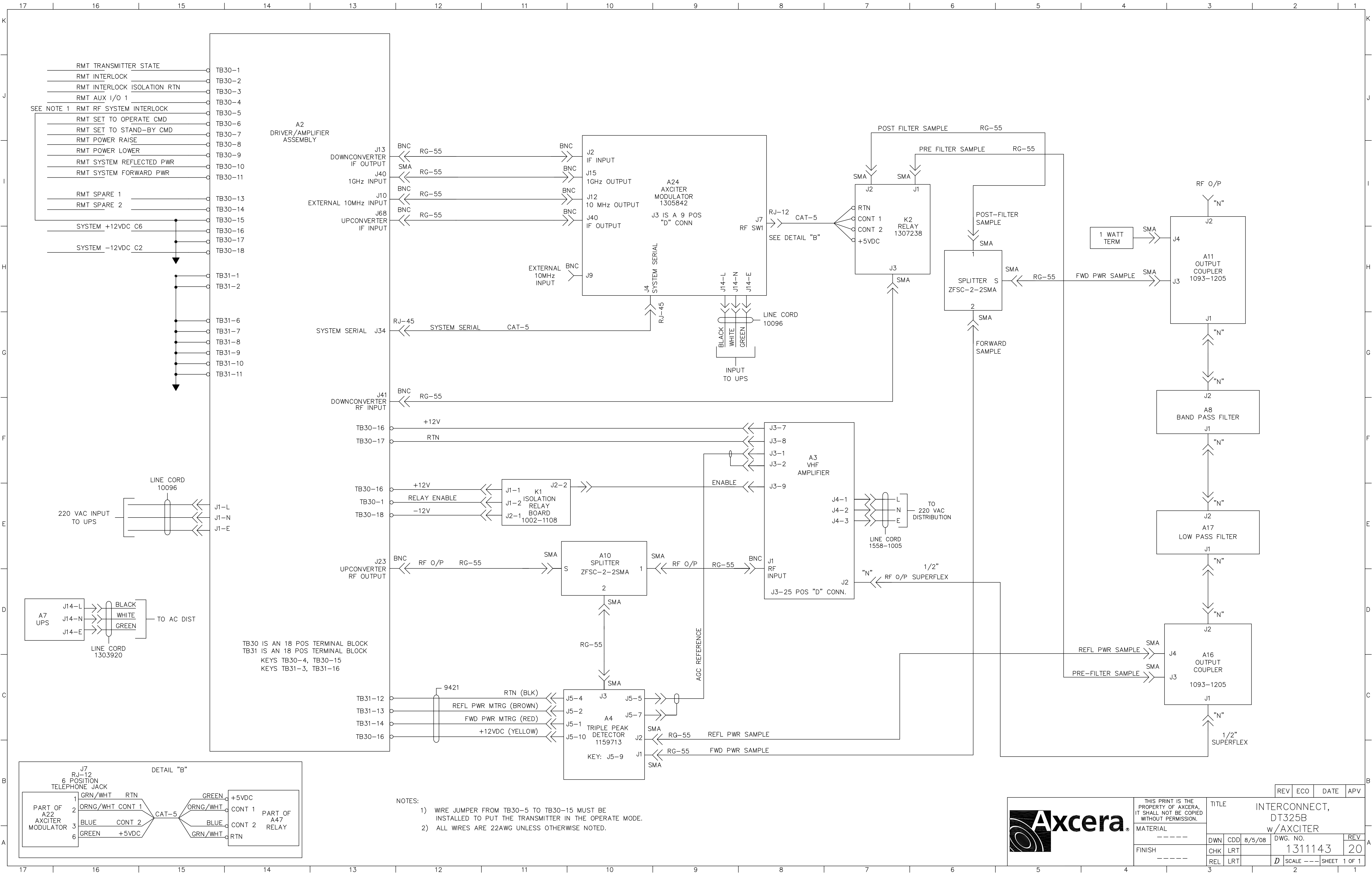
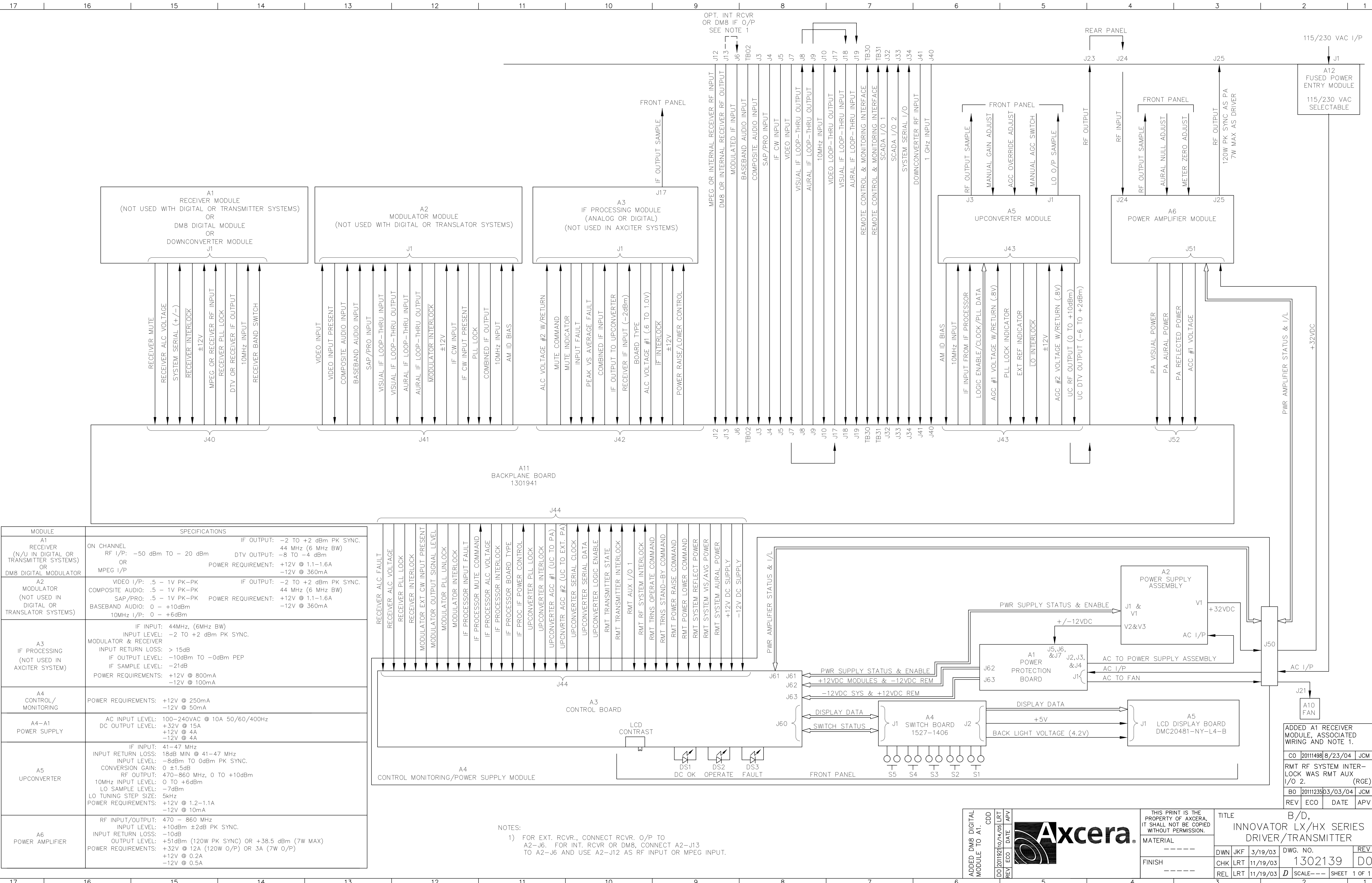






MODULE	SPECIFICATIONS	
A1 RECEIVER (N/U IN DIGITAL OR TRANSMITTER SYSTEMS) OR DM8 DIGITAL MODULATOR	ON CHANNEL RF I/P: -50 dBm TO - 20 dBm OR MPEG I/P	IF OUTPUT: -2 TO +2 dBm PK SYNC. 44 MHz (6 MHz BW) DTV OUTPUT: -8 TO -4 dBm POWER REQUIREMENT: +12V @ 1.1-1.6A -12V @ 360mA
A2 MODULATOR (NOT USED IN DIGITAL OR TRANSLATOR SYSTEMS)	VIDEO I/P: .5 - 1V PK-PK COMPOSITE AUDIO: .5 - 1V PK-PK SAP/PRO: .5 - 1V PK-PK BASEBAND AUDIO: 0 - +10dBm 10MHz I/P: 0 - +6dBm	IF OUTPUT: -2 TO +2 dBm PK SYNC. 44 MHz (6 MHz BW) POWER REQUIREMENT: +12V @ 1.1-1.6A -12V @ 360mA
A3 IF PROCESSING (NOT USED IN AXCIER SYSTEM)	IF INPUT: 44MHz, (6MHz BW) INPUT LEVEL: -2 TO +2 dBm PK SYNC. MODULATOR & RECEIVER INPUT RETURN LOSS: > 15dB IF OUTPUT LEVEL: -10dBm TO -0dBm PEP IF SAMPLE LEVEL: -21dB POWER REQUIREMENTS: +12V @ 800mA -12V @ 100mA	
A4 CONTROL/ MONITORING	POWER REQUIREMENTS: +12V @ 250mA -12V @ 50mA	
A4-A1 POWER SUPPLY	AC INPUT LEVEL: 100-240VAC @ 10A 50/60/400Hz DC OUTPUT LEVEL: +32V @ 15A +12V @ 4A -12V @ 4A	
A5 UPCONVERTER	IF INPUT: 41-47 MHz INPUT RETURN LOSS: 18dB MIN @ 41-47 MHz INPUT LEVEL: -8dBm TO 0dBm PK SYNC. CONVERSION GAIN: 0 ±1.5dB RF OUTPUT: 470-860 MHz, 0 TO +10dBm 10MHz INPUT LEVEL: 0 TO +6dBm LO SAMPLE LEVEL: -7dBm LO TUNING STEP SIZE: 5kHz POWER REQUIREMENTS: +12V @ 1.2-1.1A -12V @ 10mA	
A6 POWER AMPLIFIER	RF INPUT/OUTPUT: 470 - 860 MHz INPUT LEVEL: +10dBm ±2dB PK SYNC. -10dB INPUT RETURN LOSS: +51dBm (120W PK SYNC) OR +38.5 dBm (7W MAX) OUTPUT LEVEL: +32V @ 12A (120W O/P) OR 3A (7W O/P) POWER REQUIREMENTS: +12V @ 0.2A -12V @ 0.5A	

NOTES:
1) FOR EXT. RCVR., CONNECT RCVR. O/P TO A2-J6. FOR INT. RCVR OR DM8, CONNECT A2-J13 TO A2-J6 AND USE A2-J12 AS RF INPUT OR MPEG INPUT.

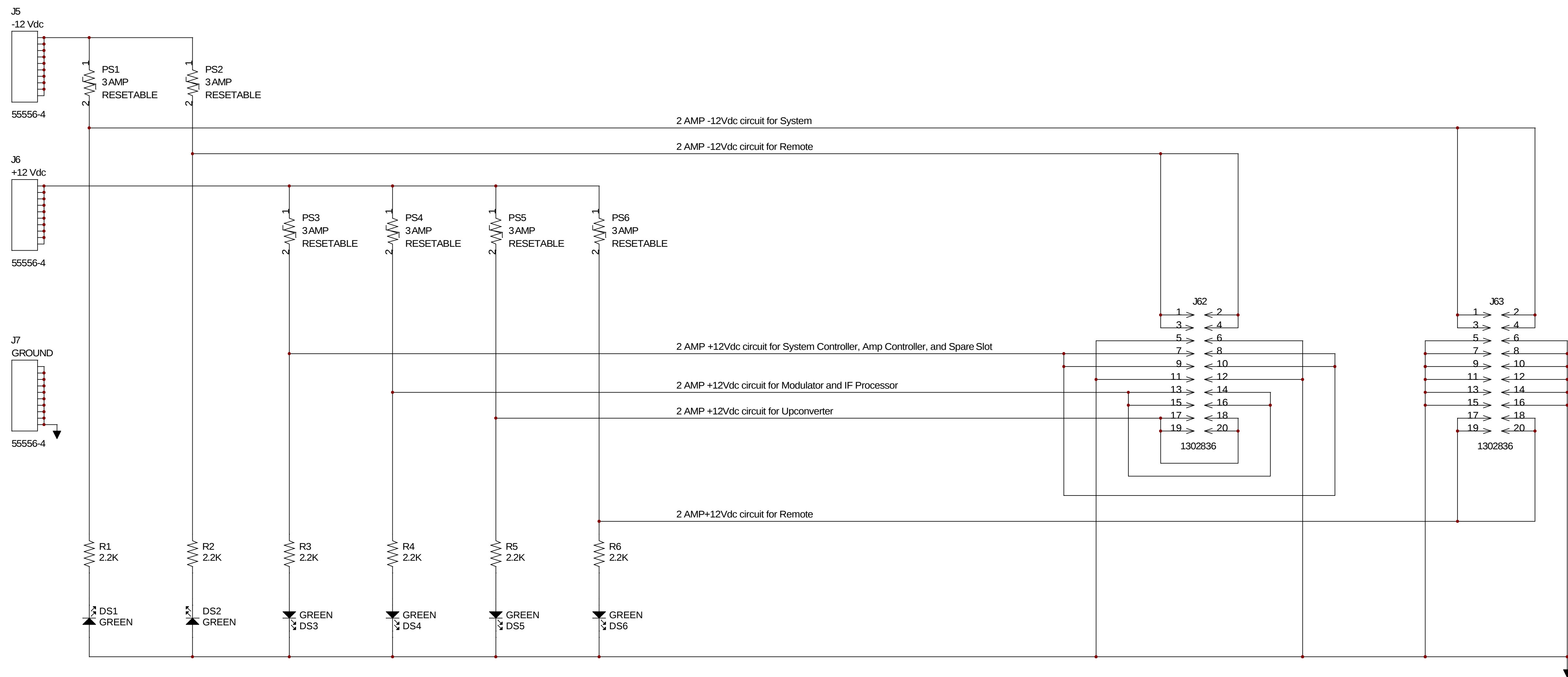
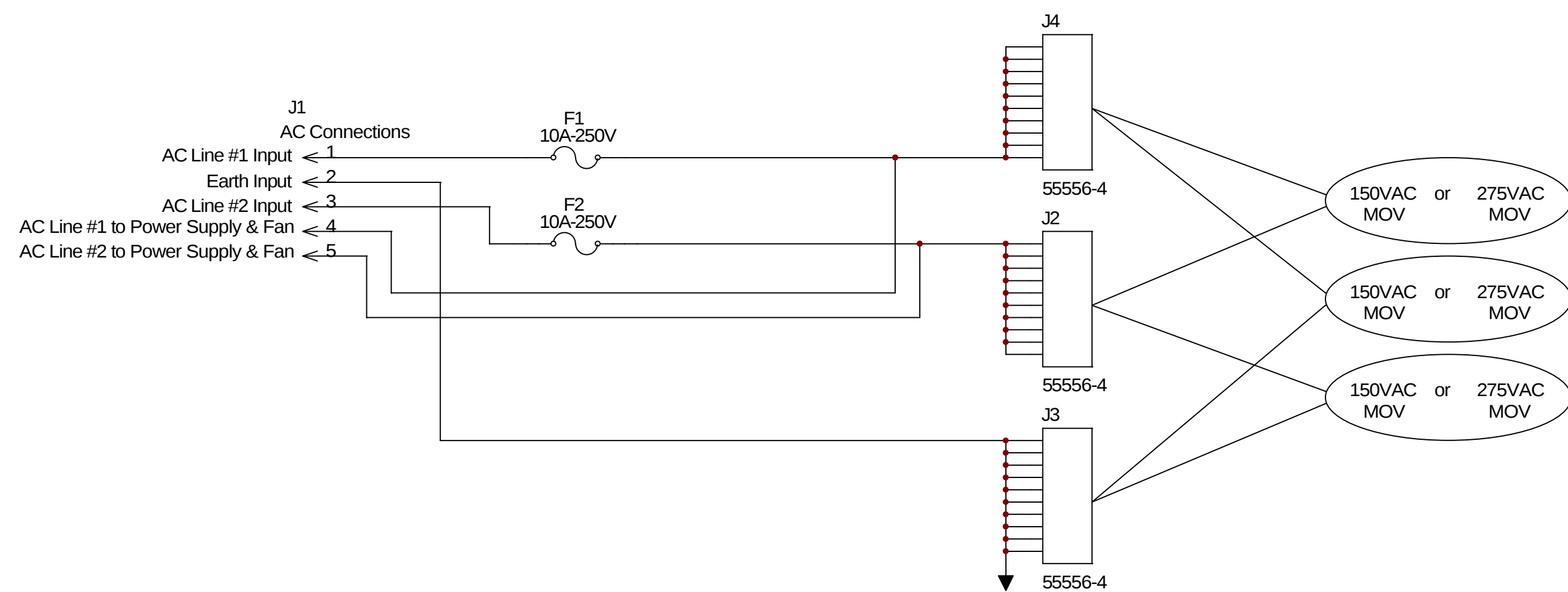
ADDED DM8 DIGITAL MODULE TO A1:
COD
DO 2019210/14/08
REV ECO DATE APV

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MATERIAL
FINISH

TITLE
B/D,
INNOVATOR LX/HX SERIES
DRIVER/TRANSMITTER

DWN	JKF	3/19/03	DWG. NO.	REV
CHK	LRT	11/19/03	1302139	D0
REL	LRT	11/19/03	SCALE----	SHEET 1 OF 1



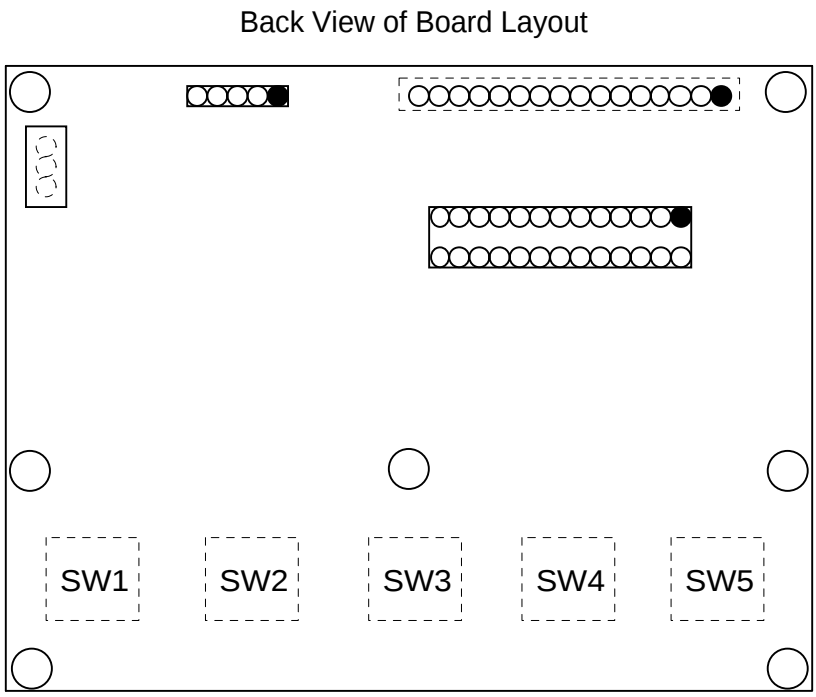
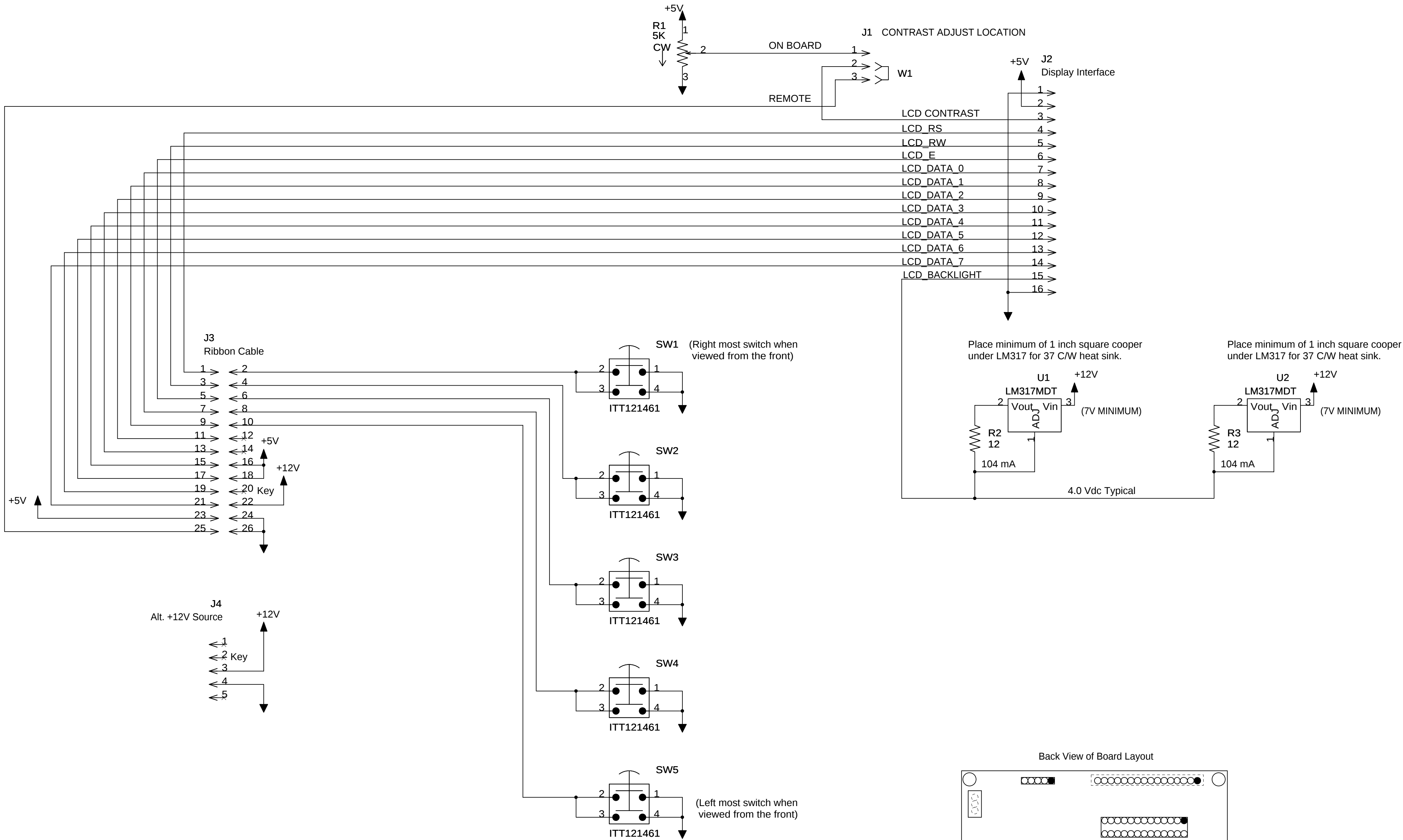
Circuit Design Notes:

1. Track widths of 0.140 inch minimum top and bottom of board shall be used to connections to J1, J2, J3, J4.
2. Track widths of 0.140 inch minimum top of board shall be used to connections to J5 and J6.
3. Track widths of 0.065 inch minimum shall be used to connections to J62 and J63.
4. Track widths of 0.020 inch minimum shall be used to connections between LEDs and resistors.
5. Board BOM needs the following items added to those exported from Orcad:

Part Number	Qty	Description
102071	4	Fuse Clip, PC BD Mnt., 15 Amp

MATERIAL NUMBERS:
1302837 PIONEER, POWER PROTECTION
1302838 PCB, PIONEER, PWR PROTECT
1302839 SCH, PIONEER, PWR PROTECT
1302840 STENCIL FOR 1302838

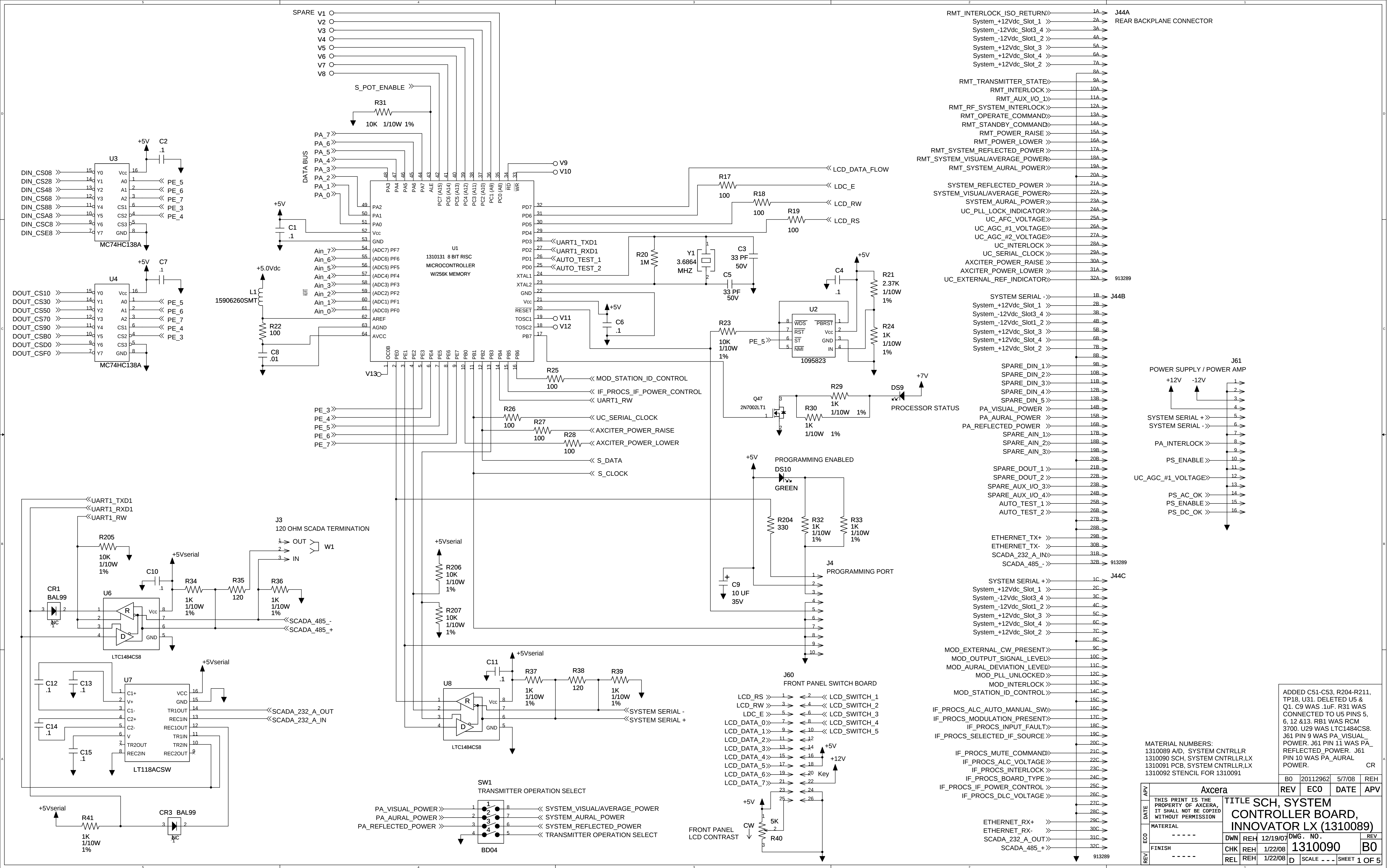
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ECO		MATERIAL						REV.
REV		FINISH						AO
	-----	DWN	REH	5/29/03	DWG. NO.			
		CHK	REH	5/29/03	1302839			
	-----	REL	REH	5/29/03	D	SCALE ---	SHEET 1 OF 1	



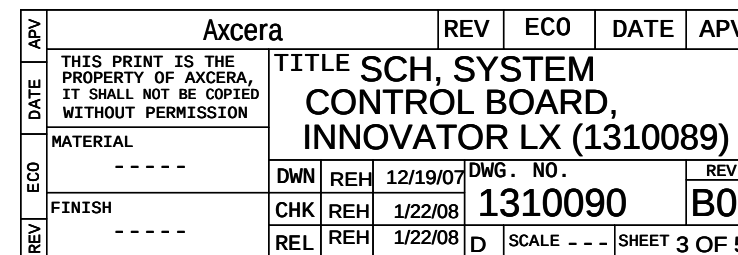
Board layout and part placement to be sized to fit in an Innovator LX System Controller in place of the board and display module that is presently used in this assembly.

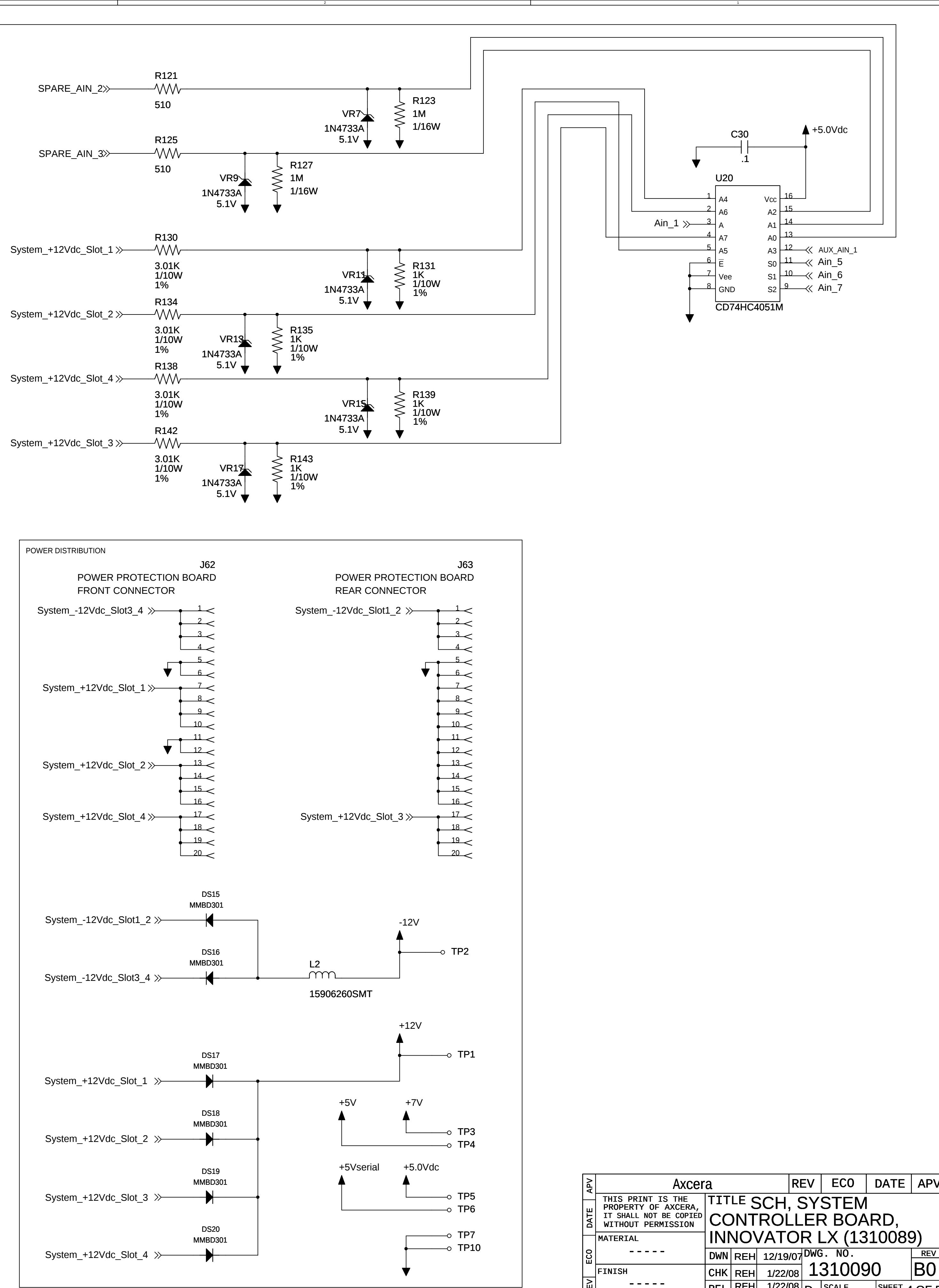
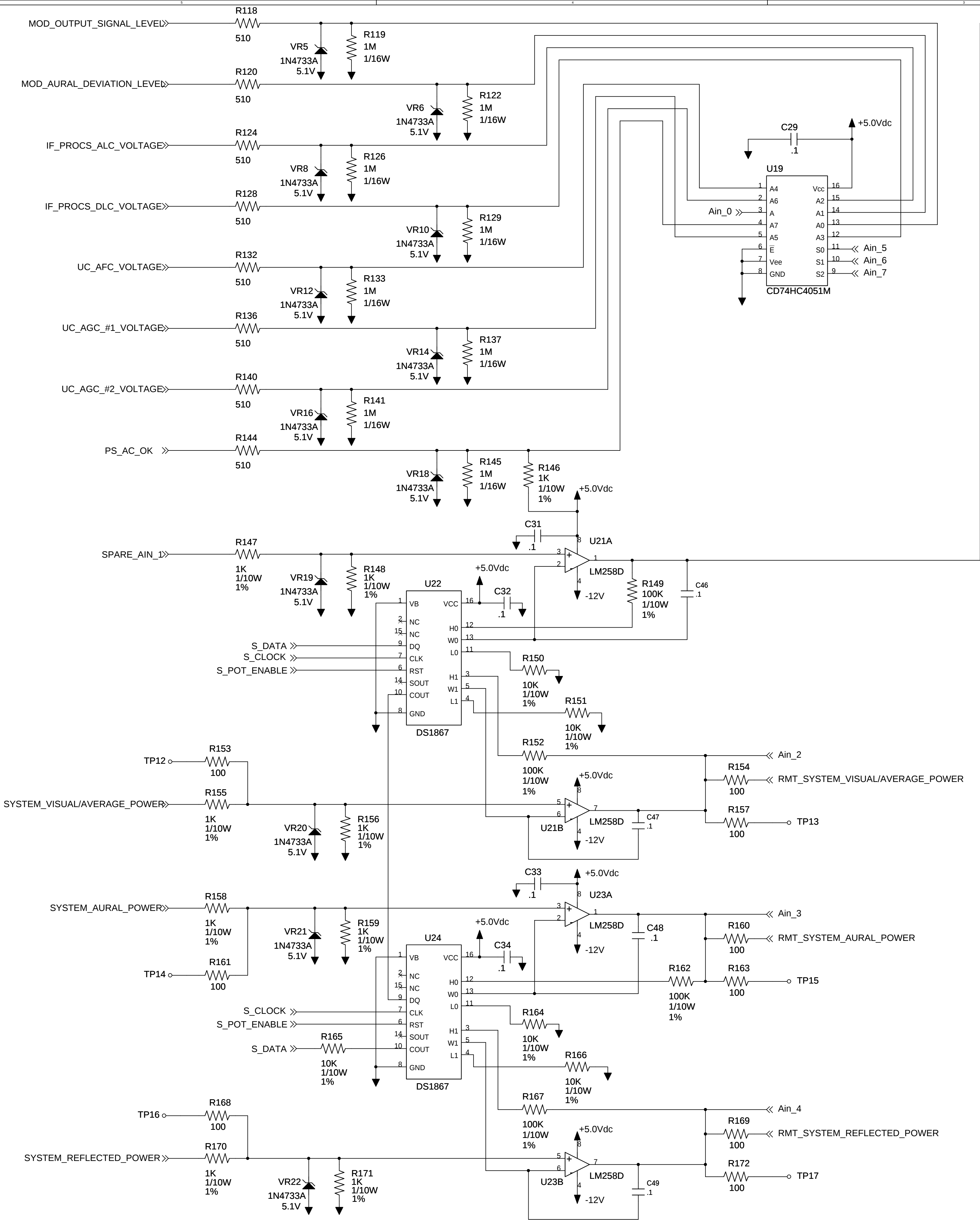
MATERIAL NUMBERS:
1307977 ASSY,LCD W/ SWITCHES BOARD
1307978 SCH,LCD W/ SWITCHES BOARD
1307979 PCB,LCD W/ SWITCHES BOARD

REV	ECO	DATE	APV	REV	ECO	DATE	APV
Axcera				TITLE SCH, LCD W/ SWITCHES BOARD (1307977)			
THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION				DWG. NO. 1307978			
MATERIAL				REV			
FINISH				A0			
REL				SHEET 1 OF 1			



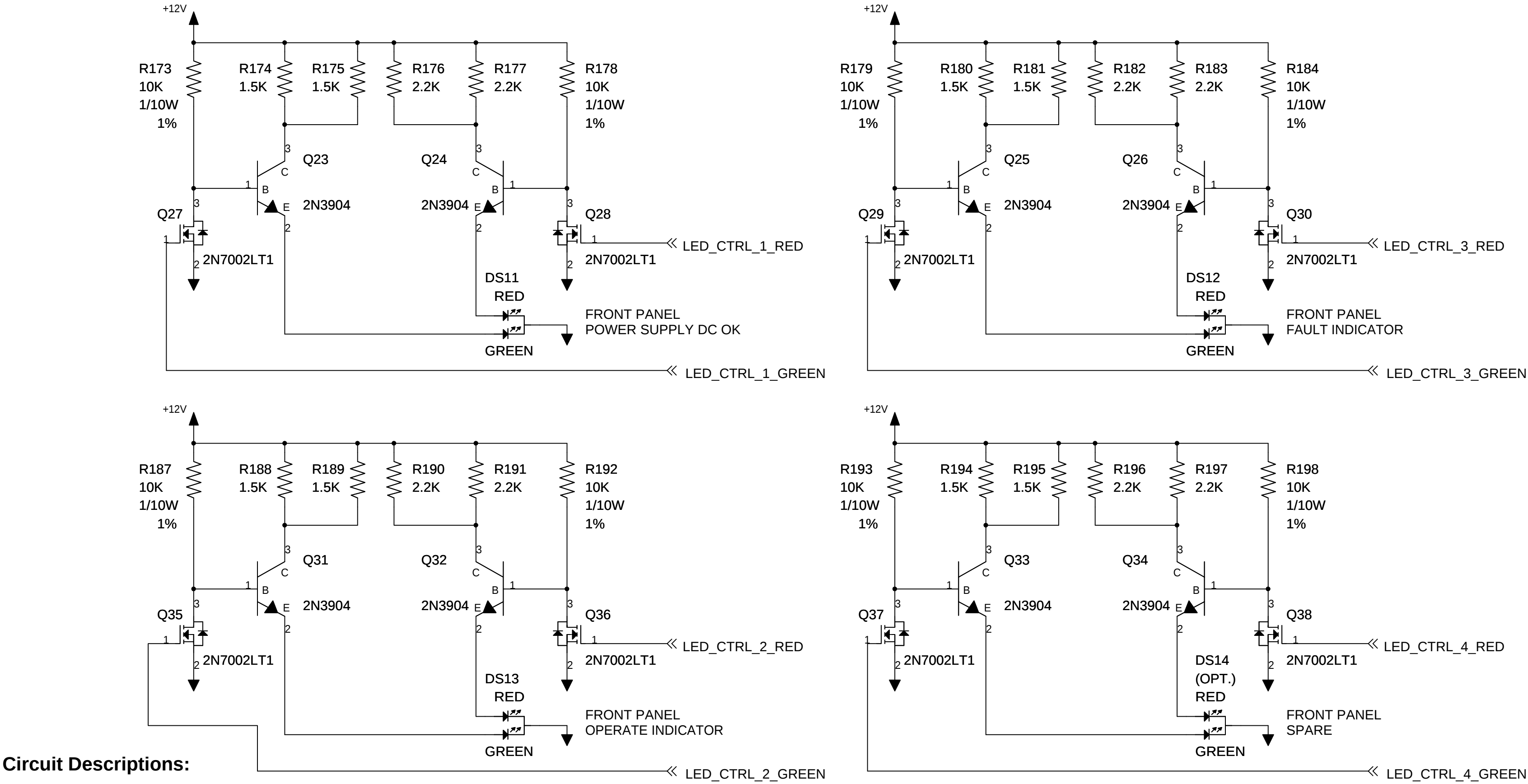
MATERIAL NUMBERS: 1310089 A/D, SYSTEM CNTRLR 1310090 SCH, SYSTEM CNTRLR,LX 1310091 PCB, SYSTEM CNTRLR,LX 1310092 STENCIL FOR 1310091				CR			
B0				20112962			
5/7/08				REH			
APV				REV			
THIS PRINT IS THE PROPERTY OF AXCERA, IT SHALL NOT BE COPIED WITHOUT PERMISSION				TITLE SCH, SYSTEM CONTROLLER BOARD, INNOVATOR LX (1310089)			
DWN				REH			
12/19/07				DWG. NO.			
1/22/08				1310090			
CHK				REH			
1/22/08				D			
REL				SCALE			
SHEET 1 OF 5							





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R211
C53
Q47
DS20
U31
VR22
J64
TP18
V23
SW2
CR11
W2
Y1
L2



Circuit Descriptions:

PAGE 1:

U1 is an Atmel Atmega2561 microcontroller. This part is in-circuit programmed using the serial programming port.

U2 is a watchdog IC used to hold the microcontroller in reset if the supply voltage is less than 4.21 Vdc; (1.25 Vdc < Pin 4 (IN) < Pin 2 (Vcc)). The watchdog momentarily resets the microcontroller if Pin 6 (IST) is not clocked every second.

A test board is used to execute self test routines. When the test board is installed, Auto_Test_1 is held low and Auto_Test_2 is allowed to float at 5 Vdc. This is the signal to start the auto test routines.

U3 and U4 are used to selectively enable various input and output ICs found on page 2 and 3 of the schematic.

U1 has two serial ports available. In this application, one port is used to communicate with transmitter system components where U1 is the master of a RS-485 serial bus. The other serial port is used to provide serial data I/O where U1 is not the master of the data port. A dual RS-232 port driver IC and a RS-485 port driver is also in the second serial data I/O system. The serial ports are wired such that serial data input can come through either the RS-232 or RS-485 channels. Data output is sent out through each of the two serial port channels.

Switch SW1 is used to select either transmitter operation or exciter driver operation. When the switches of SW1 are on, transmitter operation is selected and the power monitoring lines of the transmitter's power amplifier are routed to the system power monitoring lines.

PAGE 2:

Digital output latches are used to control system devices. Remote output circuits are implemented using open drain FETs with greater than 60 Volt drain to source voltage ratings.

Remote digital inputs are diode protected with a 1 Kohm pull-up resistor to 5Vdc. If the remote input voltage is greater than about 2 volts or floating, a FET is turned on and a logic low is applied to the digital input buffer. If the remote input voltage is less than the turn on threshold of the FET (about 2 Vdc), a logic high is applied to the digital input buffer.

Four of the circuits on page two are auxiliary I/O connections wired for future use. They are wired similar to the remote digital inputs but include a FET for digital output operation. To operate these signals as an input, the associated output FET must be turned off. These circuits are also connected to an analog input multiplexer IC.

PAGE 3:

Several ICs are used as input buffers to allow the microcontroller to monitor various digital input values. Most digital inputs use a 10 Kohm pull-up resistor. The buffer IC used for data transfer to the display is wired for read and write control.

RB1 is the connector to a Rabbit Semiconductor RCM4300. This ethernet enabled controller polls the U1 microcontroller on the same serial lines as a remote computer. The controller only gets data and sets conditions through the serial communication port.

PAGE 4:

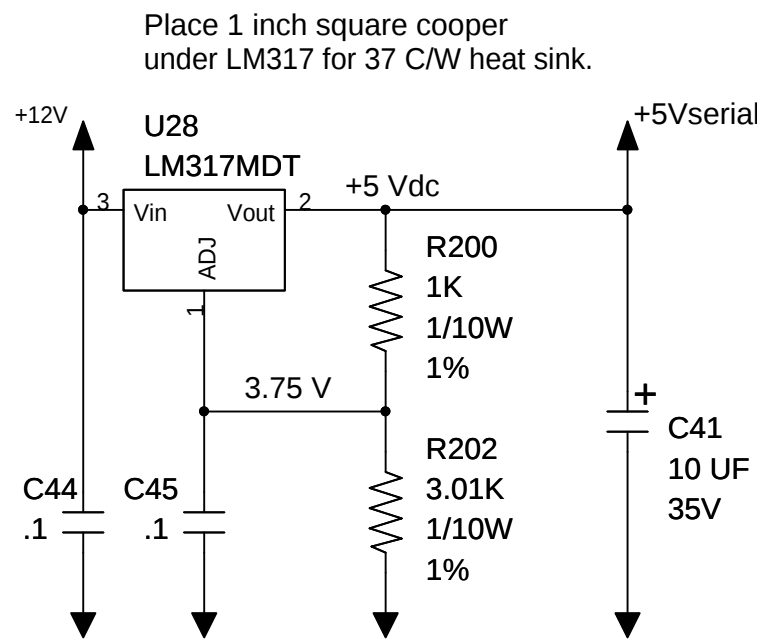
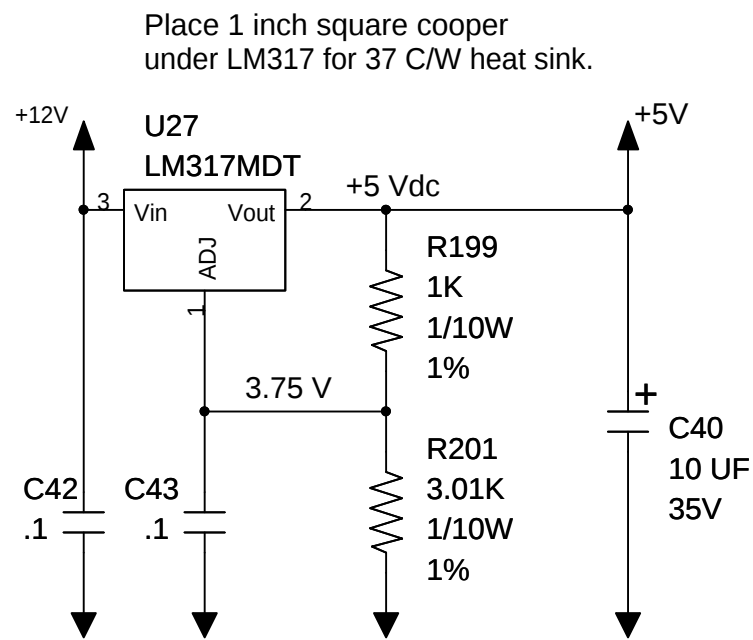
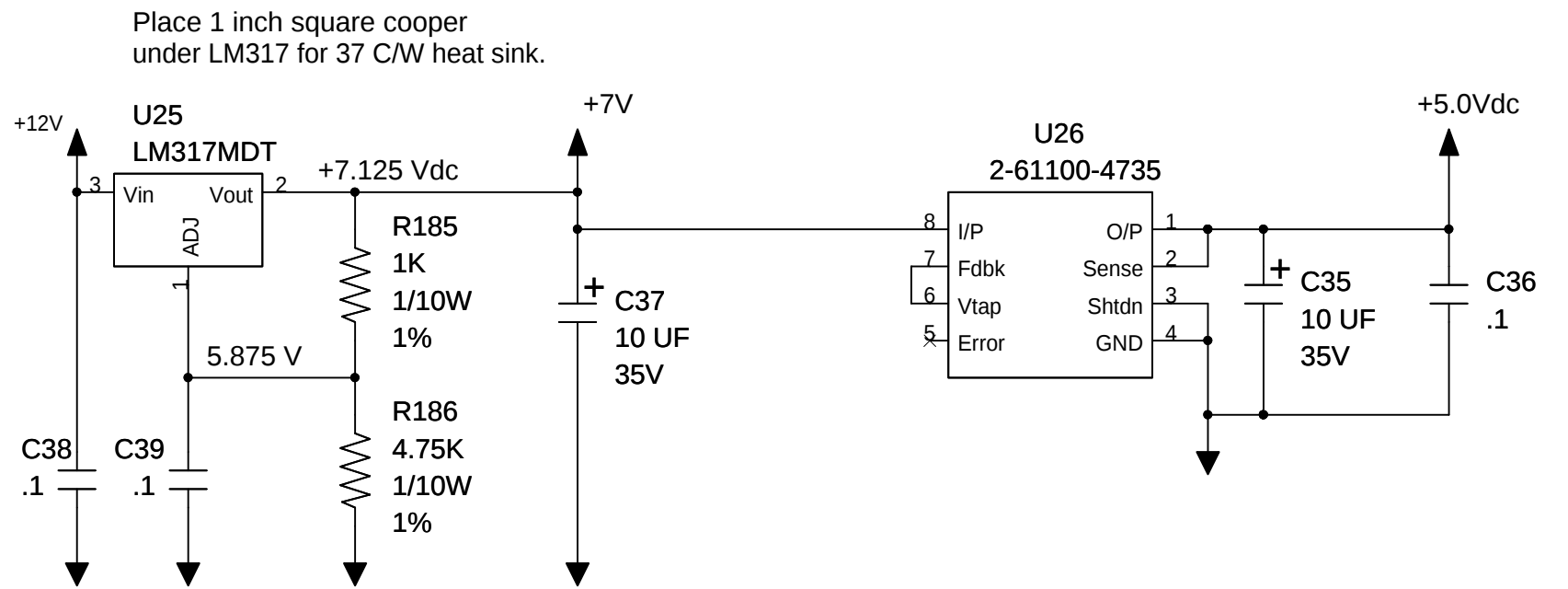
Each analog input is expected to be between 0 and 5 Vdc. If a signal exceeds 5.1 Vdc, a 0.225 Watt zenor diode clamps the signals voltage. Most signals are calibrated at their source however two dual serial potentiometer ICs are used to calibrate four signals. For these four circuits, the input value is divided in half before it is applied to an op-amp. The serial potentiometer is used to adjust the input signal between 80 and 120% of the input signal. Serial data to the second serial potentiometer is transferred through the first IC. The wiper position of the digital potentiometer circuit is used to set the gain of the op-amp. Lower digital values for the wiper setting increases the gain of the op-amp. If N= 0, gain = 6.0. If N = 255, gain = 3.00. If Vin = 1.0 at spare_Ain_1 and N = 128, U21A out = 4.0V with gain = 4.

Two 20 position connectors are used to provide power to the backplane. J62 and J63 get power from the power supply after a nominal 3 amp resettable fuse. The Raychem polyswitch resettable fuses may open on a current as low as 2.43 amps at 50C, 3 amps at 25 C or 3.3 amps at 0C. They definately will open when the current is 4.86 amps at 50C, 6 amps at 20C, or 6.6 amps at 0C. Trace widths of these circuits are 0.140" (designed for maximum current).

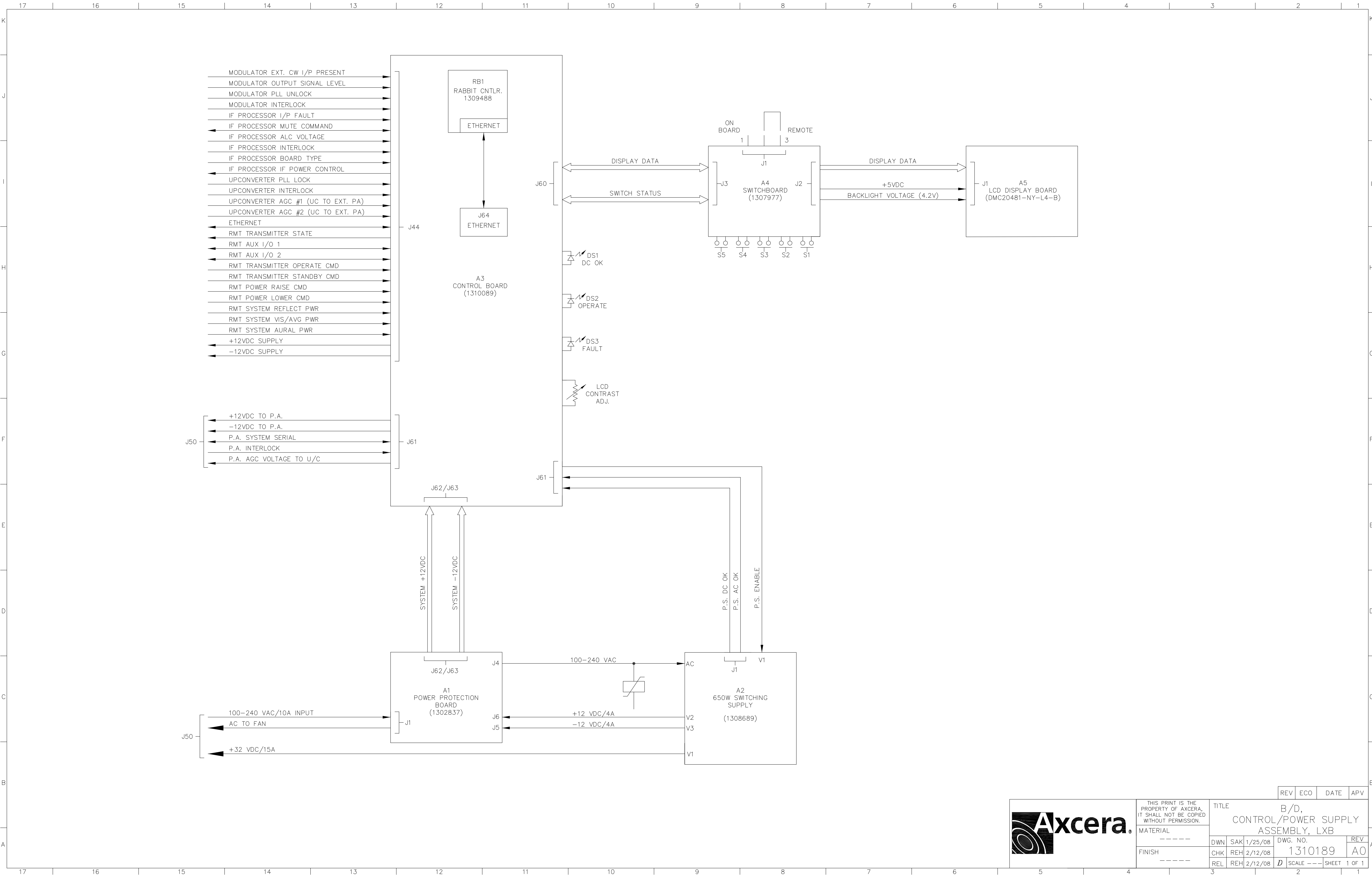
PAGE 5:

Each of the four LED circuits drive a dual element common cathode LED. To make a good amber color, the current applied to the green element is slightly greater than the red element.

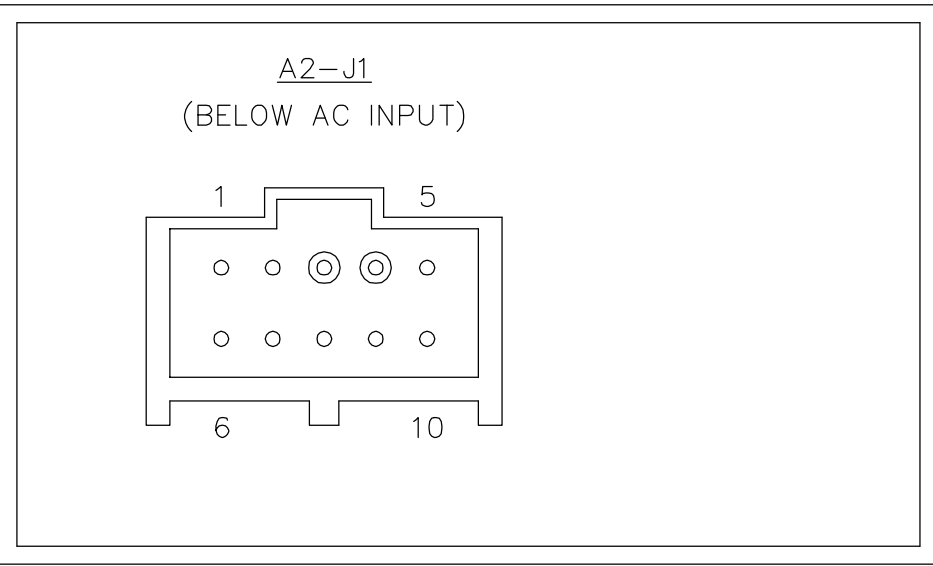
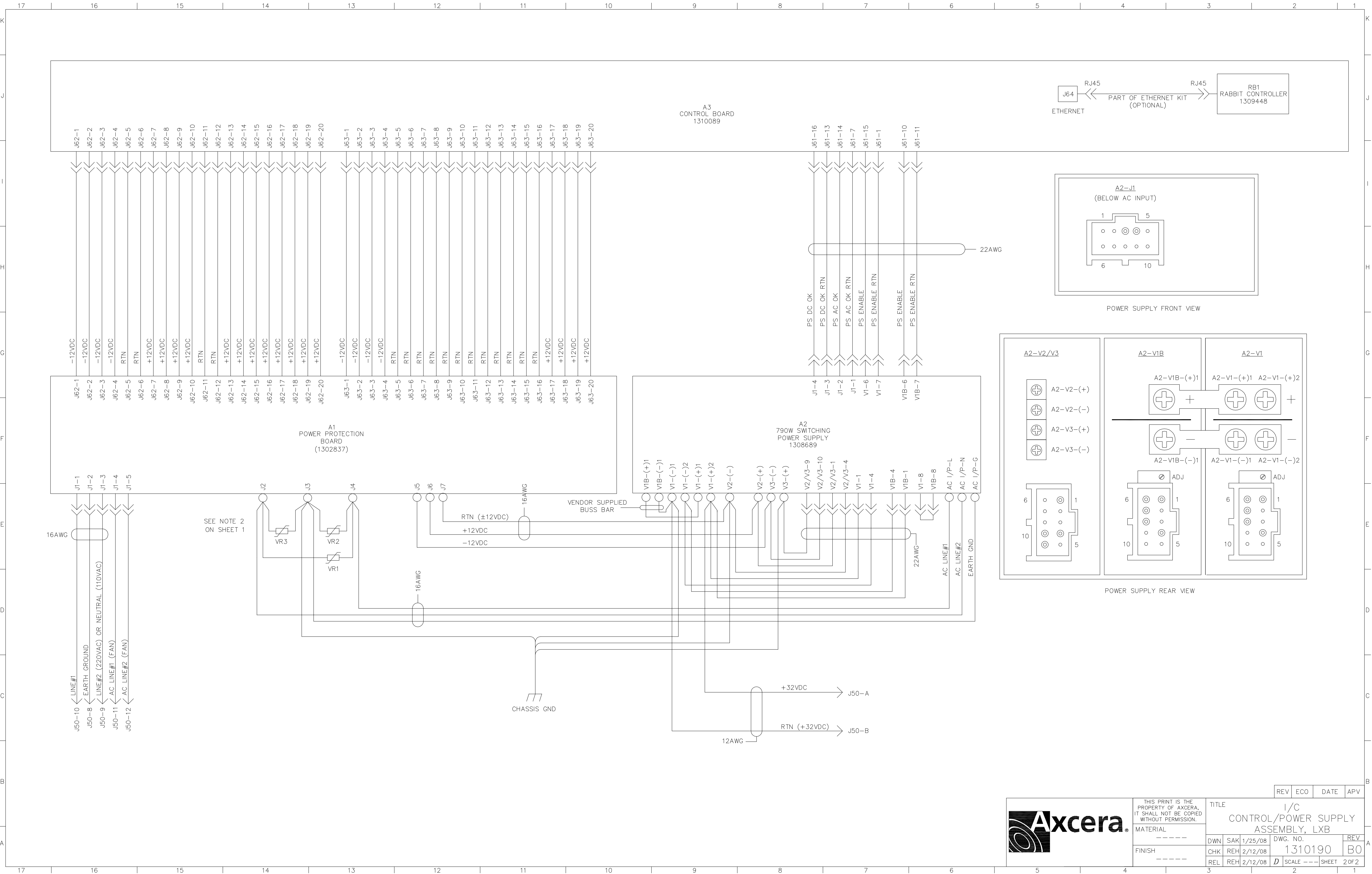
Several voltage regulators are used to power the board. Seven volts is typically applied to board LEDs and to the input of a precision 5.0 volt regulator. The 5.0 volt regulator is used for analog circuits and the microcontroller analog reference voltage. Another two 5 volt regulator circuits are used for most other board circuits.



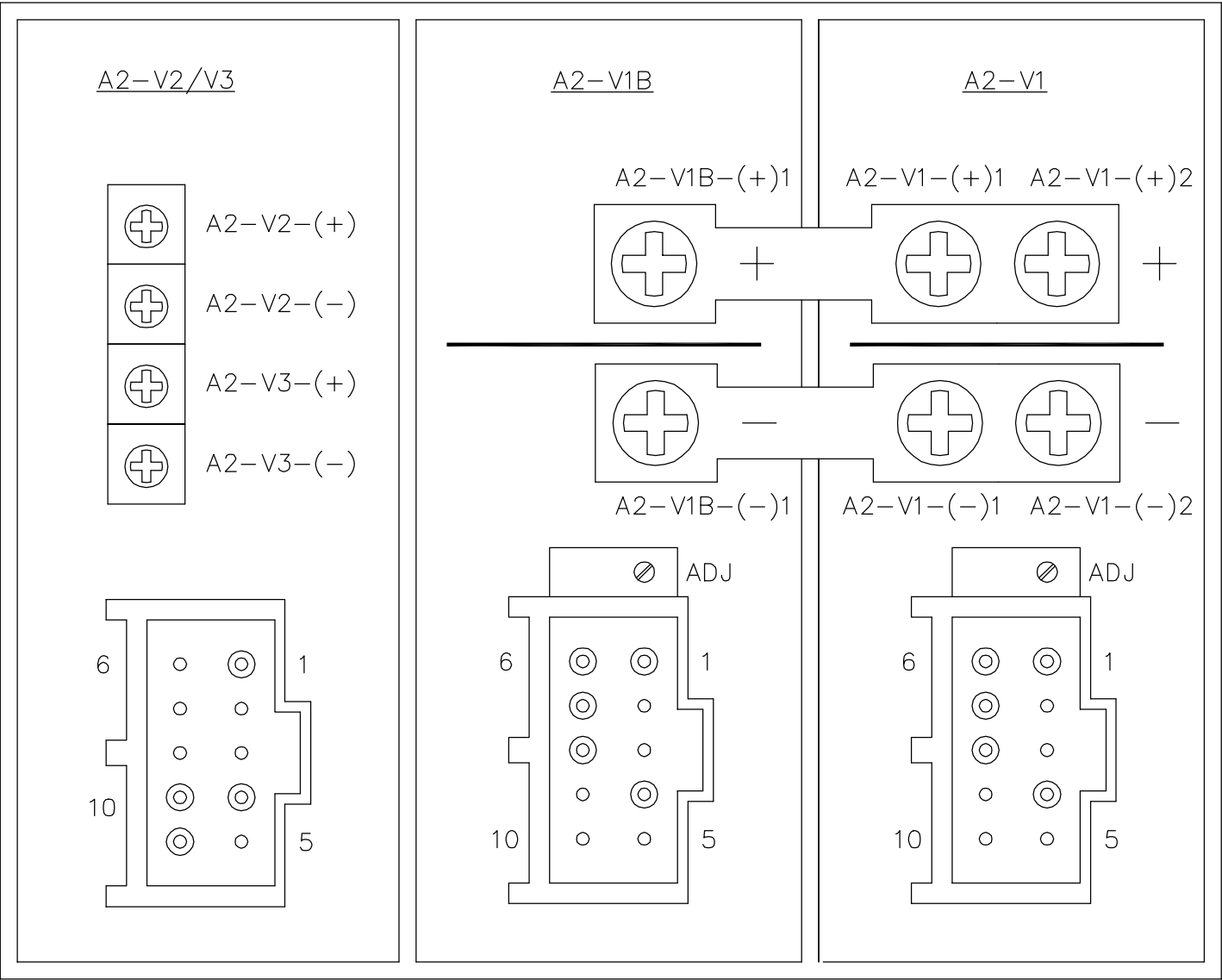
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ECO			MATERIAL						
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REV	FINISH		CHK	REH	1/22/08	1310090		B0	
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MATERIAL -----								
FINISH -----		DWN	SAK	1/25/08	DWG. NO.		REV	
		CHK	REH	2/12/08	1310189		A0	
		REL	REH	2/12/08	D	SCALE ---	SHEET	1 OF 1



POWER SUPPLY FRONT VIEW



POWER SUPPLY REAR VIEW



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MATERIAL		FINISH		DWN	SAK	1/25/08	DWG. NO.
-----		-----		CHK	REH	2/12/08	1310190
				REL	REH	2/12/08	D SCALE --- SHEET 20F2

REV	ECO	DATE	APV
-----	-----	------	-----

REV

B0

