

IDENTIFICATION

PRODUCT CODE: MAINDEC 12-D6CC-D (D)
PRODUCT NAME: A TO D TEST
DATE CREATED: 9-21-70
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: RAYMOND SHOOP

ADTST

1. ABSTRACT:

THIS PROGRAM MAY BE USED TO TEST THE KNOBS FOR CONTINUITY, THE BASIC A-D FOR MONOTONICITY, AND TO TEST AND CALIBRATE THE FREAMPS FOR GAIN AND OFFSET, A PROVISION FOR TESTING SIXTEEN ADDITIONAL A-D CHANNELS IS INCLUDED FOR THE AM12-AG12 MULTIPLEX EXTENSION.

THREE METHODS ARE PROVIDED FOR TESTING THE KNOBS AND ADJUSTING THE PREAMPS, (NOTE: ADJUSTMENT OF THE LATCHING DIFFERENTIAL AMPLIFIER OR THE SAMPLE AND HOLD IS NOT NORMALLY REQUIRED, FOR ADJUSTMENT OF THESE MODULES SEE THE APPROPRIATE MAINTENANCE MANUAL.)

2. REQUIREMENTS:

2.1 EQUIPMENT

- A) A PDP-12 WITH A-D AND VR12 DISPLAY.
- B) AN ASR-33 OR EQUIVALENT.

2.2 PRELIMINARY PROGRAMS:

- A) INSURE THAT THE BINARY LOADER IS OPERATING PROPERLY.
- B) ALL BASIC PROCESSOR TESTS MUST HAVE BEEN RUN SUCCESSFULLY BEFORE ATTEMPTING TO EXECUTE ADTST.

3. LOADING PROCEDURES

3.1 METHOD

THIS PROGRAM MAY BE LOADED WITH THE BINARY LOADER, IF YOU ARE UNFAMILIAR WITH THE PROPER BINARY LOADING PROCEDURES REFER TO "APPENDIX A" OF THIS PROGRAM, OTHERWISE PROCEED WITH THE FOLLOWING:

- A) SET THE TELETYPE READER SWITCH TO FREE.
- B) OPEN THE TELETYPE READER AND INSERT THE PROGRAM TAPE SO THAT THE ARROWS ON THE TAPE ARE VISIBLE TO AND POINTING TOWARD THE OPERATOR.
- C) CLOSE THE READER AND SET THE READER SWITCH TO START.
- D) SET THE TELETYPE FRONT PANEL SWITCH TO ON LINE.
- E) SET THE LEFT SWITCHES TO 7777.
- F) SET THE RIGHT SWITCHES TO 4000.
- G) SET THE MODE SWITCH TO 8 MODE.
- H) DEPRESS I/O PRESET.
- I) DEPRESS START LS.
- J) WHEN THE PROGRAM TAPE HAS BEEN READ THE ACCUMULATOR MUST BE 0000 IF IT IS NOT, A READ-IN ERROR HAS OCCURRED AND ONE MIGHT TRY RELOADING THE BINARY LOADER.
- K) REMOVE THE PROGRAM TAPE FROM THE READER.

4. STARTING PROCEDURES.

- A) TURN THE VR12 ON, AND ALLOW TO WARM UP AT LEAST ONE MINUTE.
- B) SET THE BRIGHTNESS POT ON THE VR12 TO 3/4 MAXIMUM; (NOTE! IF A BRIGHT DOT APPEARS ON THE VR12, SHUT DOWN THE INTENSITY IMMEDIATELY TO PREVENT BURNING THE PHOSPHOR)
- C) SET THE MODE SWITCH ON THE CONSOLE TO L MODE.
- D) DEPRESS I/O PRESET.
- E) SET ALL SWITCHES TO 0'S.
- F) (THIS WILL SET UP THE PROGRAM FOR THE FIRST DISPLAY) ROTATE ANALOG CHANNEL 00 TO FULL COUNTER CLOCKWISE AND ROTATE ANALOG CHANNEL 01 TO FULL CLOCKWISE (THIS IS TO INSURE THAT THEY ARE UNEQUAL FOR THE FAST SAMPLE TEST. THEY MAY BE CHANGED AFTER STARTING THE PROGRAM).
- G) DEPRESS START 20.
- H) THE PROGRAM IS NOW RUNNING, ADJUST THE INTENSITY ON THE VR12 TO GIVE A COMFORTABLE VIEWING LEVEL. IF ANY DIFFICULTY IS ENCOUNTERED, IT IS A HARDWARE PROBLEM AND MUST BE CORRECTED BEFORE PROCEEDING.
- I) THIS PROGRAM DOES USE FAST SAMPLE MODE.

5. OPERATING PROCEDURES

5.1 SWITCH SETTINGS

- A) SSW=00: CHANNELS 00-17(8) ARE SAMPLED AND DISPLAYED.
- B) SSW=40: CHANNELS 20-37(8) ARE SAMPLED AND DISPLAYED. THESE CHANNELS ARE OPTIONAL ON THE PDP-12; IF NOT INSTALLED, THE VALUE DISPLAYED FOR EACH CHANNEL WILL BE -777(8).
- C) SSW=20: THE CHANNEL SELECTED BY BITS 07-11 OF THE LEFT SWITCHES WILL BE DISPLAYED AS A FULL OSCILLOSCOPE TYPE DISPLAY, THE ROUTINE USED FOR DISPLAY WILL TRIGGER (SYNC) TO THE INPUT IF IT IS AN AC SIGNAL WITH AT LEAST 2 BITS (.4 MV) OF CHANGE WITHIN 15 MS.
- D) SSW=10: CHANNELS 0-7 ARE SAMPLED AND DISPLAYED AS A SEGMENTED OSCILLOSCOPE DISPLAY. EACH CHANNEL HAS TRIGGERING CAPABILITY AS IN (C) ABOVE.
- E) SSW=04: CHANNELS 10-17 ARE SAMPLED AND DISPLAYED AS A SEGMENTED OSCILLOSCOPE DISPLAY. EACH CHANNEL HAS TRIGGERING CAPABILITY AS IN (C) ABOVE.
- F) SSW=02: CHANNELS 20-27 ARE SAMPLED AND DISPLAYED AS A SEGMENTED OSCILLOSCOPE DISPLAY. EACH CHANNEL HAS TRIGGERING CAPABILITY AS IN (C) ABOVE.
- G) SSW=01: CHANNELS 30-37 ARE SAMPLED AND DISPLAYED AS A SEGMENTED OSCILLOSCOPE DISPLAY. EACH CHANNEL HAS TRIGGERING CAPABILITY AS IN (C) ABOVE.

5.2 ADJUSTMENT PROCEDURES

FOR ADJUSTMENT OF THE AD12/AM12/AG12 A TO D CONVERTER, REFER TO THE CHECKS AND ADJUSTMENTS SECTION OF THE PDP-12 MAINTENANCE MANUAL.

5.3 ERROR ROUTINE

THIS TEST HAS NO ERROR ROUTINES ONLY A HALT ON FAST SAMPLE ERROR. IF DIFFICULTY IS ENCOUNTERED WITH THE SAM INSTRUCTION, CHECK THE A TO D CONTROL. IF DIFFICULTY IS ENCOUNTERED WITH THE POTENTIOMETERS, IT WILL MOST LIKELY BE EITHER THE MULTIPLEXER OR THE POTS THEMSELVES. IF DIFFICULTY IS ENCOUNTERED WITH THE EXTERNAL ANALOG CHANNELS, CHECK THE PREAMPLIFIERS.

/PDP-12 A TO D TEST, MAINDEC 12-D6CC
/COPYRIGHT 1970, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
/THIS TEST IS DESIGNED TO DISPLAY ALL AVAILABLE
/ANALOG INPUT CHANNELS ON THE VR12 DISPLAY

/SENSE SWITCH 0 DETERMINES WHAT CHANNELS TO DISPLAY
/SENSE SWITCH 1 GIVES AN OSCILLOSCOPE DISPLAY
/FOR THE CHANNEL ENTERED IN THE LEFT SW

/SENSE SWITCHES 2 THRU 5 GIVE AN OVERALL
/OSCILLOSCOPE OF CHANNELS 0-7, 10-17, 20-27,
/AND 30-37, RESPECTIVELY.

/I/O PRESET, START 20 LINC MODE,
/TYPING CTL="0" RETURNS USER TO DIAL

/MAJOR START 4020
/TAGS AND CONSTANTS

4001	*0001		/HORIZONTAL COORDINATE STORAGE
4001	0000	H1,	
4016	*0016	DIAL,	
4016	W701	RCC	
4017	7300	EJECT	

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/TO HERE IS FIRST TIME THROUGH
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B7,
4020 JMP FSAM
4021 SNS I 1
4022 JMP D5
4023 SNS I 2
4024 JMP J6
4025 SNS I 3
4026 JMP J6*2
4027 SNS I 4
4028 JMP J6*5
4029 SNS I 5
4030 JMP J6*10
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/TEST FAST SAMPLE
/CHECK FOR OPTIONS
/TRIGGERED SCOPE DISPLAY
/CHANNELS 0-7
/CHANNELS 10-17
/CHANNELS 20-27
/CHANNELS 30-37

/BASIC CHANNEL SAMPLE AND DISPLAY
/LIFT SSW 0 FOR CHANNELS 20-37
SFA
BSE I
0200
ESF
LDA I
LDA I
STA
E1*25
EJECT

/ENABLE SPECIAL FUNCTIONS
/SET FLOW TAG FOR 20 CHANNEL DISPLAY

/END OF SINGLE DISPLAY

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/DISPLAY CHANNEL NO.
/E1:

4043	1000	LDA	/GET CHANNEL NUMBER
4044	0245	A1	/SAVE IT
4045	1040	STA	/GET LAST BIT
4046	0246	T1	/SAVE BITS 8,9,10
4047	0241	ROL 1	/ADD POINTER
4050	1540	BCL	/SAVE FIRST ADDRESS AND CLEAR AC
4051	0250	M1	/ADD BASIC CHANNEL NUMBER
4052	2247	ADD G1	/SAVE BITS 8,9,10
4053	4011	STC 11	/ADD POINTER
4054	2246	ADD T1	/SAVE SECOND ADDRESS AND CLEAR AC
4055	0302	ROR 2	/PICK UP VERTICAL COORDINATE
4056	1540	BCL	/DISPLAY HALF CHARACTER
4057	0250	M1	/DISPLAY SECOND HALF CHARACTER
4060	2247	ADD G1	/GO INSERT SPACE BETWEEN CHARACTERS
4061	4010	STC 10	/DISPLAY HALF CHARACTER
4062	2251	ADD V1	/DISPLAY SECOND HALF CHARACTER
4063	1750	DSC 10	/GO INSERT SPACE BETWEEN CHARACTERS
4064	1770	DSC I 10	/DISPLAY HALF CHARACTER
4065	6217	JMP X1	/DISPLAY SECOND HALF CHARACTER
4066	1751	DSC 11	/DECREMENT HORIZONTAL COORDINATE
4067	1771	DSC I 11	
4070	1020	LDA I	
4071	7737	-40	
4072	1140	ADM	
4073	0001	H1	
		EJECT	

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Line No.	Address	Instruction	Comment
87	4074	CLR	/SAMPLE CHANNEL JUST LABELED
88	4075	ADD A1	/SET CHANNEL NUMBER
89	4076	BSE I	/SET FOR SAM X
90	4077	100	
91	4078	STC .+4	/STORE FOR EXECUTION
92	4100	1000	/EXECUTE SAM X
93	4101		
94			
95			
96			
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98			
99			
100	6451	ARO	/POSITIVE?
101	6452	JMP :+4	/NO, SET POINTER FOR NEGATIVE PREFIX
102	6453	SET I 10	/YES, SET POINTER FOR POSITIVE PREFIX
103	6454	T2+20 FSAH+15	
104	6455	JMP :+4	
105	6456	SET I 10	
106	6457	T2+22 FSAH+15	
107	6458	COM	/COMPLEMENT NEGATIVE SAMPLE
108	6459	STA	/SAVE SAMPLE
109	6460	T1	/FIND AND STORE TABLE ADDRESSES FOR DISPLAY
110	6461	ROL 1	
111	6462	BCL	
112	6463	M1	
113	6464	ADD G1	
114	6465	STC 13	
115	6466	ADD T1	
116	6467	ROR 2	
117	6468	STA	
118	6469	T1	
119	6470	BCL	
120	6471	M1	
121	6472	ADD G1	
122	6473	STC 12	
123	6474	ADD T1	
124	6475	ROR 3	
125	6476	BCL	
126	6477	M1	
127	6478	ADD G1	
128	6479	STC 11	
129	6480	EJECT	

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4137 1120
 4140 7737
 4141 2251
 4142 1750
 4143 1770
 4144 6217
 4145 1751
 4146 1771
 4147 6217
 4150 1752
 4151 1772
 4152 6217
 4153 1753
 4154 1773

/DISPLAY DIGITS
 /
 ADA I 10
 -40
 ADD V1
 DSC I 10
 DSC I 10
 JMP X1
 DSC I 11
 DSC I 11
 JMP X1
 DSC I 12
 DSC I 12
 JMP X1
 DSC I 13
 DSC I 13

/DECREMENT VERTICAL TO DISPLAY BELOW CHAN NO,
 /ADD BASIC VERTICAL COORDINATE
 /DISPLAY PREFIX (+ OR -)
 /INCREMENT HORIZONTAL
 /DISPLAY DIGITS
 /INCREMENT HORIZONTAL
 /DISPLAY DIGITS
 /INCREMENT HORIZONTAL
 /DISPLAY DIGITS

/IS ROW ENDED?
 /
 LDA
 A1
 BCL I
 7774
 SAE I
 0003
 JMP P1

4155 1000
 4156 0245
 4157 1560
 4160 7774
 4161 1460
 4162 0003
 4163 6225

/FIND CHANNEL NUMBER
 /SAVE LOW-ORDER 2 BITS
 /DISPLAY 4 CHANNELS PER LINE
 /NOT END OF ROW, INCREMENT HORIZONTAL AND CHANNEL

/IS DISPLAY ENDED?
 /
 LDA
 A1
 BCL I
 7760
 SAE I
 0017
 JMP U1
 EJECT

4164 1000
 4165 0245
 4166 1560
 4167 7760
 4170 1460
 4171 0017
 4172 6236

/FIND CHANNEL NUMBER
 /SAVE LOW-ORDER 4 BITS
 /DISPLAY 17 OCTAL CHANNELS PER FRAME
 /NOT END OF DISPLAY, DECREMENT VERTICAL, INCREMENT CHANNEL

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/END OF DISPLAY
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4173	1020	LDA I	/RESET COORDINATES
4174	0300	0300	/VERTICAL TOP OF FRAME
4175	4251	STC V1	/HORIZONTAL LEFT EDGE
4176	4001	STC H1	/WHICH SET?
4177	0440	SNS 0	/CHANNELS 20-37
4200	6204	JMP I, 4	/CHANNELS 0-17
4201	1020	LDA I	/RESET CHANNEL NUMBER
4202	0020	0020	/KEYBOARD?
4203	6205	JMP I, 02	/BACK TO START
4204	0011	CLR A1	/READ KEYBOARD
4205	4245	STC A1	/CONTROL D?
4206	0415	KST	/RESET DATA FIELD
4207	6021	JMP B7	/YES, BACK TO DIAL
4210	0500	IOB	/INCREMENT HORIZONTAL TO SPACE CHARACTERS
4211	6036	0036	
4212	1460	SAE I	
4213	0204	0204	
4214	6021	JMP B7	
4215	0043	LDF 03	
4216	6016	JMP DIAL	
4217	0221	XSK I H1	
4220	0221	XSK I H1	
4221	0221	XSK I H1	
4222	0221	XSK I H1	
4223	0016	NOP 0	
4224	6000	JMP 0	
		EJECT	

X1,

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200 /NOT END OF ROW
201 /
202 P1, LDA I /INCREMENT HORIZONTAL TO SPACE CHANNELS
203 0077
204 ADM
205 H1
206 /INDEX CHANNEL NUMBER
207 4230 0001
208 /
209 /INDEX CHANNEL NUMBER
210 /
211 4231 1020 /INCREMENT CHANNEL NUMBER (NOT END OF ROW
212 4232 0001 /OR NOT END OF DISPLAY)
213 4233 1140
214 4234 0245
215 4235 6043 /GET NEXT CHANNEL AND DISPLAY
216 /
217 /NOT END OF DISPLAY
218 /
219 U1, LDA /DECREMENT VERTICAL TO SPACE ROWS
220 4236 1000 V1
221 4237 0251 ADA I
222 4240 1120 -200
223 4241 7577 STC V1
224 4242 4251
225 4243 4001 STC H1
226 4244 6231 JMP 01 /GO INCREMENT CHANNEL NUMBER
227 /
228 /TAGS AND REGISTERS
229 /
230 A1, 0000 /CONTAINS CHANNEL NUMBER
231 T1, 0000 /TEMPORARY STORAGE
232 G1, T2 /MATRIX POINTER
233 M1, 7761 /BCL CONSTANT
234 V1, 0 EJECT

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/DISPLAY MATRICES

4136	/ZERO
3641	/ONE
2101	/TWO
0177	/THREE
4523	/FOUR
2151	/FIVE
4122	/SIX
2651	/SEVEN
2414	/PLUS EIGHT
0477	/MINUS NINE
5172	
0651	
1506	
4225	
4443	
6050	
0404	
5126	
0437	
2651	
0404	
5126	
0404	
3631	
EJECT	

/V

/C

/M

/T

/Z

/N

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260 /
261 /TRIGGERED SCOPE DISPLAY
262 /
263 /
264 / D5, /FIND CHANNEL NUMBER
265 /
266 /
267 /
268 /CHANNEL NO. TO A1
269 /SET FOR SAMPLE
270 /STORE FOR EXECUTION
271 /GET FLOW TAG
272 /SAM SET-UP
273 /GET FLOW TAG
274 /REINITIALIZE AFTER CHANNEL NUMBER DISPLAY
275 /CHANNEL NUMBER HORIZONTAL COORDINATE
276 /
277 /
278 /
279 /CHARACTER DISPLAY VERTICAL COORDINATE
280 /SET V,H
281 /
282 /TRIGGERING ROUTINE (EQUIVALENT TO AUTO TRIG. INTERNAL SYNC, DC POSITIVE),
283 /
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4276 J517
4277 1560
4300 7740
4301 1040
4302 0245
4303 1620
4304 0100
4305 4463
4306 1020
4307 0064
4310 4341
4311 1020
4312 6323
4313 4070
4314 1020
4315 0100
4316 1040
4317 0001
4320 0017
4321 4251
4322 6043
4323 0074
4324 1000
4325 6463
4326 0451
4327 6332
4330 0234
4331 6325
4332 0074
4333 1000
4334 6463
4335 0471
4336 6341
4337 0234
4340 6334

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/ /DISPLAY A TRACE TO HERE IF TRIGGERED, OR NOT TRIGGERED AND
/
      SET I 4
      1000 /START DISPLAY AT LEFT SIDE
      JMP E6 /SAMPLE CHANNEL
      DIS 4 /DISPLAY CHANNEL
      CLR /DISPLAY 0V REFERENCE
      DIS 4
      LDA I
      377 /DISPLAY *.5V REFERENCE
      DIS 4
      COM /DISPLAY *.5V REFERENCE
      DIS 4 /INCREMENT HORIZONTAL
      XSK I 4 /CONTINUE TRACE
      JMP C5 /GO CHECK KEYBOARD
      JMP X1-11
/ /TRIGGERED PREAMP DISPLAY
/
      CLR /TO HERE IF SSW2=1
      JMP K6
      LDA I /TO HERE IF SSW3=1
      10
      JMP K6
      LDA I /TO HERE IS SSW4=1
      20
      JMP K6
      LDA I /TO HERE IF SSW5=1
      30
      STA /STORE CHANNEL NUMBER
      A1
      STC B6 /WE NOW HAVE CHANNEL
      LDA I /SET FLOW TAG
      JMP A6
      STC E1+25
      LDA I /INITIALIZE DISPLAY
      -177
      STC V1 /SET VERTICAL COORDINATE FOR CHANNEL NUMBER DISPLAY
      LDA I
      14
      STC H1 /SET HORIZONTAL COORDINATE FOR LEFT SIDE
      SET I 4 /RESET HORIZONTAL FOR SAMPLE DISPLAY
      1000
      JMP E1 /GO DISPLAY CHANNEL NUMBER
      EJECT

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350 /
351 /
352 /DISPLAY CHANNEL NUMBERS
353 /
354 /
355 / A6,
356 / LDA I /INCREMENT CHANNEL NUMBER
357 1
358 ADM
359 A1
360 BCL I /SAVE LOW-ORDER 3 BITS
361 7770
362 AZE I /IF 0, WE JUST DISPLAYED LAST CHANNEL IN FRAME
363 JMP D6 /NOW DISPLAY ANALOG INPUTS
364 LDA I /INCREMENT HORIZONTAL
365 34
366 ADM
367 H1
368 JMP E1 /DISPLAY NEXT CHANNEL NUMBER
369 LDA I /BEGIN DISPLAY
370 JMP F6 /SET FLOW TAG TO PREVENT OVERLAP OF CHANNELS
371 STC C5-2
372 ADD B6
373 BSE I /GET CHANNEL
374 100 /SET FOR SAM X
375 STC E6 /INITIALIZED
376 SET I 15 /SET WIDTH OF CHANNEL DISPLAY
377 -100
378 JMP A5 /GO LOOK FOR TRIGGER IF AVAILABLE
379 JMP E6 /GO SAMPLE CHANNEL
380 DIS 4 /DISPLAY CHANNEL
381 LDA I /DISPLAY *,5V REFERENCE
382 377
383 DIS 4 /DISPLAY -.5V REFERENCE
384 COM 17
385 DIS 4 /DISPLAY 0V REFERENCE
386 CLR 4
387 DIS 4 /END OF SAMPLE DISPLAY?
388 XSK I 15 /NO, GO INCREMENT HORIZONTAL
389 JMP H6 /END OF SEGMENT
390 LDA I
391 1 /INCREMENT CHANNEL NUMBER
392 ADM 1140
393 B6 0465
394 XSK I 4 /INCREMENT HORIZONTAL
395 JMP G6 /DISPLAY NEXT SAMPLE
396 6431

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395 4460 0224 H6, XSK I 4 /INCREMENT HORIZONTAL
396 4461 6437 JMP F6 /DISPLAY SAMPLE
397 4462 6206 JMP X1=11 /GO CHECK KEYBOARD
398 4463 0000 0 /EXECUTE SAM X
399 4464 6000 JMP 0 /RETURN
400 4465 0000 0 /HOLDS CHANNEL NUMBER
401 /FAST SAMPLE TEST
402 /ANALOG CHANNEL 00 AND 01 "MUST" NOT BE EQUAL AT THE START OF THE TEST
403 /ROTATE ANALOG 00 TO FULL COUNTER CLOCKWISE
404 /ROTATE ANALOG 01 TO FULL CLOCKWISE
405
406 /THIS TO INSURE CHANNEL 00 & 01 ARE NOT EQUAL
407 / AT THE START OF THE TEST
408 FSAM, LDA I
409 4466 1020 0100 /LOAD AC WITH
410 4467 0004 ESF /SET FAST SAMPLE
411 4470 0101 SAM 1 /SET UP
412 4471 0101 SAM 1 /GET CHANNEL 01
413 4472 4476 STC 0 /SAVE IT
414 4473 0100 SAM 0 /GET CHANNEL 01 AGAIN
415 4474 1460 SAE I /IS IT EQUAL
416 4475 0000 0000 /
417 4476 0000 HLT /NO, FAST SAMPLE FAILED
418 4500 0011 CLR /CLEAR AC
419 4501 6004 ESF
420 4502 6000 JMP 0 /EXIT
421 4503 7614 /HALT
4504 0110
4505 1010
4506 0119

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4507 7460
4508 0110
4509 6437
4510 1000
4511 1040
4512 3112
4513 6000
4514 6000
4515 6000
4516 6000
4517 6000
4518 6500
4519 6500
4520 6000
4521 6000

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/FAST SAMPLE TEST
/ANALOG CHANNEL 00 AND 01 "MUST" NOT BE EQUAL AT THE START OF THE TEST
/ROTATE ANALOG 00 TO FULL COUNTER CLOCKWISE
/ROTATE ANALOG 01 TO FULL CLOCKWISE
/THIS TO INSURE CHANNEL 00 & 01 ARE NOT EQUAL
/ AT THE START OF THE TEST
FSAM, LDA I
0100 /LOAD AC WITH
0101 /SET FAST SAMPLE
1 /SET UP
1 /GET CHANNEL 01
0 /SAVE IT
0 /GET CHANNEL 01 AGAIN
I /IS IT EQUAL
/NO, FAST SAMPLE FAILED
/CLEAR AC
/EXIT
/HALT

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/INCREMENT HORIZONTAL
/DISPLAY SAMPLE
/GO CHECK KEYBOARD
/EXECUTE SAM X
/RETURN
/HOLDS CHANNEL NUMBER
FAST SAMPLE TEST
ANALOG CHANNEL 00 AND 01 "MUST" NOT BE EQUAL AT THE START OF THE TEST
ROTATE ANALOG 00 TO FULL COUNTER CLOCKWISE
ROTATE ANALOG 01 TO FULL CLOCKWISE
THIS TO INSURE CHANNEL 00 & 01 ARE NOT EQUAL
AT THE START OF THE TEST
FSAM, LDA I
0100 /LOAD AC WITH
0101 /SET FAST SAMPLE
1 /SET UP
1 /GET CHANNEL 01
0 /SAVE IT
0 /GET CHANNEL 01 AGAIN
I /IS IT EQUAL
/NO, FAST SAMPLE FAILED
/CLEAR AC
/EXIT
/HALT

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0000
0100
0200
0300
0400
0500
0600
0700

1000
1100
1200
1300
1400
1500
1600
1700

2000
2100
2200
2300
2400
2500
2600
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3100
3200
3300
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3500
3600
3700

400	01000000	00000011	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
410	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
420	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
430	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
440	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
450	11110000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

REVISIONAL PCB PLANT 1963-1

4600
4700

5000
5100

5200
5300

5400
5500

5600
5700

6000
6100

6200
6300

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700

A1	4245
A5	4323
A6	4410
B6	4465
B7	4021
C5	4343
D5	4276
D6	4425
DIAL	4016
E1	4043
E6	4463
F6	4437
FSAM	4466
G1	4247
G6	4431
H1	4001
H6	4460
J6	4357
K6	4371
M1	4250
P1	4225
Q1	4231
T1	4246
T2	4252
U1	4236
V1	4251
X1	4217

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 4 SECONDS

2K CORE USED