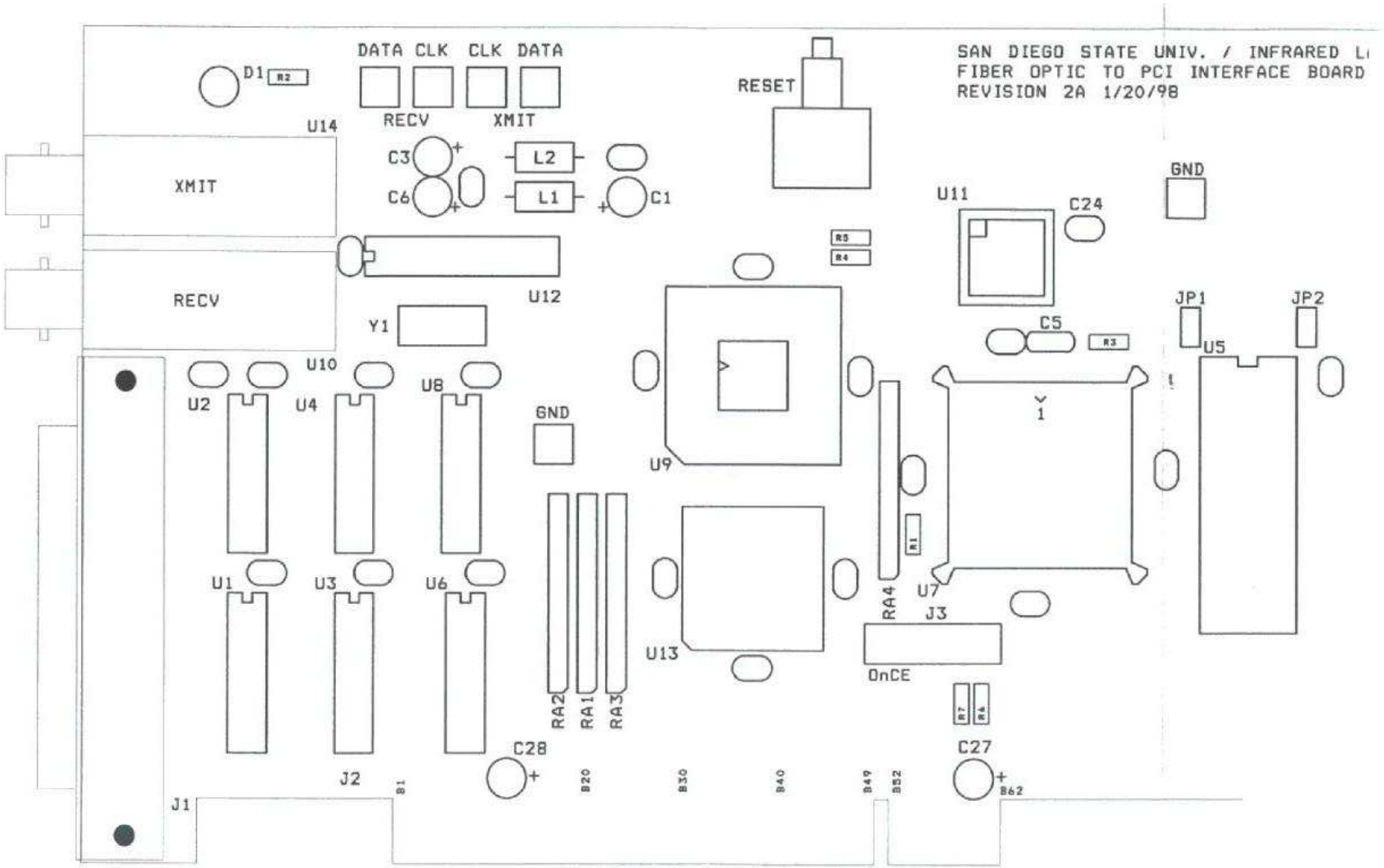

Rate of Change in Temperature for Dewar #2977
1.00
0.50
0.00
-0.50
-1.00
-1.50
-2.00
Temperature [K]
0
5
10
15
20
25
30
35
40
45
Time [Minutes]
BiB
BiB
Cold plate
InSb Stage
InSb Filter Box
InSb Filter Box
BiB Stage
InSb Stage
Coldplate

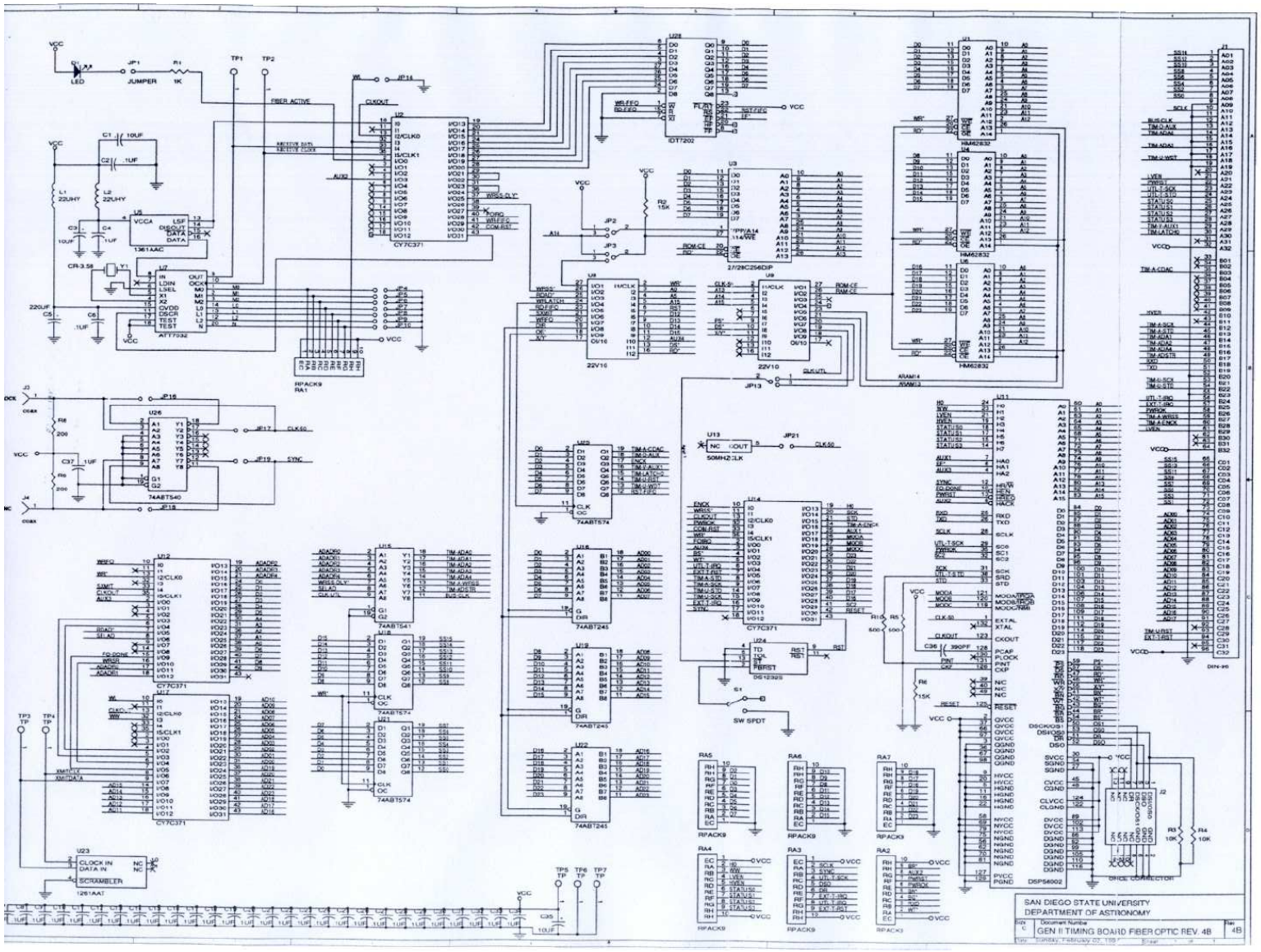

Cooldown of Dewar #2977
(Using LN2 Precooler for ~3 Hours)
Temperature [K]
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
0
2
4
6
8
10
12
14
16
18
20
Time [Hours]
InSb Filter Box
InSb stage
Cold Plate
BiB stage
InSb Filter Box
BiB Stage
InSb Stage
Coldplate

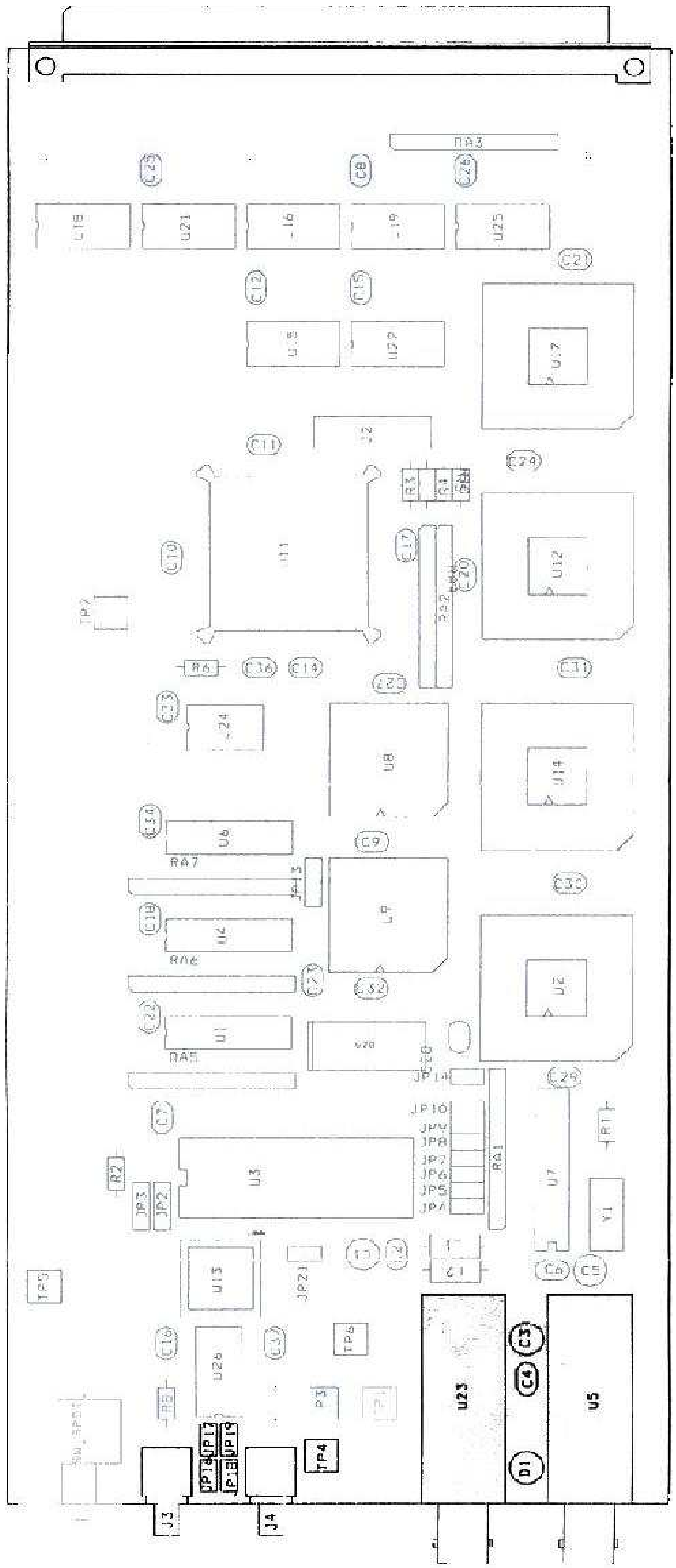

Rate of Change in Temperature for Dewar #2977
(using LN2 precooler for ~ 3 hours)
1.00
0.50
0.00
-0.50
-1.00
-1.50
-2.00
Temperature [K]
0
2
4
6
8
10
12
14
16
18
20
Time [Hours]
BIB
BIB
InSb Filter Box
BiB Stage
InSb Stage
Coldplate

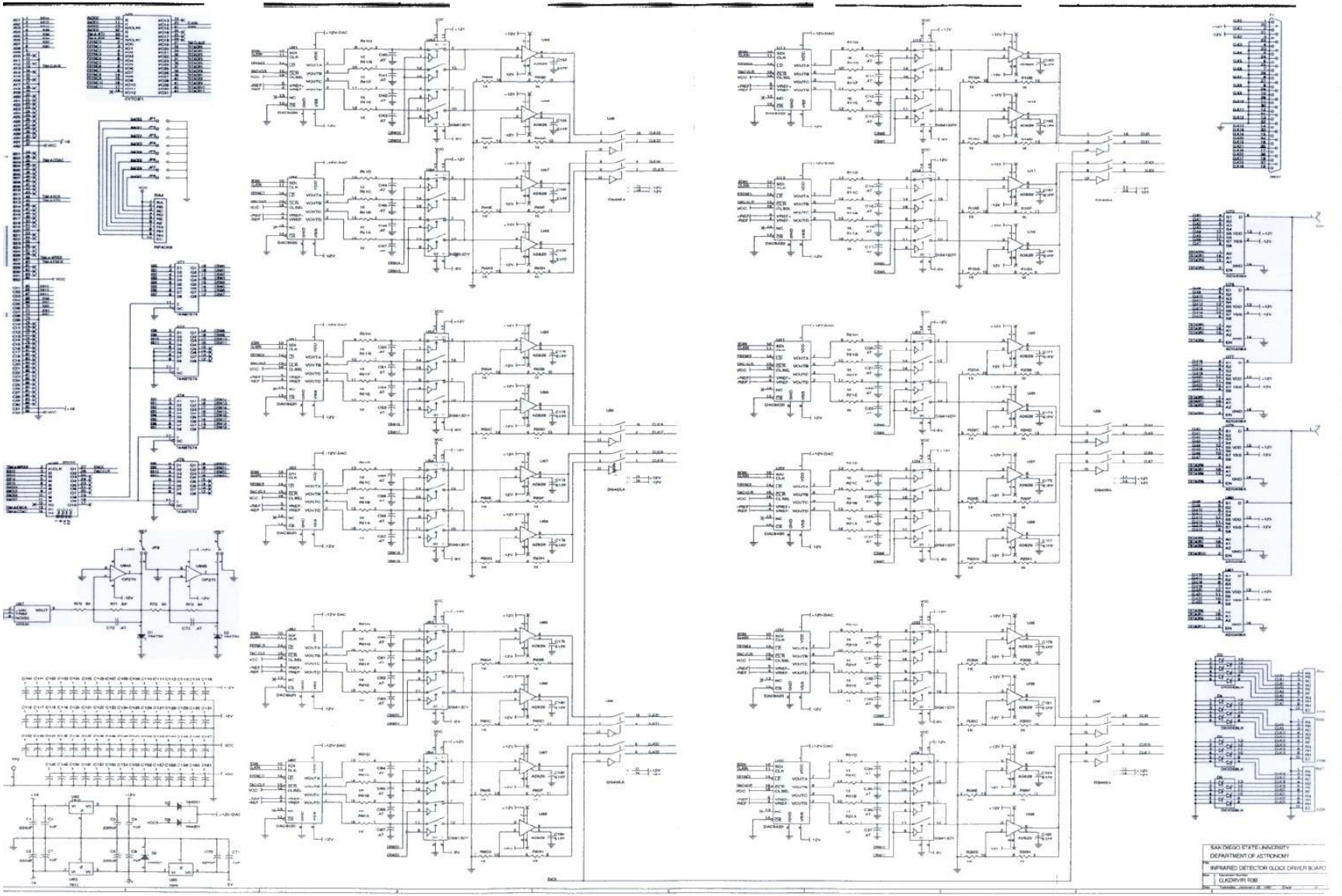
Electronics: Boards Layouts & Schematics

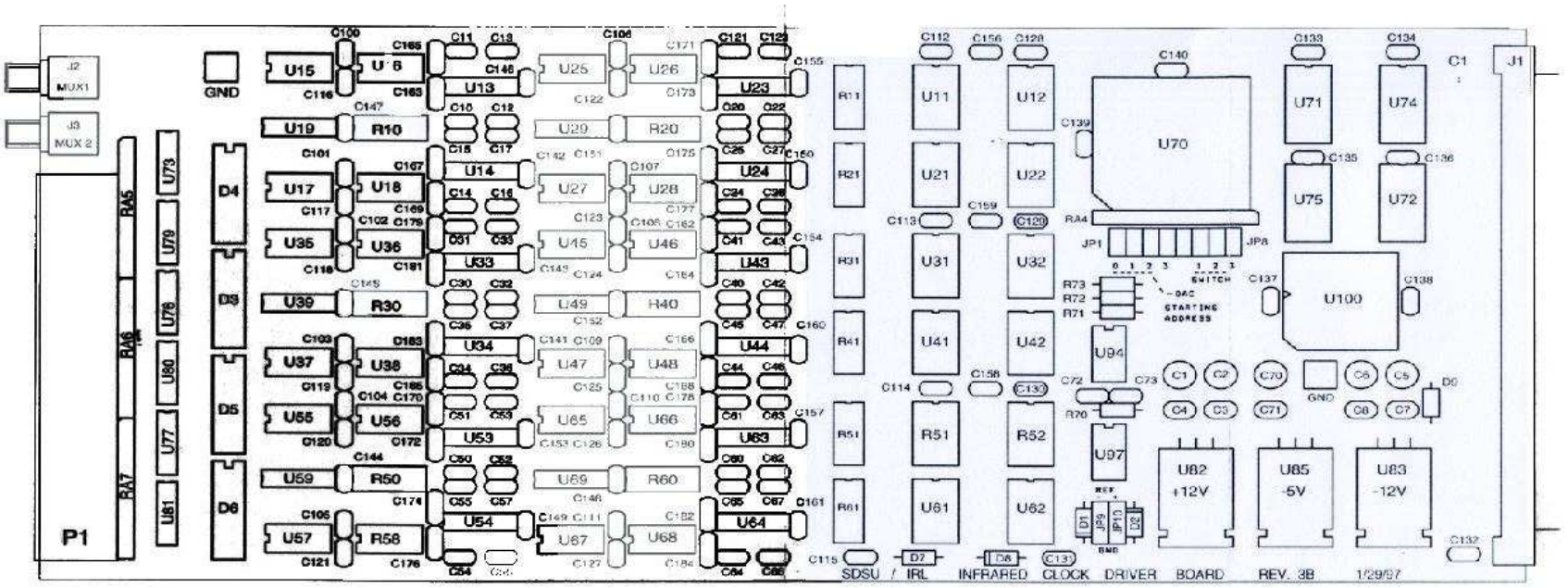

SAN DIEGO STATE UNIVERSITY
DEPARTMENT OF ASTRONOMY
PC TO FIBER OPTIC CONVERT BOARD
CONN_SCSI68
AM26C31
AM26C32
1261AAT
16MHZCLK
CY7C371
PALC22V10D-7JC
DSP56002
ONCE CONNECTOR
PCI_A/S62
SW SPDT

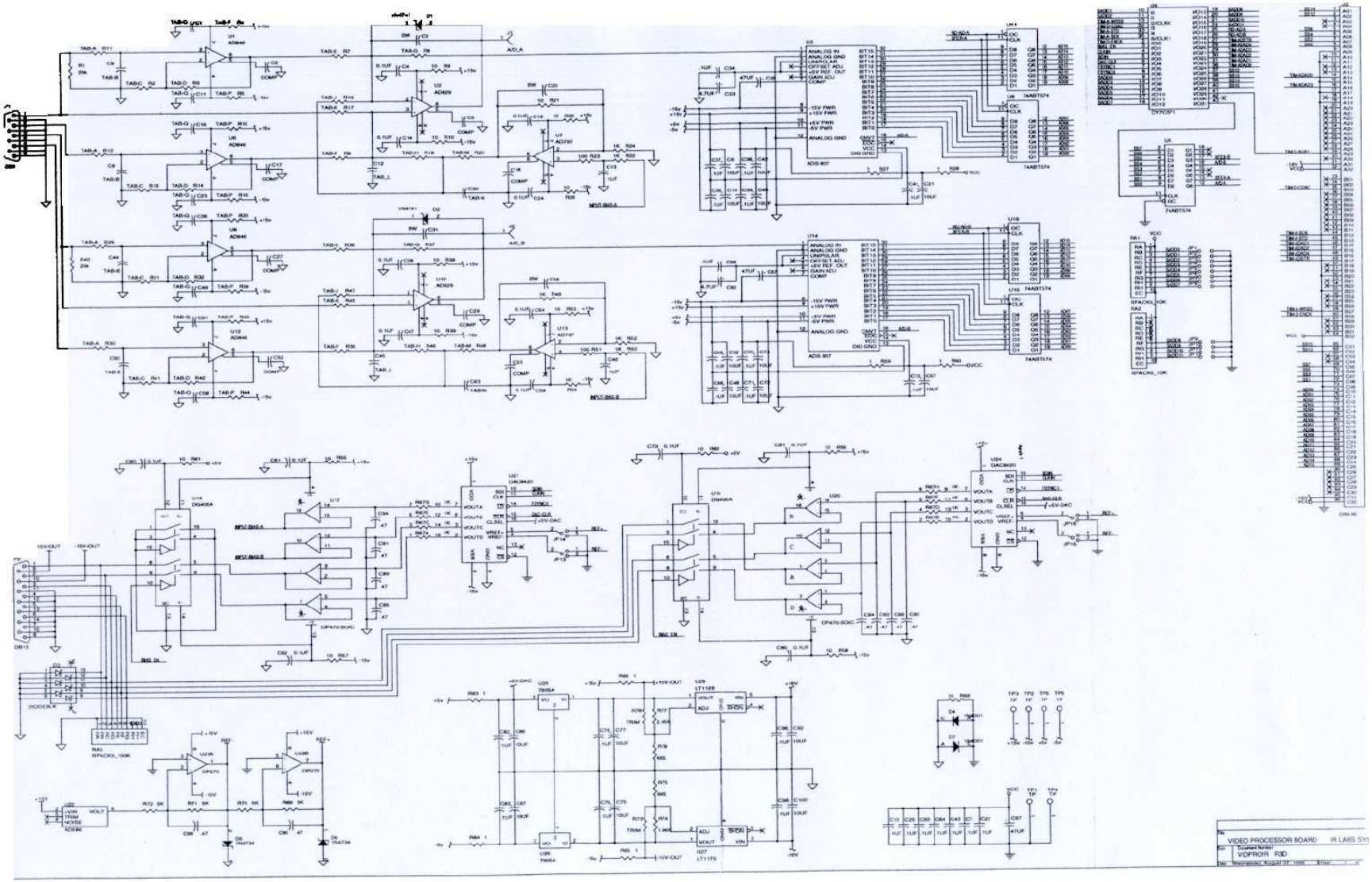

SAN DIEGO STATE UNIV. / INFRARED L
FIBER OPTIC TO PCI INTERFACE BOARD
REVISION 2A 1/20/98
DATA CLK CLK DATA
RECV XMIT
D1
R2
RESET
U14
XMIT
RECV
C3
C6
L2
L1
C1
U12
R5
R4
U11
C24
GND
JP1
JP2
C5
R3
U5
Y1
U10
U8
U2
U4
GND
U9
1
U1
U3
U6
RA4
U7
J3
OnCE
U13
R1
RA2
RA1
RA3
R7
R6
C28
C27
J2
J1
B1
B20
B30
B40
B49
B52
B62

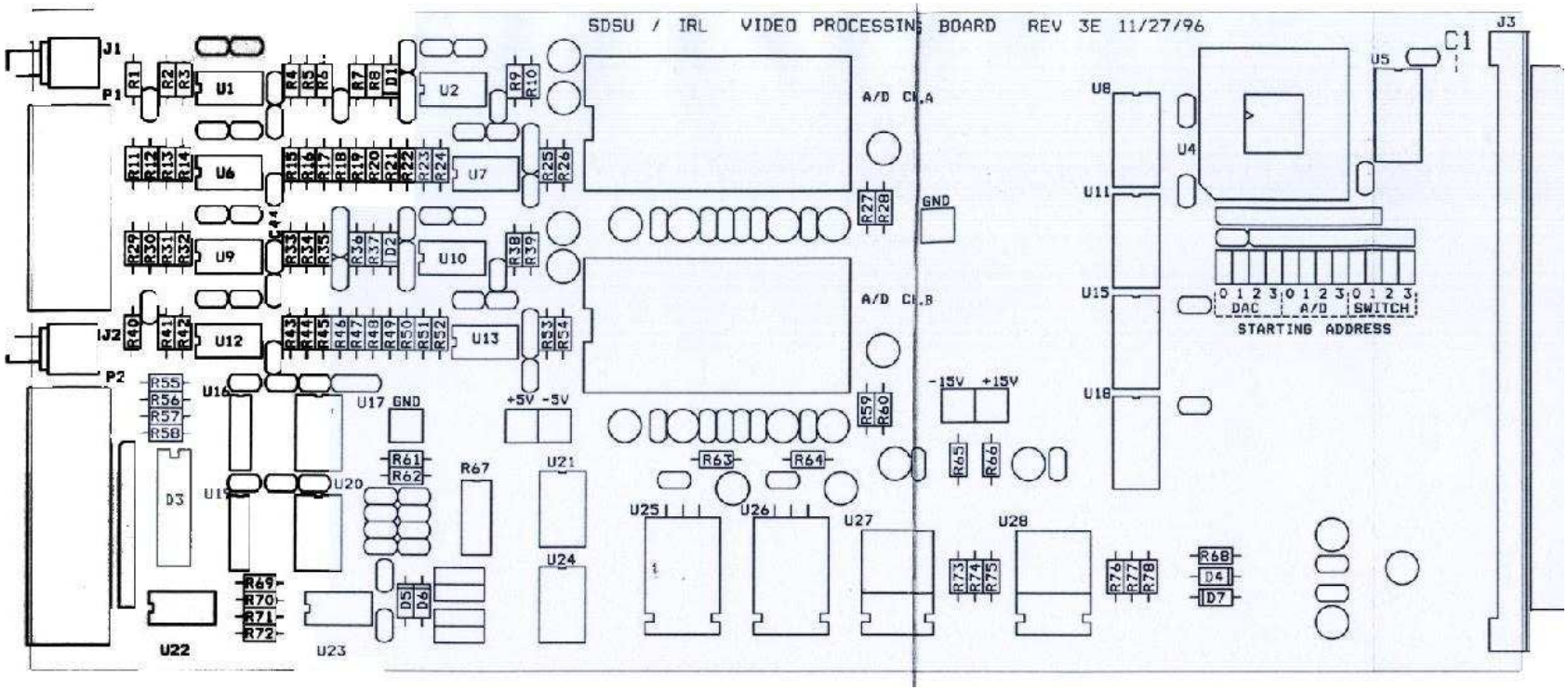

SAN DIEGO STATE UNIVERSITY
DEPARTMENT OF ASTRONOMY
GEN II TIMING BOARD FIBER OPTIC REV. 4B
4B


U23
U5
C3
C4
D1
TP4
J3
J4
U3
U7
RA1

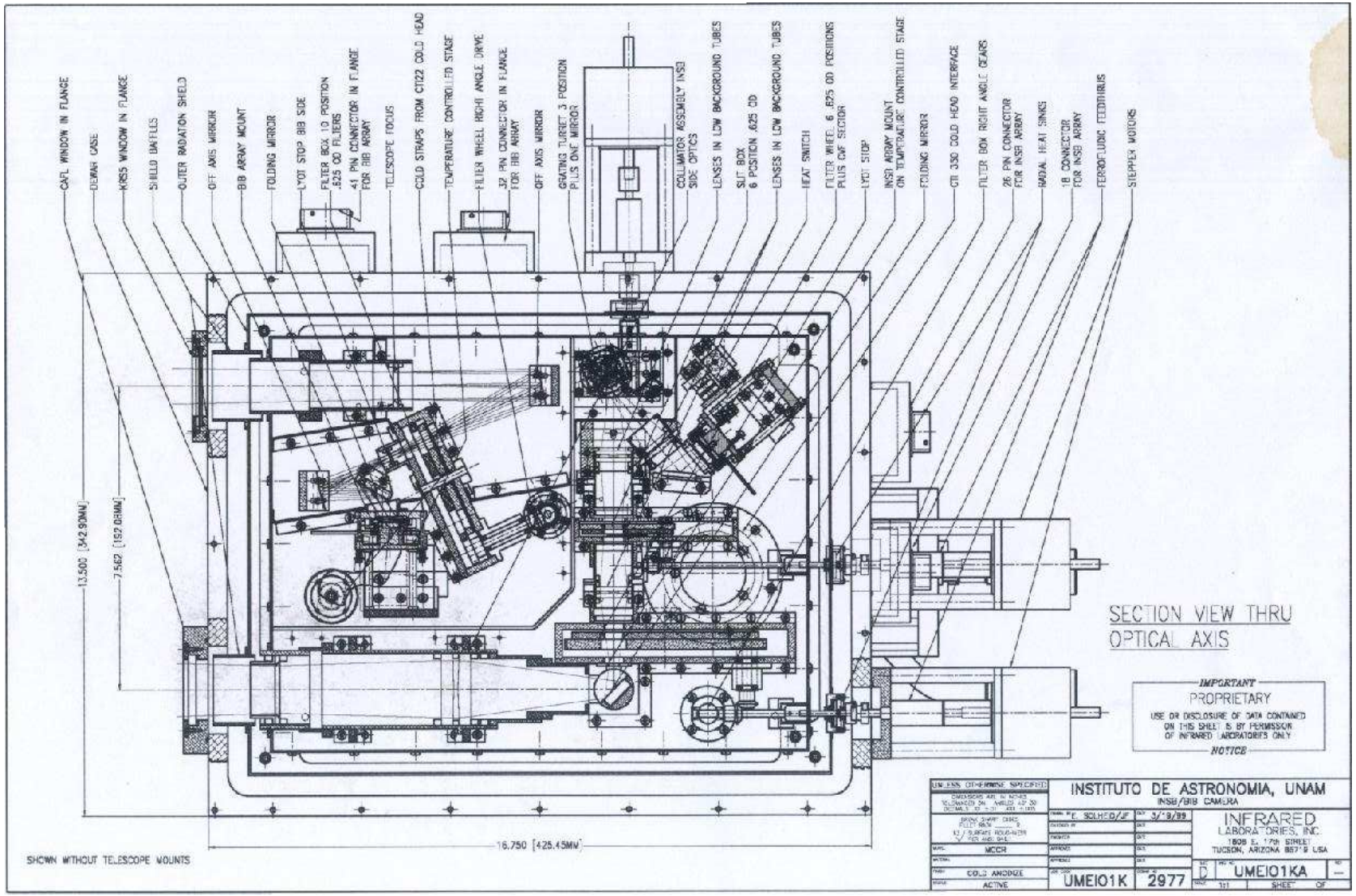

SAN DIEGO STATE UNIVERSITY
DEPARTMENT OF ASTRONOMY
INFRARED DETECTOR CLOCK DRIVER BOARD
CLKDRVR.ROB

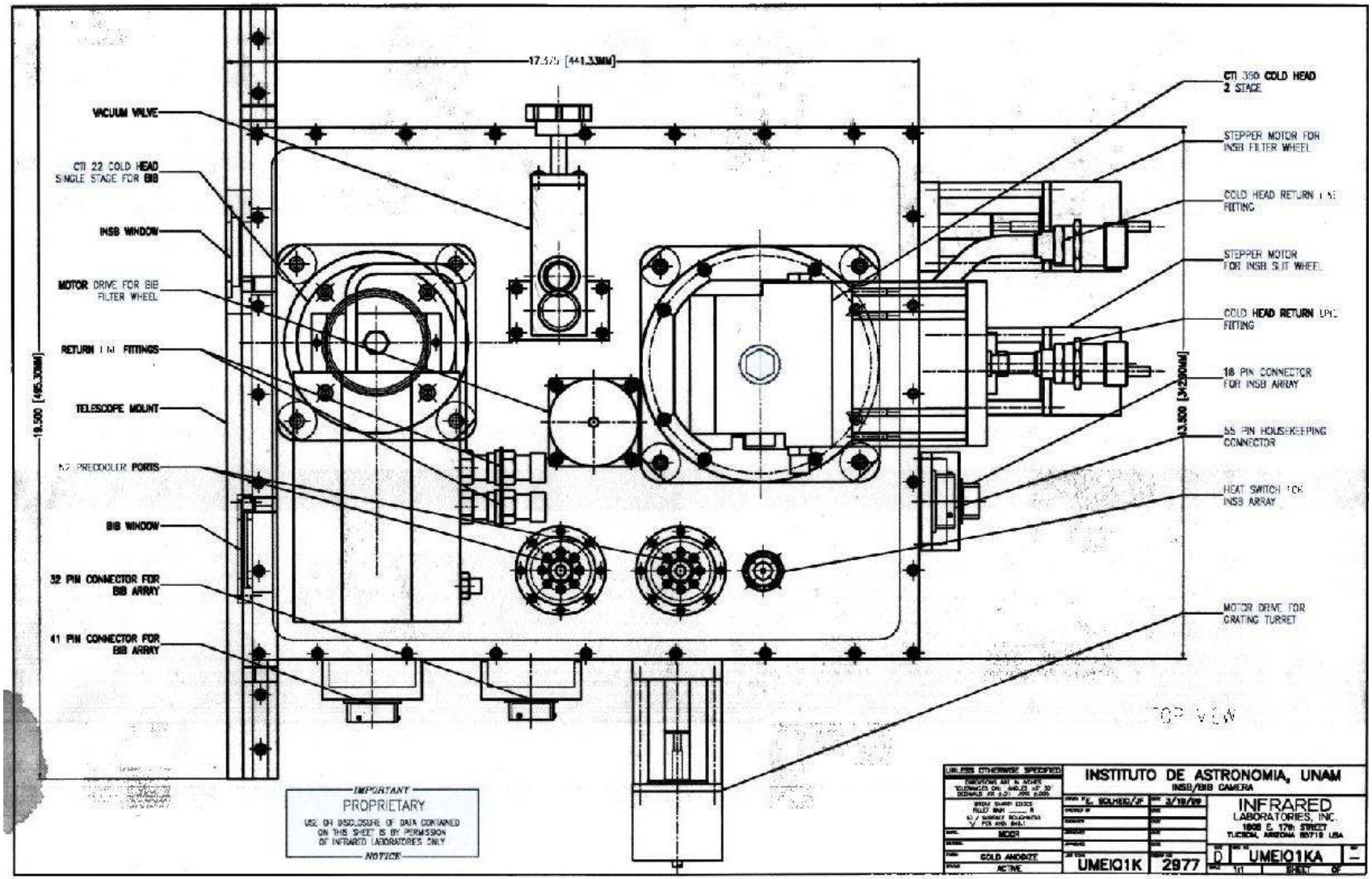

J2
MUX1
J3
MUX 2
P1
GND
D4
D5
D6
RA5
RA6
RA7
U73
U79
U76
U80
U77
U81
U15
U16
U19
R10
U17
U18
U35
U36
U39
R30
U37
U38
U55
U56
U59
R50
U57
R58
U13
U14
U33
U34
U53
U54
U25
U26
U29
R20
U27
U28
U45
U46
U49
R40
U47
U48
U65
U66
U69
R60
U67
U68
U23
U24
U43
U44
U63
U64
R11
R21
R31
R41
R51
R61
U11
U12
U21
U22
U31
U32
U41
U42
R51
R52
U61
U62
U70
RA4
JP1
JP8
SWITCH
DAC
STARTING ADDRESS
R73
R72
R71
U94
R70
U97
REF.
D1
JP9
JP10
D2
BMD
U71
U74
U75
U72
U100
GND
U82
+12V
U85
-5V
U83
-12V
C1
J1
SDSU / IRL
INFRARED
CLOCK DRIVER BOARD
REV. 3B
1/29/97


VIDEO PROCESSOR BOARD
IR LABS SYS
VIDPROR PID


SDSU / IRL VIDEO PROCESSING BOARD REV 3E 11/27/96
J1
P1
J2
P2
J3
C1
U1
U2
U4
U5
U6
U7
U8
U9
U10
U11
U12
U13
U15
U16
U17
U18
U19
U20
U21
U22
U23
U24
U25
U26
U27
U28
A/D CH.A
A/D CH.B
GND
+5V
-5V
-15V
+15V
0 1 2 3 0 1 2 3 0 1 2 3
DAC A/D SWITCH
STARTING ADDRESS

AutoCad Drawings


CAPL WINDOW IN FLANGE
DEWAR CASE
KRSS WINDOW IN FLANGE
SHIELD BAFFLES
OUTER RADIATION SHIELD
OFF AXIS MIRROR
BIB ARRAY MOUNT
FOLDING MIRROR
LYOT STOP BIB SIDE
FILTER BOX 10 POSITION .625 OD FILTERS
41 PIN CONNECTOR IN FLANGE FOR BIB ARRAY
TELESCOPE FOCUS
COLD STRAPS FROM CTI22 COLD HEAD
TEMPERATURE CONTROLLED STAGE
FILTER WHEEL RIGHT ANGLE DRIVE
32 PIN CONNECTOR IN FLANGE FOR INSB ARRAY
OFF AXIS MIRROR
GRATING TURRET 3 POSITION PLUS ONE MIRROR
COLLIMATOR ASSEMBLY INSB SIDE OPTICS
LENSES IN LOW BACKGROUND TUBES
SLIT BOX 6 POSITION .625 OD
LENSES IN LOW BACKGROUND TUBES
HEAT SWITCH
FILTER WHEEL 6 .625 OD POSITIONS PLUS ONE SECTOR
LYOT STOP
INSB ARRAY MOUNT ON TEMPERATURE CONTROLLED STAGE
FOLDING MIRROR
CTI 330 COLD HEAD INTERFACE
FILTER BOX RIGHT ANGLE GEARS
26 PIN CONNECTOR FOR INSB ARRAY
RADIAL HEAT SINKS
18 CONNECTOR FOR INSB ARRAY
FERROFLUDIC FEEDTHRUS
STEPPER MOTORS
13.500 [342.90MM]
7.562 [192.05MM]
16.750 [425.45MM]
SHOWN WITHOUT TELESCOPE MOUNTS
SECTION VIEW THRU OPTICAL AXIS
IMPORTANT
PROPRIETARY
USE OR DISCLOSURE OF DATA CONTAINED ON THIS SHEET IS BY PERMISSION OF INFRARED LABORATORIES ONLY
NOTICE
UNLESS OTHERWISE SPECIFIED
MCCR
COLD ANODIZE
ACTIVE
INSTITUTO DE ASTRONOMIA, UNAM
INSB/BIB CAMERA
E. SOLHED/JF
3/9/89
INFRARED LABORATORIES, INC.
1808 E. 17th STREET
TUCSON, ARIZONA 85719 USA
UMEI01K
2977
D
UMEI01KA
SHEET OF


17.375 [441.33MM]
VACUUM VALVE
CTI 22 COLD HEAD SINGLE STAGE FOR BIB
INSB WINDOW
MOTOR DRIVE FOR BIB FILTER WHEEL
RETURN LINE FITTINGS
TELESCOPE MOUNT
N2 PRECOOLER PORTS
BIB WINDOW
32 PIN CONNECTOR FOR BIB ARRAY
41 PIN CONNECTOR FOR BIB ARRAY
CTI 350 COLD HEAD 2 STAGE
STEPPER MOTOR FOR INSB FILTER WHEEL
COLD HEAD RETURN LINE FITTING
STEPPER MOTOR FOR INSB SLIT WHEEL
COLD HEAD RETURN LINE FITTING
18 PIN CONNECTOR FOR INSB ARRAY
55 PIN HOUSEKEEPING CONNECTOR
HEAT SWITCH FOR INSB ARRAY
MOTOR DRIVE FOR GRATING TURRET
TOP VIEW
IMPORTANT
PROPRIETARY
USE OR DISCLOSURE OF DATA CONTAINED ON THIS SHEET IS BY PERMISSION OF INFRARED LABORATORIES ONLY
NOTICE
INSTITUTO DE ASTRONOMIA, UNAM
INSB/BIB CAMERA
INFRARED LABORATORIES, INC.
1808 E. 17th STREET
TUCSON, ARIZONA 85719 USA
UMEIQ1K
2977
UMEIQ1KA