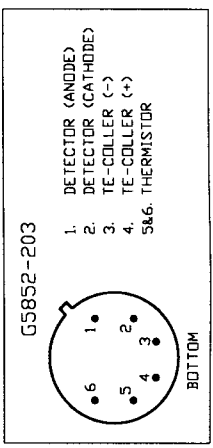


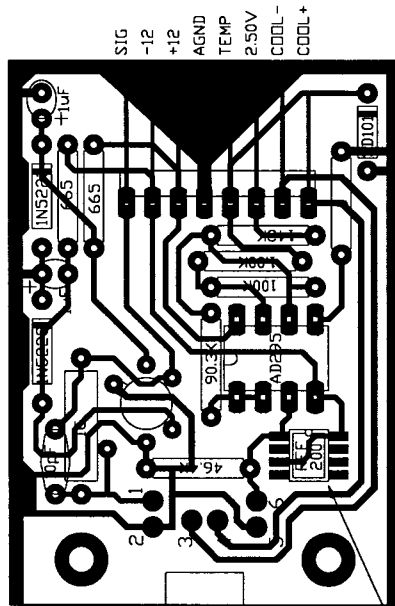
T	Rt	Rt//46.4K	V1	V2 G = -1.107	V3 G = -0.699	V2 + V3
-40	170K	36.4K	-3.64	+4.03	-1.75	2.28
-30	100K	31.7K	-3.17	+3.51	-1.75	1.76
-20	60.0K	26.2K	-2.62	+2.90	-1.75	1.15
-10	38.0K	20.9K	-2.09	+2.31	-1.75	0.57
0	24.0K	15.8K	-1.58	+1.75	-1.75	0.00

57.25mv/C  
5.85ADU/C

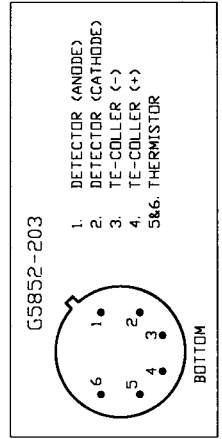


TOLERANCE .XX ± .007 .XXX ± .003	CONTRACT SSP-4	REVISION 10/1/2001 1/30/2002 4/30/2002	SCALE: ND: 17-04001
MATERIAL	PREAMP CIRCUIT		
FINISH	OPTEC, Inc.		

PN4130



MOUNT ON SOLDER SIDE



CONTRACT SSP-4	OPTEC, Inc.
REVISION 10/6/2001 1/30/2002 3/1/2002 5/10/2002	DET/ELECTROMETER BOARD
SCALE:	ND: 17-04007

TO: OPTEC INST.

<Y> 2002 <M> 4 <D> 2

# FINAL INSPECTION SHEET

HAMAMATSU PHOTONICS K. K.  
SOLID STATE DIVISION

Type No. **G5852-203**  
Quantity **3 pcs.**  
Note

Approved by *H. Tanikawa*  
Inspected by *M. Nishimura*

Test Condition  
 Isc: Short Circuit Current (Light Source: 100lx, 2856K)  
 ID: Dark Current (at VR=1V)  
 Rsh: Shunt Resistance (at VR=10mV)  
 T E Cooling: Thermo Element Current (at Td=-20°C)  
 Element Temperature is Controlled by C1103-04

Parameter	Isc	ID	Rsh	Rt	T E Cooling	Element Temperature		
Unit	nA	nA	MΩ	kΩ	A	°C		
Spec.	Min. 200	Max. 440	Min. 111kΩ	8.1~9.9		25		
		Max. 22	Min. 2.22		Max. 0.8	-20		
6	380	7.13	7.81	8.97		25		
		0.31	192		OK	-20		
7	417	6.52	8.77	8.82		25		
		0.27	213		OK	-20		
8	425	6.14	9.17	8.52		25		
		0.24	244		OK	-20		

Date Inspected: <Y> 2002 <M> 3 <D> 22 25 °C

# OPTEC, Inc.

OPTICAL AND ELECTRONIC PRODUCTS

sales@optecinc.com  
http://www.optecinc.com

199 Smith Street  
Lowell, MI 49331  
U.S.A.  
(616) 897-9351  
(616) 897-8229 FAX

April 9, 2002

Chris DePalma  
Hamamatsu Corp.  
360 Foothill Rd.  
Bridgewater, NJ 08807-0910

Dear Mr. DePalma:

Ref: RA 6198, our P.O. 8155

I have sent back to you 2 pieces of G5852-203 and 2 pieces of G5852-21 for evaluation and possible repair or replacement. These units were ordered in February and delivered in early March. Three units of the G5852-203 are on backorder at this time.

I ordered and received late last year a G5852-203 for our evaluation and prototype construction of a photometer used in astronomy. That detector worked fine with our preamp circuit shown in drawing #17-04001. The initial offset voltage from the AD8551 with the detector attached was within expected limits of +/- 20 mv. The actual value was 8 mv. When the cooler was tuned on, the offset voltage would fall to a value closer to zero as expected. The offset voltage was stable and repeatable through many on/off cycles. The operating temperature can be set with our equipment to a value within the range of 0 to -40 degrees C. Normal operating temperature is set at -35 degrees C. Current through the TEC is limited to a maximum of 0.9 amps. The voltage applied to the TEC is very stable with noise in the mv range. The prototype instrument with the first G5852-203 has worked fine for the last 3 months and is still operating within expected limits.

The four pieces in question were installed in identically equipment as compared to the prototype unit. At room temperature (TEC off), the units exhibit an offset voltage which is near the expected limits but higher compared to the prototype unit. When the TEC is turned on, the offset voltage would increase to a value of -75 to -300 mv depending on the unit. This change in offset would take about 4 seconds which is close to the cooling time with a set temperature of -25 degrees C. Under close examination, there would be an overshoot of about 10% of the value before the unit would settle down to its stable offset voltage. When the TEC is turned off, the offset voltage would slowly settle down to its room temperature value over a period of 1 to 2 minutes. As with the turn on of the TEC, there is a slight rise in the offset voltage when the TEC is just turned off before it begins to fall. This test is repeatable at all times with the detectors even when the cooler is powered by a separate power supply. However, room temperature offset voltage and the cooled offset voltage would be a little different each time the test was done.

## *OPTEC, Inc.*

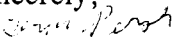
---

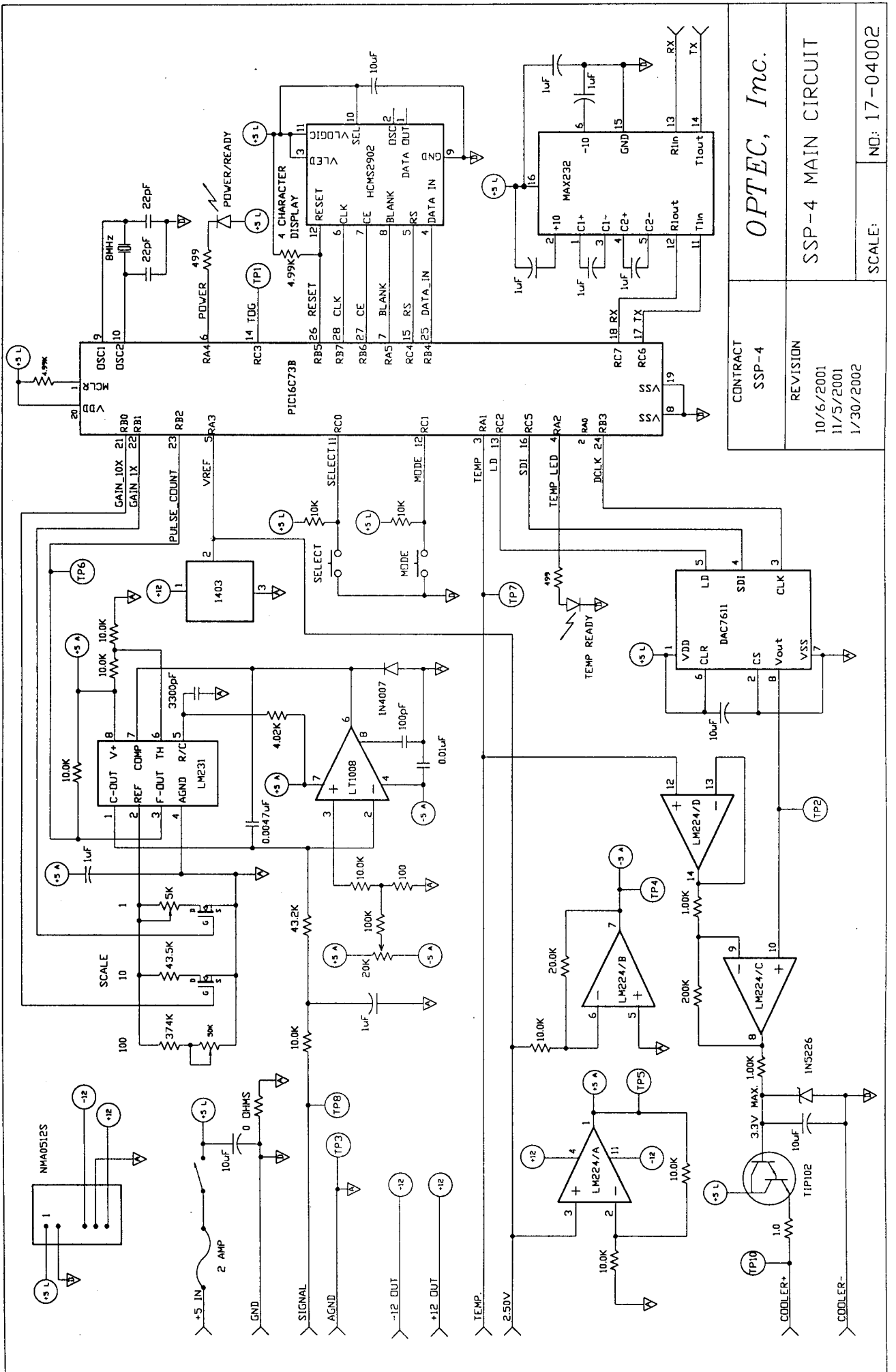
It appears to me that condensation inside the detector package might be causing a surface leakage situation. The fast change in the offset voltage when the TEC is turned on and the slow change back to the original offset voltage when the TEC is turn off looks to me like water condensing and then drying.

I have included a copy of our preamp circuit. On disk labeled "pictures", there are some \*.jpg files showing our preamp circuit with detector mounted. On disk labeled "manual" is draft copy of our operating manual for the SSP-4 photometer which used these detectors. There are complete schematics and board layouts in the manual. The manual is written in WORD format.

We have sold five instruments and expect a number more to be sold this year. I had hoped to start making deliveries this week but that does not seem possible now. Please do what you can to find a cure for this problem.

Sincerely,

  
Gerald Persha



<b>OPTEC, Inc.</b>	
CONTRACT SSP-4	REVISION 10/6/2001 11/5/2001 1/30/2002
SSP-4 MAIN CIRCUIT	
SCALE:	NO: 17-04002