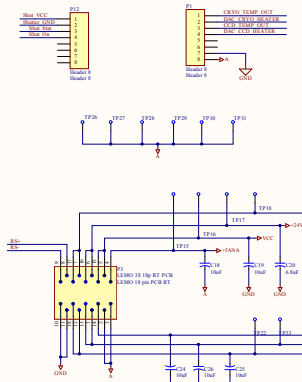
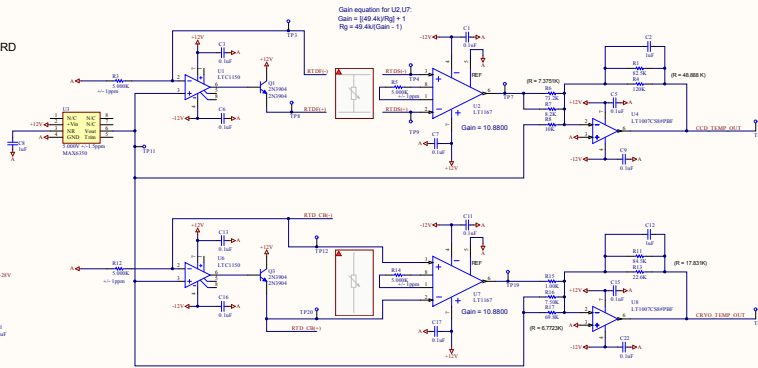


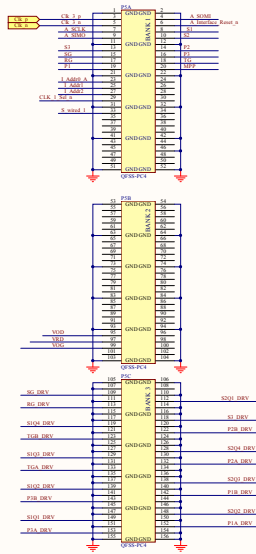
SHUTTER



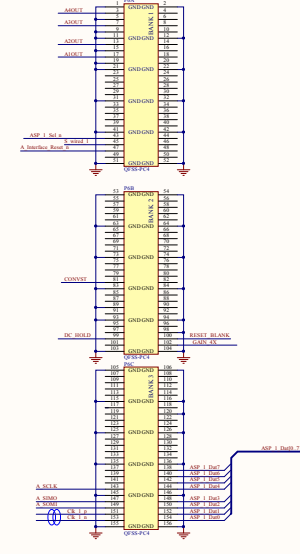
TEMP CONTROL VIA NI FPGA BOARD



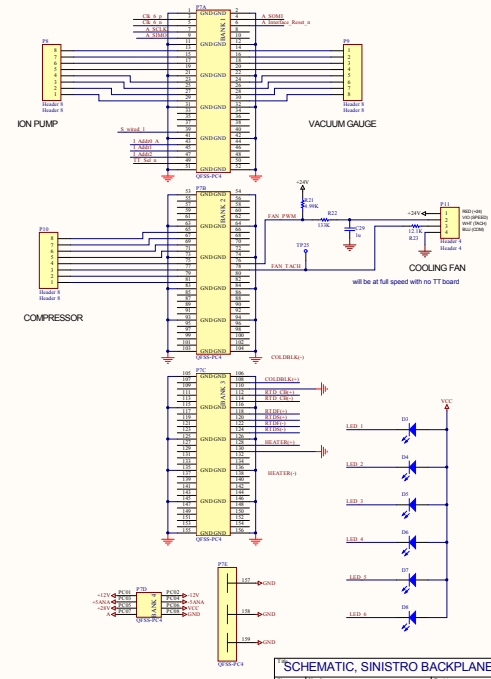
CLOCK



ASP



TEMP/TELEMETRY



NOTES (UNLESS OTHERWISE SPECIFIED):

GENERAL

- 1) PCB IS 12-LAYER, .062" THICK.
- 2) CONSTRUCTION IS SOLDER-MASK-OVER-BARE-COPPER (SMOBC).
- 3) ACCEPTABILITY SHALL BE BASED ON IPC-A-600, CLASS 2.
- 4) THE FOLLOWING GERBER RS274X PHOTO TOOL FILES SHALL BE USED TO DEFINE ALL CIRCUIT FEATURES:
 - *GTL -- TOP LAYER GERBER DATA
 - *GPI -- INTERNAL PLANE LAYER 1 GERBER DATA
 - *G1 -- MID LAYER 1 GERBER DATA
 - *GP2 -- INTERNAL PLANE LAYER 2 GERBER DATA
 - *GP3 -- INTERNAL PLANE LAYER 3 GERBER DATA
 - *GP4 -- INTERNAL PLANE LAYER 4 GERBER DATA
 - *GP5 -- INTERNAL PLANE LAYER 5 GERBER DATA
 - *GP6 -- INTERNAL PLANE LAYER 6 GERBER DATA
 - *GP7 -- INTERNAL PLANE LAYER 7 GERBER DATA
 - *GP8 -- INTERNAL PLANE LAYER 8 GERBER DATA
 - *GP9 -- INTERNAL PLANE LAYER 9 GERBER DATA
 - *GBL -- BOTTOM LAYER GERBER DATA
 - *GTO -- TOP OVERLAY GERBER DATA
 - *GBO -- BOTTOM OVERLAY GERBER DATA
 - *GTP -- TOP-SIDE SOLDER PASTE MASK

- *GTS -- TOP SOLDER MASK GERBER DATA
 - *GBS -- BOTTOM SOLDER MASK GERBER DATA
- 5) THE PHOTO TOOL SHALL NOT BE COMPENSATED WITHOUT PRIOR ENGINEERING APPROVAL.
PCB DESIGNER: RICH LOBOLL PH (805) 880-1621 FAX (805) 961-1792.

FABRICATION TOLERANCES

- 6) END PRODUCT CONDUCTOR WIDTHS AND PAD DIAMETERS SHALL NOT VARY MORE THAN 0.002" FROM THE 1:1 DIMENSIONS OF THE MASTER ARTWORK.
- 7) THE CONDUCTIVE PATTERN SHALL BE POSITIONED SO THAT THE LOCATION OF ANY PAD OR LAND SHALL BE WITHIN 0.005" DIAMETER TO THE TRUE POSITION OF THE HOLE IT CIRCUMSCRIBES.
- 8.1) DRILL TOLERANCES +/- 0.003"
- 8.2) ALL DRILL HOLE SIZES AND TOLERANCES APPLY AFTER PLATING.
- 9) THE MINIMUM ANNULAR RING SHALL BE 0.005".
- 10) BOW AND TWIST SHALL NOT EXCEED 0.010" PER INCH.
- 11) FOR PCB ROUTING DIMENSIONS: $30X = +/- .005"$ $3X = +/- .020"$

MATERIAL

- 12) BASE MATERIAL IS FR4 EPOXY FIBERGLASS
- 13) SEE STACK-UP LEGEND FOR COPPER CLADDING CALL OUTS

PLATING

- 14) ALL HOLES AND CONDUCTIVE SURFACES SHALL BE PLATED WITH A MINIMUM OF 0.001" COPPER.
- 15) AFTER SOLDERMASK, ALL EXPOSED HOLES AND CONDUCTIVE SURFACES SHALL BE COATED WITH A GOLD IMMERSION PLATING TO PRESERVE SOLDERABILITY.

COATINGS

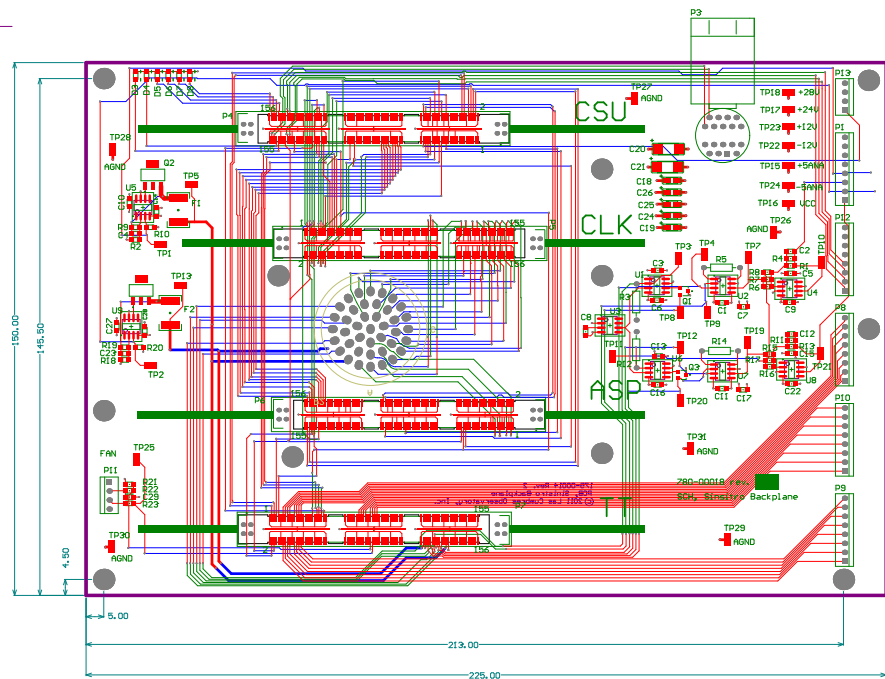
- 16) THE SOLDERMASK SHALL BE BLACK LIQUID PHOTO-IMAGEABLE PER IPC-SM-840, TYPE-B, CLASS 2.
- 17) THE SOLDERMASK REGISTRATION ALLOWANCE IS 0.003". THERE SHALL BE NO SOLDERMASK ON ANY SOLDER PAD OR LAND.

MARKING

- 18) THE LEGEND SHALL BE SCREEN-PRINTED USING PERMANENT YELLOW EPOXY INK.
- 19) THE SCREEN PRINTING REGISTRATION ALLOWANCE IS 0.007". THERE SHALL BE NO INK ON ANY SOLDER PAD OR LAND.
- 20) THE VENDOR CODE AND UL FLAMMABILITY RATING MAY BE ETCHED IN THE FOL OR MARKED IN PERMANENT EPOXY INK (VENDORS OPTION).

ELECTRICAL TESTING

- 21) ALL BOARDS SHALL BE ELECTRICALLY TESTED TO THE SUPPLIED IPC-D-356A NET LIST FOR CONTINUITY, OPENS AND SHORTS.



175-00014 REV 2, SINISTRO BACKPLANE
LAS CUMBRES OBSERVATORY 6/28/2011

*GTO -- TOP OVERLAY GERBER DATA

Layer Stack Up Detail for: 175-00014_Rev1, PCB, Sinistro Backplane.PcbDoc

Layer Name	Copper cladding
Top Layer (*,GTL)	1/2 oz. (1 oz. Finished)
AGND (*,GPI)	1/2 oz
Mid-Layer 1 (*,G1)	1/2 oz
GND (*,GP2)	1/2 oz
+12V (*,GP3)	1/2 oz
-12V (*,GP4)	1/2 oz
+5ANA (*,GP5)	1/2 oz
-5ANA (*,GP6)	1/2 oz
+28V (*,GP7)	1/2 oz
VCC (*,GP8)	1/2 oz
+24V (*,GP9)	1/2 oz
Bottom Layer (*,GBL)	1/2 oz. (1 oz. Finished)

PRIMARY PCB SPECIFICATIONS	
(REFER TO COMPLETE SPEC LISTING AT LEFT FOR FURTHER DETAILS)	
NUMBER OF LAYERS	12
FINISHED THICKNESS	.062"
BASE MATERIAL	FR4
PLATING TYPE	GOLD IMMERSION
SOLDER MASK COLOR	BLACK

NOTICE
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Las Cumbres Observatory Global Telescope Network		Las Cumbres Observatory, Inc. 6740 Cortona Dr. Goleta, CA 93117 www.lcoglnet	
DATE 6/28/2011	DESIGNER Rich Loboll	PRICE Rich Loboll	REV 1 : 1
PROJECT 175-00014, Sinistro Backplane		SHEET 1 OF 20	