

where

ENGINEERING SPECIFICATION		CONTINUATION SHEET	
TITLE AD01-D Acceptance Procedure			
A124 Modules are:			
Slot A17 CH00 - CH03		Slot B17 CH16 - CH19	
A18 CH04 - CH07		B18 CH20 - CH23	
A19 CH08 - CH11		B19 CH24 - CH27	
A20 CH12 - CH15		B20 CH28 - CH31	
2.0 Insure Flip-Chip module handle extenders and hold down bar in place.			
3.0 Logic Testing			
The logic testing is accomplished by loading the AD01D diagnostic Maindec-11-D6AB with the binary loader. The G735 test card should be inserted into slots AB21. Set the voltage standard (EDC) for 0.625V.			
3.1 Running the diagnostic			
3.1.1 Normal (Worst Case) Testing			
The starting address is 200 and the program halts 3 times at the start.			
1st Halt - Load initial channel number (SW0-SW5)			
2nd Halt - Load number of channels to be tested (SW0 - SW5)			
3rd Halt - Set SR option (if AH05 is ordered set SR 8-1 at this halt.			
The continue switch should be hit after each halt. The program should now run testing all logic, control functions, gain, linearity and analog channels. If the AH05 option is installed the program will ask for the proper input voltage to test the sign. The gain linearity test may fail if external noise is excessive. However, the test should be			
SIZE	CODE	NUMBER	REV
A	SP	AD01-D-12	8

ENGINEERING SPECIFICATION		CONTINUATION SHEET	
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repeated as continued failures indicate non-linearity.			
4.0 Channel Noise			
This test is used primarily to locate excessively noisy channels. It should be noted here that this test is dependent on many factors, external noise generated at the voltage source, variations in power line voltages and radiated power line noises. Typeouts here do not necessarily indicate failures. When running the was-is test the main thing to watch for is excessively noisy channels. This is indicated by repeated typeouts on the same channel with 3-4 count spreads.			
4.1 Running the Was-Is Test			
1. Set EDC to "0" on polarity switch.			
2. Load and start at SA270; the program will halt 3 times:			
1st Halt - Load initial channel in octal (Bits 05-00) and Gain (Bits 07-06)			
2nd Halt - Load number of channels (Bits 05-00)			
3rd Halt - Set SR option (refer to diagnostic for option settings). For acceptance purposes load SRO at this halt.			
Hit continue after each halt. The test should be run for each gain using the discussion in the previous Section (4.0) as a guide. At the end of each pass (4096 conversions per channel) the teletype bell will ring. Test should run for a minimum of 5 minutes without errors.			
4.2 Channel Continuity			
With the Was-Is test running at a gain of 1 and the EDC set at 9.9900V. Set SW6=1. A table will print out			
SIZE	CODE	NUMBER	REV
A	SP	AD01-D-12	8

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giving the channel number, initial value and new value. of the converted data. With the G735 test card in use each channel will be half of the previous channel value until at the tenth(8) channel,the full voltage will then repeat. For a full scale input as set above the printout for 10(8) channel will look like the following: <table><tr><td>Channel</td><td>Initial Value</td><td>Final Value</td></tr><tr><td>CH00</td><td>1777</td><td>1777</td></tr><tr><td>CH01</td><td>1000</td><td>1000</td></tr><tr><td>CH02</td><td>0400</td><td>0400</td></tr><tr><td>CH03</td><td>0200</td><td>0200</td></tr><tr><td>CH04</td><td>0100</td><td>0100</td></tr><tr><td>CH05</td><td>0040</td><td>0040</td></tr><tr><td>CH06</td><td>0020</td><td>0020</td></tr><tr><td>CH07</td><td>0000</td><td>0000</td></tr><tr><td>CH10</td><td>1777</td><td>1777</td></tr></table> If the G735 test card is not available each input should be given a known voltage and the results checked in the display conversion loop SA220. 5.0 <u>Repeatability Test (3 Sigma)</u> This routine tests repeatability to specifications on the channels desired at gains of 4 and 8. Ten thousand conversions are taken at each gain. The specifications have been interpreted to mean that 35 conversions out of the ten thousand may be outside of 2 states at a gain of 4, and that 35 conversions out of ten thousand may be outside of 3 states at a gain of 8.				Channel	Initial Value	Final Value	CH00	1777	1777	CH01	1000	1000	CH02	0400	0400	CH03	0200	0200	CH04	0100	0100	CH05	0040	0040	CH06	0020	0020	CH07	0000	0000	CH10	1777	1777
Channel	Initial Value	Final Value																															
CH00	1777	1777																															
CH01	1000	1000																															
CH02	0400	0400																															
CH03	0200	0200																															
CH04	0100	0100																															
CH05	0040	0040																															
CH06	0020	0020																															
CH07	0000	0000																															
CH10	1777	1777																															
SIZE	CODE	NUMBER	REV																														
A	SP	AD01-D-12																															

ENGINEERING SPECIFICATION		CONTINUATION SHEET	
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5.1 Running the 3 Sigma Test The Pass- Fail aspect of this test is based on the specification for repeatability of the converter, and requires that the input to each channel be grounded. This can be accomplished by setting the EDC to ZERO (0) at the polarity switch or by connecting the inputs to analog ground. The SA is 300. At the first halt set the initial channel number to be tested in SW05-SW00. At the second halt set the number of consecutive channels to be tested in SW05-SW00. The test will now run, ringing the bell after each successful pass. Again it should be noted here that this test is dependent on outside factors especially radiated power line noise and variations in power line voltages. This test should be run for a minimum of 5 min, without errors. 6.0 <u>Accuracy</u> The accuracy specification for the AD01-D is 0.1% of F.S. This specification can be proved by checking switching points and comparing the values obtained against the proper calibration chart. (Unipolar chart for basic unit and Bipolar if AH05 is installed). Each switching point should be within the specified tolerance on each gain.			
SIZE	CODE	NUMBER	REV
A	SP	AD01-D-12	

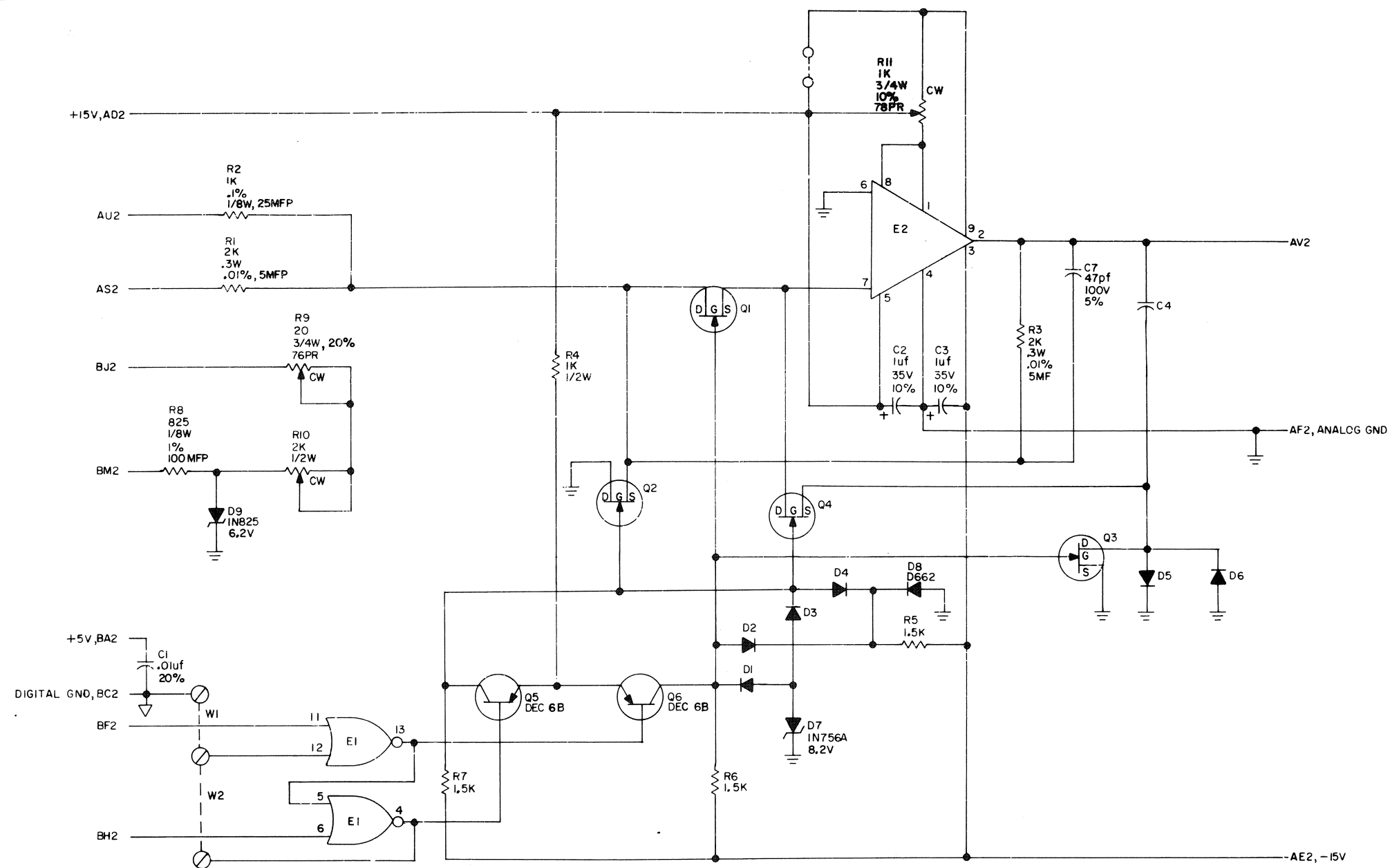
ENGINEERING SPECIFICATION		CONTINUATION SHEET			
TITLE AD01-D Acceptance Procedure					
6.1	Running the Accuracy Test This is accomplished by using the display loop section of the diagnostic program. The SA is 220 and the program will immediately run upon starting. Channel and gain can be selected while the program is running. The following are the switch register settings: Channel (Octal) - SW5-SW0 Gain (Octal) - SW7-SW6 The switching points should be checked at CH00 since the G735 acts as a voltage divider. All the switching points need not be checked for acceptance as production checkout has already been through the calibration sheet. However, six to eight readings on each gain should suffice. It should be noted here that the accuracy of the voltage standard should be considered in making the measurements. For example, if an EDC is used with an accuracy of $\pm 0.01\%$ of F.S. 10V, the EDC reading is good only to ± 1 millivolt. The accuracy test is the final part of the procedure. The G735 card should be removed from slot AB21 and the M908 cards replaced in slot AB22. The hold down bar should now be installed.				
7.0	<u>External Sync Test</u> The wave generator should be connected to the EXT. IN in slot A21. The jumper from Pin A22R2 to A22C2 should be				
		SIZE A	CODE SP	NUMBER AD01-D-12	REV

ENGINEERING SPECIFICATION		CONTINUATION SHEET			
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	removed.				
7.1	External Conversion Test This routine counts external conversions and prints out after every tenth conversion. The SA is 230 and the frequency of the input trigger signal should be set at about 1 cycle (1HZ). <u>Switch Register Settings</u> <u>SW5-1.</u> Causes the program not to set external enable thus no printout should occur. <u>SW6-1.</u> Causes it to run internal conversions during external conversions. The proper error message will occur. <u>SW7-1.</u> Prevents it from clearing done after each conversion thus an error printout will occur. It should also be noted that if the external trigger frequency is too fast error printouts will occur.				
8.0	<u>Documentation and Software</u> The following items should be complete and included: - AD01-D Print Set - Maintenance Manual or Engineering Specifications. - Key sheets, checkout log, Q.C. status, accessories as stated on accessory check list. - AD01-D Maindec-11-D6AB Diagnostic Program and Write-up - AD01-D Calibration Procedure - AD01-D Calibration Chart - ECO Status Sheet				
		SIZE A	CODE SP	NUMBER AD01-D-12	REV

[illegible]

DEC FORM NO.16-1031
DRA 110

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UNLESS OTHERWISE INDICATED:
 TRANSISTORS ARE 2N5245
 CAPACITORS ARE .001UF 100V, 10%
 RESISTORS ARE 1/4W, 5%
 DIODES ARE D664
 E1 IS DEC7402
 PIN 7 = GND ON E1
 PIN 14 = +5V
 ○--○ INDICATES JUMPER
 ○--○ SPLIT LUGS WITH JUMPER
 (CUSTOMER OPTION)
 E2 IS A 1909848-03

DRN. Nancy Moore CHK'D. Rod Roluccio ENGR. M. G. Sullivan PROD.		DATE 6/2/70 DATE 7/28/70 DATE 9/14/70	TRANSISTOR & DIODE CONVERSION CHART				TITLE SAMPLE AND HOLD A405		
DEC	EIA	DEC	EIA	DEC	EIA	SIZE	CODE	NUMBER	REV.
D664	IN3806	IN625	SAME			C	CS	A405-0-1	B
D662	IN645								
DEC68	NONE								
2N5245	NONE								
IN756A	SAME								

EQUIPMENT CORPORATION
 MAYNARD, MASSACHUSETTS
 PRINTED CIRCUIT REV. 5
 DIST. 324,434,435 5 P.NK-

REV. B
 A405-0-1
 C CS

MASTER DRAWING LIST

[illegible]

DRA 131

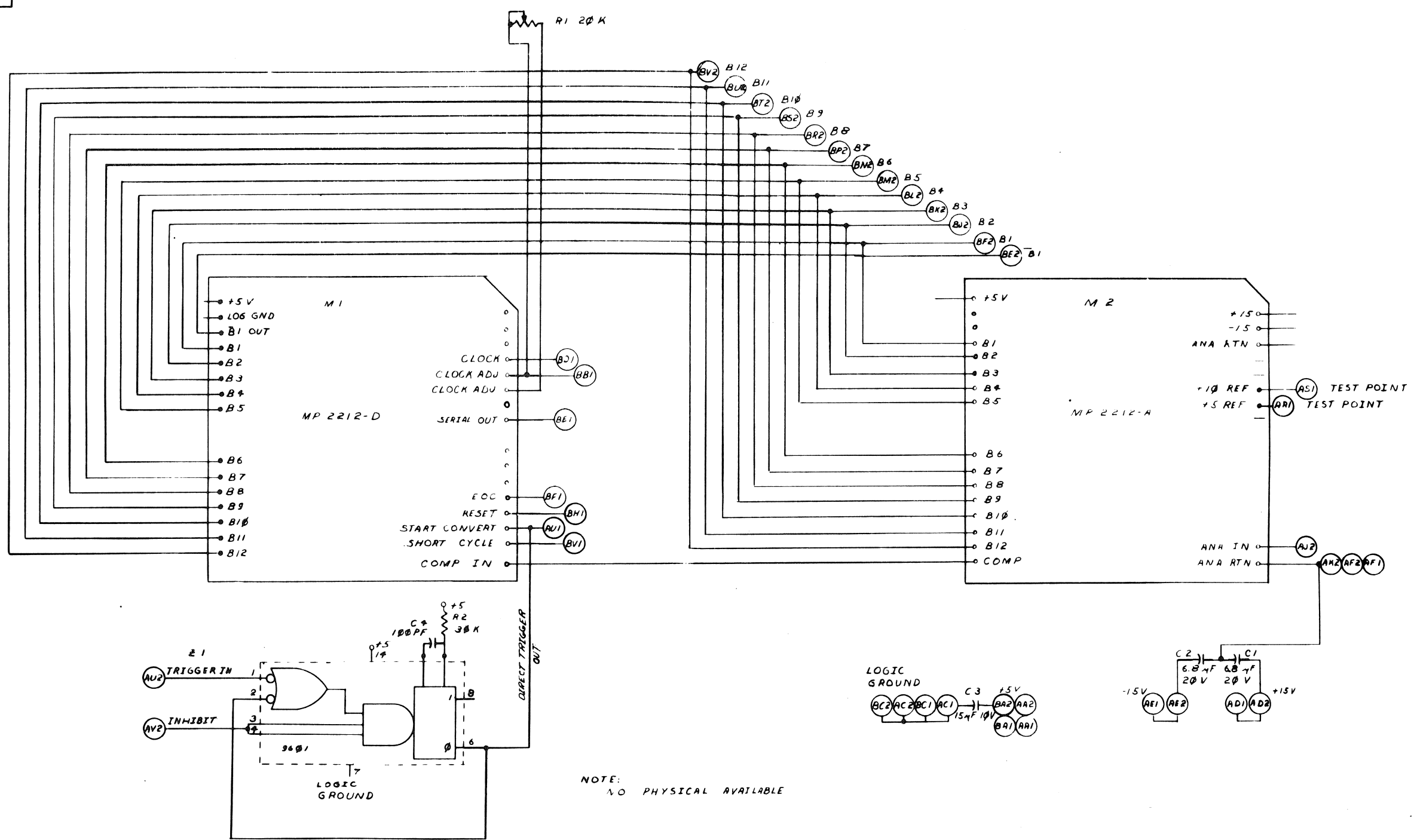
Dec 16--(325)--1048--N471

[illegible]

DRA 132

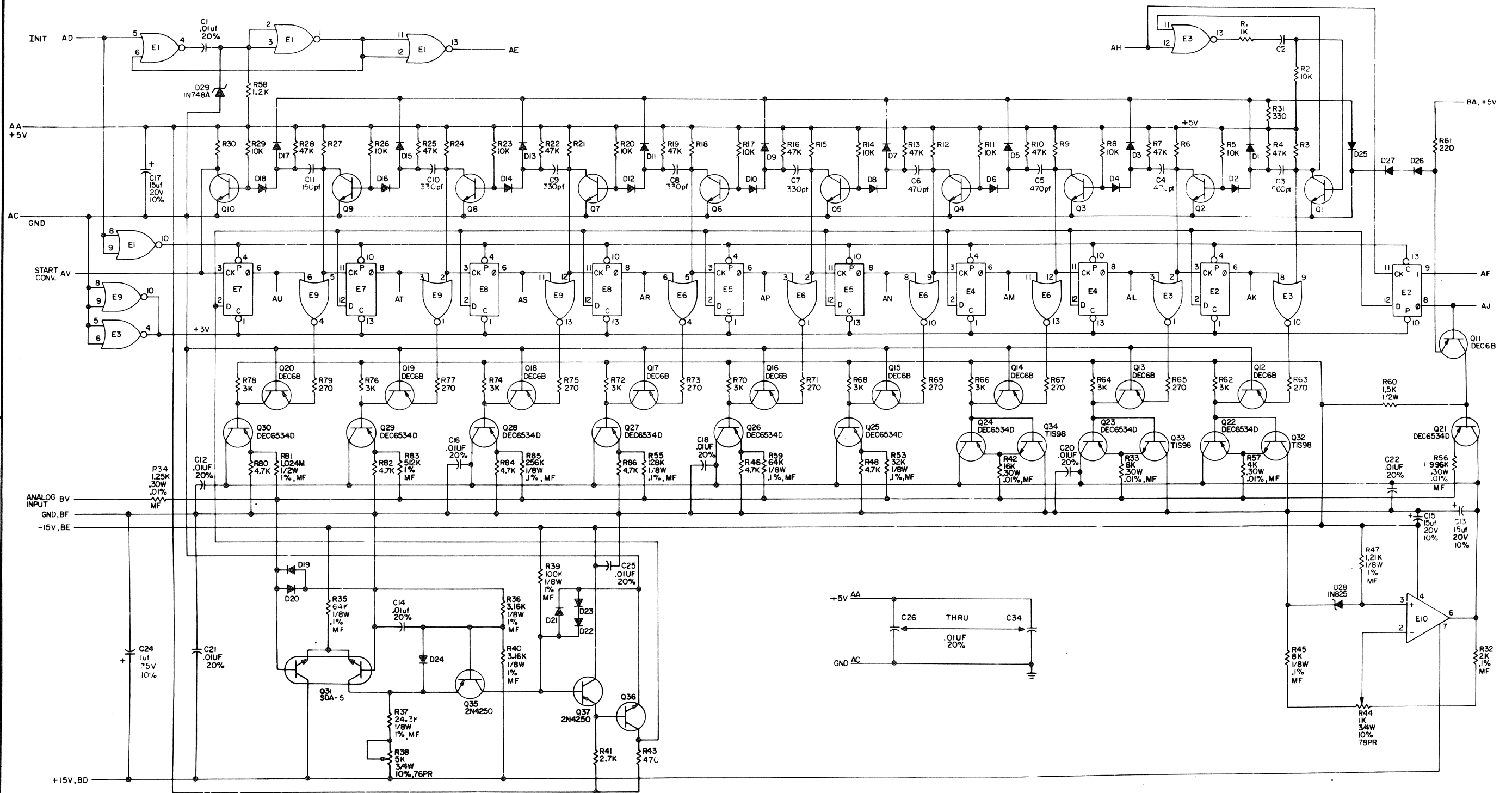
DEC 16--(325)-1048-1-N471

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FIRST USED ON OPTION/MODEL		PARTS LIST		EQUIPMENT CORPORATION	
+ +		QTY.	DESCRIPTION	PART NO.	REV.
UNLESS OTHERWISE SPECIFIED					
DIMENSIONS IN INCHES					
TOLERANCES					
DECIMALS FRACTIONS ANGLES					
± .005 ± 1/64 ± 90°					
FRACTIONAL SURFACE QUALITY					
REMOVE BURRS AND BREAK SHARP EDGES					
MATERIAL					
FINISH					
NEXT HIGHER ASSY					
SCALE					
SHEET 1 OF 1					
TITLE					
HIGH SPEED A/D CONVERTER (A861 & A862)					
DCS A862-0-01					
PINK					

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UNLESS OTHERWISE INDICATED:
RESISTORS ARE 2.2K, 1/4W, 5%
CAPACITORS ARE 150pf, 100V, 5%
DIODES ARE D664
TRANSISTORS ARE DEC3009B
E2, E4, E5, E7, E8 ARE DEC7474
E1, E3, E6, E9 ARE DEC7402
PIN 7 ON EACH IC = GND
PIN 14 ON EACH IC = +5V
E10 ARE DEC439
--- INDICATES JUMPER (CUSTOMER OPTION)
⊙ INDICATES SPLIT LUGS

REV	DATE	BY	CHKD	APPD
1	12-12-70	ALLAN RITCEY		

TRANSISTOR & DIODE CONVERSION CHART			
DEC	EIA	DEC	EIA
D664	1N3608	T1898	NONE
IN825	SAME	2N4250	NONE
DEC3009B	2N5009B	SDA-5	SDA-5
DEC7402	7402		
DEC439	439		

TITLE		10 BIT ADC A812	
SAFETY	CODE	NUMBER	REV
D	CS	A812-0-1	C
EQUIPMENT CORPORATION		PRINTED CIRCUIT REV	

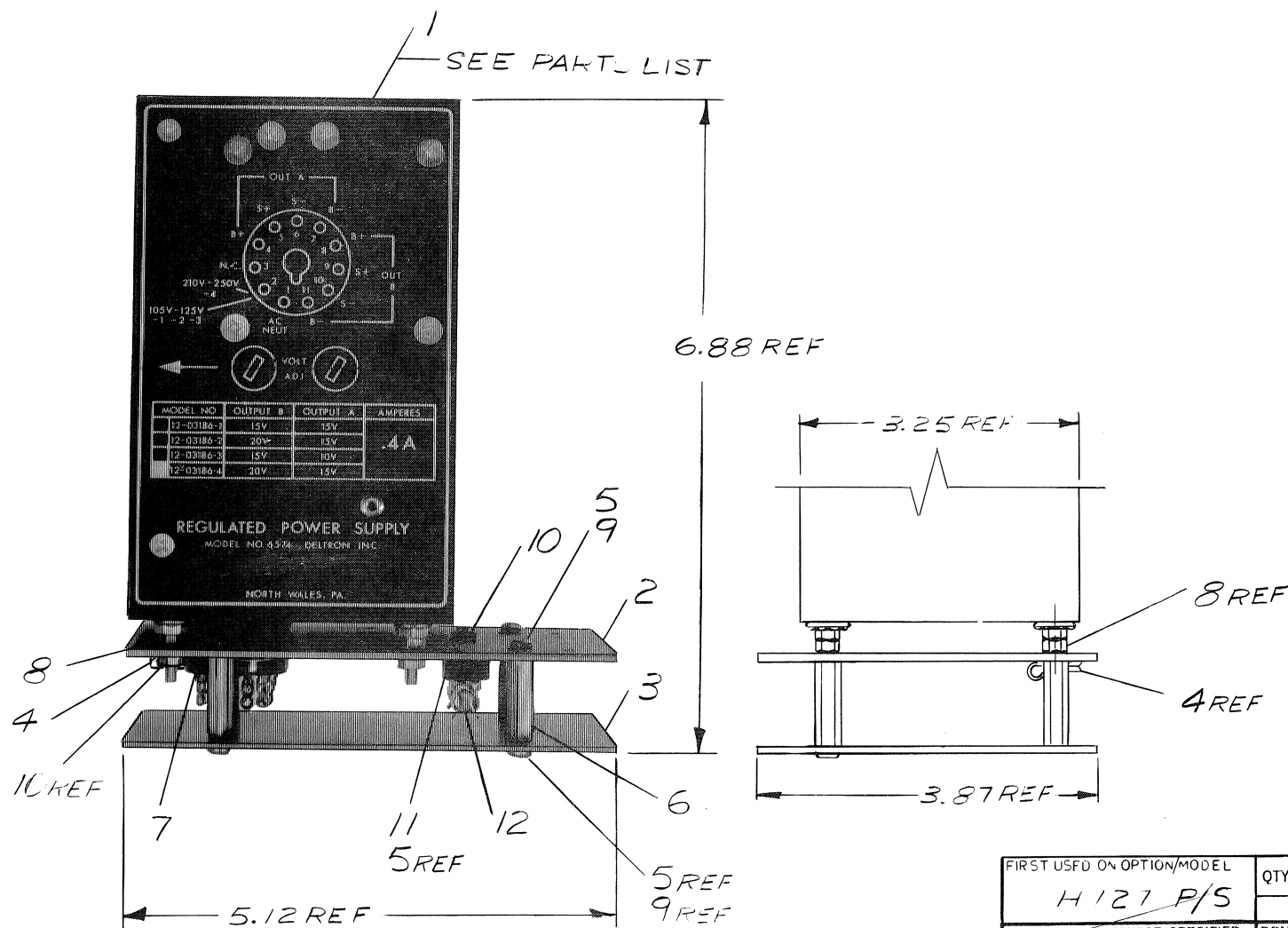
PINK 1215

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LEGEND	
PART NO	VARIATION
H727-A	115VAC (ITEM 1)
H127-B	230VAC (ITEM 1)

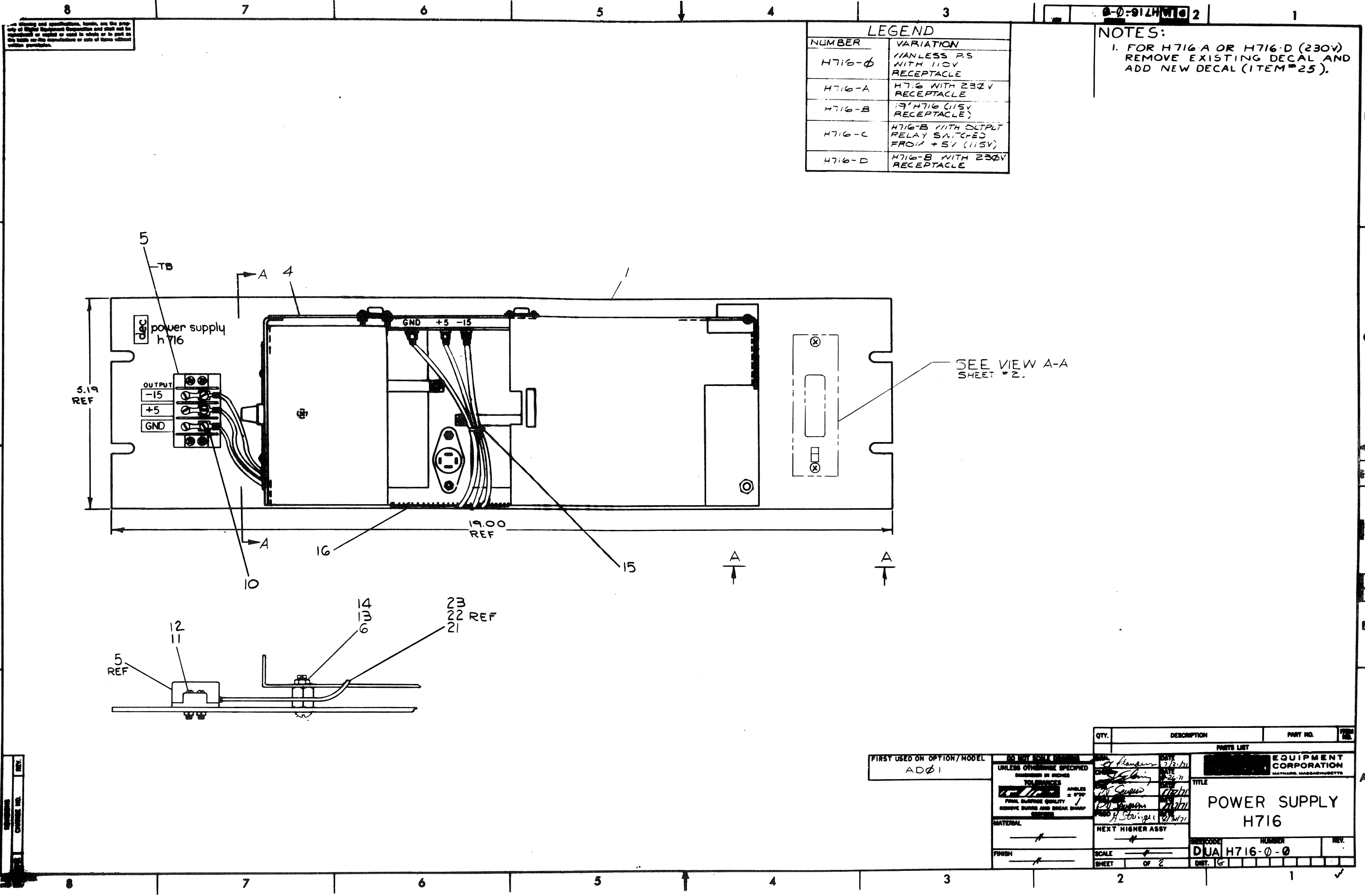
NOTES:

1. FOR CIRCUIT SCHEMATIC
REFER TO DWG D-CS-H727-Ø-1



TOLERANCES
DECIMALS
.XXX = $\pm .005$
.XX = $\pm .02$
.X = $\pm .1$

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
H127 P/S				
UNLESS OTHERWISE SPECIFIED				
DIMENSION IN INCHES				
TOLERANCES				
DECIMALS	FRACTIONS	ANGLES		
$\pm .005$	$\pm 1/64$	$\pm 0^{\circ}30'$		
FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS				
MATERIAL				
FINISH				
NEXT HIGHER ASSY				
SCALE NONE				
SHEET 1 OF 1				
PARTS LIST				
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS				
TITLE DUAL D.C. POWER SUPPLY				
SIZE CODE C UA				
NUMBER H727-Ø-Ø				
REV.				



LEGEND	
NUMBER	VARIATION
H716-0	UNLESS P.S. WITH 110V RECEPTACLE
H716-A	H716 WITH 230V RECEPTACLE
H716-B	H716 (115V RECEPTACLE)
H716-C	H716-B WITH OUTPUT RELAY SWITCHED FROM +5V (115V)
H716-D	H716-B WITH 230V RECEPTACLE

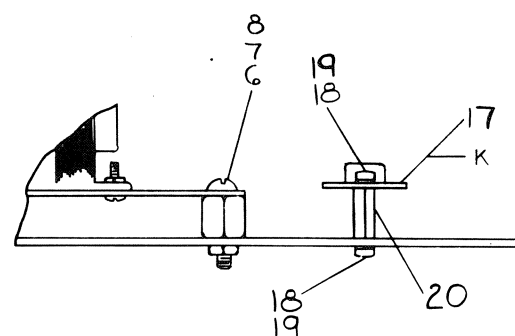
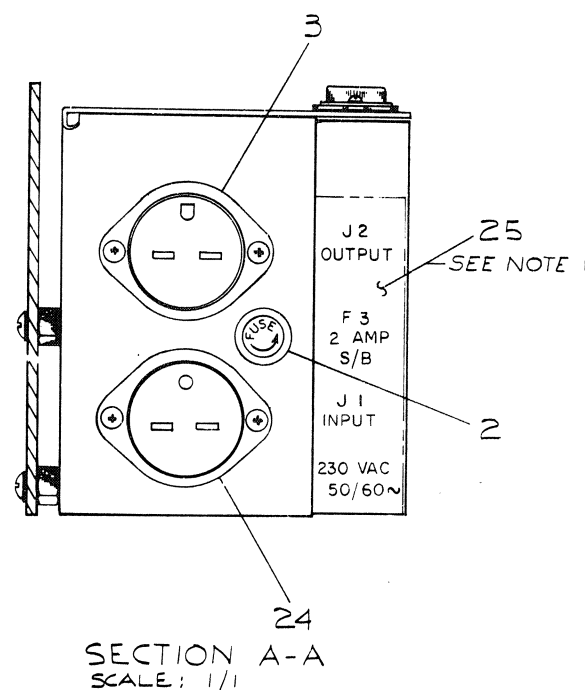
NOTES:
1. FOR H716 A OR H716-D (230V) REMOVE EXISTING DECAL AND ADD NEW DECAL (ITEM #25).

FIRST USED ON OPTION/MODEL AD01		UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES ANGLES ± 0°30' FINISH SURFACE QUALITY REMOVE BURRS AND BREAK SHARP EDGES		EQUIPMENT CORPORATION MARTINE, MASSACHUSETTS	
MATERIAL — # —		NEXT HIGHER ASSY — # —		TITLE POWER SUPPLY H716	
FINISH — # —		SCALE SHEET OF 2		PART NO. DUA H716-0-0	

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WIRE TABLE H716-B&D					
ITEM NO.	DESCRIPTION	FROM	WITH	TO	WITH
23	18 BLK	PS - GND	9	TB - GND	10
21	18 RED	PS - + 5	9	TB - + 5	10
22	18 BLU	PS - -15	9	TB - -15	10

WIRE TABLE H716-C					
ITEM NO.	DESCRIPTION	FROM	WITH	TO	WITH
23	18 BLK	PS - GND	26	TB - GND	10
21	18 RED	PS - + 5	26	TB - + 5	10
22	18 BLU	PS - -15	26	TB - -15	10



VIEW A-A
FOR H716-C

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DRN. <i>[Signature]</i> CHK'D <i>[Signature]</i> DATE 8/14/71	DATE 8/26/71	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	
DECIMALS	ANGLES	DATE 8/27/71	TITLE	
XXX - 005 XX - 02 X - 1	± 0° 30'	DATE 8/27/71	POWER SUPPLY H716	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	PROD'G <i>[Signature]</i> DATE 8/31/71	DATE 8/31/71	SIZE CODE	
MATERIAL	NEXT HIGHER ASSY.	SCALE	NUMBER	REV.
FINISH	SHEET 2 OF 2	DIST.	DUA H716-0-0	