

# DH11

ECHO TEST

MD-11-DZDHJ-B

EP-DZDHJ-B-DL-A

OCT 1976

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FICHE 1 OF 1

Made In U.S.A.

The microfiche card contains a grid of frames. The first column contains text, likely labels for the data. The second and third columns contain various data visualizations, including bar charts and line graphs. The data appears to be organized in a structured manner, possibly representing test results or system performance metrics over time or across different parameters.

.REM \*

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZDHJ-S-0  
PRODUCT NAME: DH11 ECHO/CABLE TEST  
DATE CREATED: APRIL 1973  
REVISED: JANUARY 1975  
MAINTAINER: DIAGNOSTIC  
AUTHOR: GEORGE BAISLEY

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1. ABSTRACT  
THE DH11 ECHO/CABLE DIAGNOSTIC IS DIVIDED INTO TWO TESTS.  
THE FIRST TEST (ECHO) IS A QUICK VERIFY TEST USING  
A TTY OR VT05 ETC.

THE SECOND TEST (CABLE TEST) IS A QUICK VERIFY TEST USING THE  
CABLE TERMINATOR (TEST CONNECTOR).

BOTH TESTS ASSUME 8 BITS/CHARACTER, NO PARITY GENERATION  
OR CHECKING, AND A DH PRIORITY LEVEL 5 (BR:5)

1.1 THE DH11 ECHO TEST VERIFIES THAT ALL CHARACTERS (0-377)  
WILL ECHO ON EACH LINE (0-17 OCTAL) WITH STANDARD DH11  
TERMINAL ATTACHMENTS TTY 33,35 OR VT05 ETC. USING ASCII  
ASYNCHRONOUS CODE

1.2 THE DH11 CABLE TEST VERIFIES THAT ALL CHARACTERS (0-377)  
ARE TRANSMITTED AND RECEIVED ON A PER LINE BASIS.  
THE LINE UNDER TEST MUST BE TERMINATED WITH THE TEST CONNECTOR !

2. REQUIREMENTS

PDP-11 FAMILY STANDARD COMPUTER WITH MINIMUM 4K MEMORY.  
DH11 ASYNCHRONOUS MULTIPLEXER.

2.1 FOR THE ECHO TEST  
TWO TERMINALS; ONE FOR CONSOLE, ONE FOR DH11 ECHO TEST.

2.2 FOR THE CABLE TEST  
ONE CONSOLE TERMINAL, ONE TEST CONNECTOR MINIMUM

2.3 STORAGE

THE PROGRAM LOADS INTO 4KW OF MEMORY WITH ABS LOADER

3. LOADING PROCEDURE

THE STANDARD PROCEDURE FOR LOADING ABSOLUTE BINARY TAPES  
IS TO BE USED.

4. STARTING PROCEDURE

CONTROL SWITCH SETTINGS

AFTER PROGRAM LOAD (INITIAL PROGRAM START)

ALL CONSOLE SWITCHES DOWN.

4.1 TO MODIFY DEVICE VECTOR AND CONTROL REGISTER ADDRESSES  
AFTER PROGRAM RESTART

SW00=1

TO MODIFY DH11 LINE NUMBER AND BAUD RATE OF DH11 (WHILE RUNNING)

SW02=1 (MOMENTARILY- DO NOT LEAVE THIS SWITCH UP AFTER LINE # QUESTION)

4.2 STARTING ADDRESS

THE STARTING ADDRESS FOR ALL TESTS IS 000200

THE RESTART ADDRESS FOR ALL TESTS IS 000200

4.3 PROGRAM AND/OR OPERATOR ACTION

4.3.1 INITIAL PROGRAM START

LOAD PROGRAM INTO MEMORY

LOAD ADDRESS 000200

CLEAR CONSOLE SWITCHES

PRESS START

4.3.2 THE PROGRAM WILL TYPE "DH11 ECHO/CABLE TEST" <CR>  
DZDHJ-REVISION B (ONCE ONLY)  
AND WILL TYPE "WHICH TEST ECHO OR CABLE (E OR C)" AND WILL  
WAIT FOR AN INPUT FROM THE CONSOLE TELETYPE KEYBOARD

TYPE IN THE TEST YOU INTEND TO RUN (E OR C) FOLLOWED BY A <CARRIAGE RETURN>

IF AN INCORRECT CHARACTER IS TYPED, THE PROGRAM WILL TYPE "?"  
AND WILL THEN REPEAT THE MESSAGE

4.3.3 THE PROGRAM WILL TYPE "VECTOR ADDRESS-" AND WAIT  
FOR AN INPUT FROM THE TELETYPE KEYBOARD.

TYPE IN THE ADDRESS OF THE RECEIVER INTERRUPT  
VECTOR FOR THE DH11 TO BE TESTED FOLLOWED BY A  
<CARRIAGE RETURN>.

4.3.3 THE PROGRAM WILL TYPE "CONTROL REGISTER ADDRESS-"  
AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD.

TYPE IN THE ADDRESS OF THE SYSTEM CONTROL REGISTER  
OF THE DH11 TO BE TESTED FOLLOWED BY <CARRIAGE RETURN>

IF AN INCORRECT ADDRESS IS TYPED, THE PROGRAM WILL  
TYPE "?" AND WILL THEN REPEAT THE MESSAGE

4.3.4 THE PROGRAM WILL TYPE "LINE NUMBER IN OCTAL-" AND  
WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD.

TYPE IN THE DH11 LINE NUMBER (IN OCTAL, FROM 0 TO 17)  
TO BE TESTED FOLLOWED BY <CARRIAGE RETURN>.

4.3.5 THE PROGRAM WILL TYPE "BAUD RATE-" AND WAIT FOR  
AN INPUT FROM THE TELETYPE KEYBOARD.

TYPE IN THE APPROPRIATE DH11 TERMINAL'S LINE  
SPEED FOLLOWED BY <CARRIAGE RETURN>.  
(ANY LEGAL BAUD RATE IS ACCEPTABLE IN THE CABLE TEST) TRY 'EM ALL

IF AN INVALID BAUD RATE IS TYPED IN THE PROGRAM  
WILL TYPE "INVALID BAUD RATE" AND REPEAT THE MESSAGE.

- 4.3.6 THE PROGRAM WILL TYPE "ECHO" OR "CABLE" RESP. TO INDICATE THAT IT IS  
ABOUT TO START TESTING, AND THEN TESTING WILL BEGIN.

THE ECHO TEST WILL TYPE "TYPE A CHARACTER ON DH11 TERMINAL"  
-TYPE OR TRANSMIT VIA PREPUNCHED TAPE ANY SEQUENCE OF CHARACTERS(EXCEPT +C)  
A CONTROL C (+C) WHEN TYPED ON THE DH11 TERMINAL WILL CAUSE  
PROGRAM TO EXIT TO THE END OF PASS ROUTINE.

THE CABLE TEST REQUIRES NO ADDITIONAL OPERATOR INTERVENTION  
UNLESS TO RESELECT LINE #, BAUD RATE, ETC.

NOTE: TO CHANGE LINE NUMBER AND/OR BAUD RATE,  
SIMPLY MOMENTARILY RAISE SW02 (SW02=1).

- 4.4 PROGRAM RESTART WITH ALL SWITCHES DOWN

LOAD ADDRESS 000200

PRESS START

THE PROGRAM WILL TYPE "ECHO" OR "CABLE" RESPECTIVELY  
AND COMMENCE TESTING AS BEFORE.

- 4.5 PROGRAM RESTART WITH SW00=1

LOAD ADDRESS 000200

SET SW01=1

PRESS START

THE PROGRAM WILL PERFORM AS DESCRIBED IN 4.3.2 TO 4.3.6

5. OPERATING PROCEDURE

- 5.1 OPERATIONAL SWITCH SETTINGS

SW15=1, HALT ON ERROR  
SW14=1, LOOP ON CURRENT TEST (CABLE TEST ONLY)  
SW13=1, SUPPRESS ERROR TYPEOUT  
SW11=1, INHIBIT ITERATIONS (CABLE TEST ONLY)  
SW10=1, ESCAPE ON ERROR  
SW02=1, RESELECT LINE NUMBER AND BAUD RATE (MOMENTARILY)  
SW00=1, CHANGE PARAMETERS AT PROGRAM RESTART

- 6.0 ERRORS

6.1 ERROR HALTS

THE ERROR MESSAGE FORMAT FOR ALL ERROR TYPEOUTS IS AS FOLLOWS:

PC+2  
MESSAGE

WHERE  
PC+2 IS THE ADDRESS OF THE CALL TO THE ERROR HANDLER +2  
MESSAGE IS AN ASCII MESSAGE DESCRIBING (BRIEFLY) THE FAILURE

6.1.1 ERROR DESCRIPTIONS

SEE LISTING FOR DETAILS OF ERRORS

NOTE: FOR SERIOUS TROUBLESHOOTING....USE THE REGULAR DH11 DIAGNOSTICS

6.2 ERROR RECOVERY

6.2.1 SW15=0  
IF THE PROGRAM IS RUN WITH SW15=0, NO OPERATOR ACTION IS  
REQUIRED TO CONTINUE TESTING.

6.2.2 SW15=1  
IF THE PROGRAM IS RUN WITH SW15=1, TO CONTINUE TESTING AFTER  
THE PROGRAM HAS HALTED, PRESS THE PROCESSOR CONSOLE  
CONTINUE SWITCH.

6.2.3 ILLEGAL INTERRUPTS

IF AN INTERRUPT OCCURS TO A VECTOR ADDRESS NOT SELECTED  
DURING PROGRAM INITIALIZATION, THE PROGRAM WILL HALT IN THE  
TRAPCATCHER. THE ADDRESS AT WHICH THE PROGRAM HALTS IS 2  
GREATER THAN THE ADDRESS TO WHICH THE INTERRUPT OCCURRED.  
THE PROGRAM MUST BE RESTARTED AT 200 TO RECOVER FROM THIS  
ERROR.

7. RESTRICTIONS

NONE

8. MISCELLANEOUS

- THE ECHO TEST DOES NOT ENABLE AUTO-ECHO
- BAUD RATE 134.5 HAS BEEN ROUNDED OFF TO 135

9. PROGRAM DESCRIPTION

BOTH TESTS CHECK OUT THE DH11 IN AN "ONLINE" FUNCTION;  
ONE LINE AT A TIME AT THE FOLLOWING ASYNCHRONOUS BAUD  
RATES: 50,75,110,134.5,150,200,300,600,1200,1800,2400,4800,9600.

10. LISTING

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:DH11 ECHO/CABLE TEST  
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:STARTING PROCEDURE  
:LOAD PROGRAM  
:LOAD ADDRESS 000200  
:PRESS START  
:PROGRAM WILL TYPE DH11 ECHO/CABLE TEST  
:PROGRAM WILL TYPE WHICH TEST- ECHO OR CABLE  
:TYPE IN E OR C RESPECTIVELY  
:PROGRAM WILL TYPE "VECTOR ADDRESS-"  
:TYPE IN THE ADDRESS OF THE RECEIVER INTERRUPT VECTOR  
:FOR THE DH11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>  
:PROGRAM WILL TYPE "CONTROL REGISTER ADDRESS-"  
:TYPE IN THE ADDRESS OF THE SYSTEM CONTROL REGISTER  
:FOR THE DH11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>  
:PROGRAM WILL TYPE "LINE NUMBER-"  
:TYPE IN THE LINE NUMBER TO BE TESTED (IN OCTAL)  
:FOLLOWED BY <CARRIAGE RETURN>  
:PROGRAM WILL TYPE "BAUD RATE-"  
:TYPE IN THE BAUD RATE OF THE DH11 TERMINAL  
:FOLLOWED BY <CARRIAGE RETURN>  
:THE FOLLOWING BAUD RATES ARE ACCEPTED IN DECIMAL

- 50
- 75
- 110
- 135 (ROUNDED OFF 134.5)
- 150
- 200
- 300
- 600
- 1200
- 1800
- 2400
- 4800
- 9600

:ALL OTHERS ARE REJECTED

:PROGRAM WILL TYPE "ECHO" OR "CABLE TEST" TO INDICATE THAT TESTING HAS STARTED  
:AT THE END OF A PASS, PROGRAM WILL TYPE " DZDHJB "  
:AND THEN RESUME TESTING

:SWITCH REGISTER OPTIONS

- !00000
- 040000
- 020000
- 010000
- 004000
- 002000
- 001000
- 000400
- 000100
- 000040
- 000020

- SW15=100000
- SW14=40000
- SW13=20000
- SW12=10000
- SW11=4000
- SW10=2000
- SW09=1000
- SW08=400
- SW06=100
- SW05=40
- SW04=20

- :=1, HALT ON ERROR
- :=1, LOOP ON CURRENT TEST
- :=1, INHIBIT ERROR TYPEOUT
  
- :=1, INHIBIT ITERATIONS
- :=1, ESCAPE TO NEXT TEST ON ERROR
- :=1, LOOP WITH CURRENT DATA

DZDHJB.P11





439	001202	012702	000302		MOV	#302,R2		
440	001206	012703	000004		MOV	#4,R3		
441	001212	010211		1\$:	MOV	R2,(R1)	:RESTORE TRAPCATCHER	
442	001214	005012			CLR	(R2)	:IN FLOATING VECTOR AREA	
443	001216	060301			ADD	R3,R1		
444	001220	060302			ADD	R3,R2		
445	001222	020127	001000		CMP	R1,#1000		
446	001226	001371			BNE	1\$		
447	001230	104403			INSTR		:INPUT WHICH TEST YOU ARE RUNNING	
448	001232	005545			MWHICH		:ECHO OR CABLE	
449	001234	104412			PAWCH		:SET FLAG	
450	001236	004734			WCHFLG		:THIS FLAG	
451	001240	104403			INSTR		:INPUT ADDRESS OF DEVICE VECTOR	
452	001242	005214			MVECTOR		:MESSAGE "VECTOR ADDRESS--"	
453	001244	104405			PARAM		:CONVERT STRING TO OCTAL	
454	001246	000300			300		:LOW LIMIT	
455	001250	000770			770		:HIGH LIMIT	
456	001252	004660			DHRVEC		:LOCATIONS TO BE FILLED	
457	001254	003		.BYTE	3		:LSB MASK	
458	001255	004		.BYTE	4		:NUMBER OF LOCATIONS	
459	001256	104403			INSTR		:INPUT ADDRESS OF DEVICE CSR	
460	001260	005237			MREGAD		:MESSAGE "CONTROL REGISTER ADDRESS--"	
461	001262	104405			PARAM		:CONVERT STRING TO OCTAL	
462	001264	000300			0		:LOW LIMIT	
463	001266	177776			177776		:HIGH LIMIT	
464	001270	004636			DHSCR		:LOCATIONS TO BE FILLED	
465	001272	007		.BYTE	7		:LSB MASK	
466	001273	010		.BYTE	10		:NUMBER OF LOCATIONS	
467	001274	012777	004000	003334	MOV	#BIT11,DHSCR	:MASTER CLEAR INTERFACE	
468	001302	005037	004736		CLR	STFLG	:CLEAR PROGRAM START FLAG	
469	001306	104403			INSTR		:INPUT LINE NUMBER	
470	001310	005433			MLINE		:MESSAGE "LINE NUMBER--"	
471	001312	104405			PARAM		:CONVERT STRING TO OCTAL	
472	001314	000000			0		:LOW LIMIT	
473	001316	000017			17		:HIGH LIMIT	
474	001320	004756			LINENU		:LOCATION TO BE FILLED	
475	001322	000		.BYTE	0		:LSB MASK	
476	001323	001		.BYTE	1		:NUMBER OF LOCATIONS	
477	001324	104403		BAUD:	INSTR		:INPUT BAUD RATE	
478	001326	005465			MSPEED		:MESSAGE "BAUD RATE--"	
479	001330	104411			PARAM		:CONVERT DECIMAL STRING TO OCTAL	
480	001332	000062			50		:LOW LIMIT	
481	001334	022600			9600		:HIGH LIMIT	
482	001336	004752			LINESP		:LOCATION TO BE FILLED	
483	001340	000		.BYTE	0		:LSB MASK	
484	001341	001		.BYTE	1		:NUMBER OF LOCATIONS	
485	001342	004537	004052		JSR	RS,SET		
486	001346	013737	004654	004656	MOV	DHSSR,DHSLR	:SET UP ADDRESS OF SILO	
487	001354	005237	004656		INC	DHSLR	:STATUS REGISTER HIGH BYTE	
488								
489								
490	001360	012737	000340	177776	BEGIN:	MOV	#340,PS	:LOCK OUT INTERRUPTS
491	001366	012706	001100		MOV	#STACK,SP	:SET UP PROCESSOR STACK	
492	001372	005037	004740		CLR	LOCKUP	:CLEAR TIMEOUT	
493	001376	005737	004734		TST	WCHFLG	:ECHO OR CABLE TEST ?	
494	001402	001413			BEG	2\$	:ECHO	

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495 001404 012737 001770 004700      MOV      #TEST2,RETURN      ;CABLE TEST
496 001412 005737 004736              TST      STFLG              ;ARE YOU LOOPING ?
497 001416 001017              BNE      1$                  ;YES
498 001420 005137 004736              COM      STFLG              ;NO
499 001424 104401 005642              TYPE     ,MCABLE           ;TYPE CABLE TEST
500 001430 000412              BR       1$
501 001432 012737 001462 004700 2$:      MOV      #TEST1,RETURN      ;SET UP ECHO TEST
502 001440 005737 004736              TST      STFLG              ;ARE YOU LOOPING ?
503 001444 001004              BNE      1$                  ;YES
504 001446 005137 004736              COM      STFLG              ;NO
505 001452 104401 005614              TYPE     ,MTERM            ;TYPE ECHO TEST
506 001456 000177 003216              JMP      @RETURN            ;START TESTING
507                                     ;THIS TEST WILL ACCEPT 1 CHARACTER AT A TIME
508                                     ; (IN INTERRUPT MODE) AND TRANSMIT THAT SAME CHARACTER,
509                                     ; ONE LINE AT A TIME, ANY LINE 0 THRU 17 (OCTAL)
510
511 001462 012737 000340 177776      TEST1:  MOV      #340,PS        ;DISABLE ALL INTERRUPTS
512 001470 012737 001274 004702              MOV      #LINE,ESCAPE
513 001476 012737 002374 004670              MOV      #EOP,NEXT
514 001504 052777 004000 003124              BIS      #BIT11,@DHSCR     ;MASTER CLEAR INTERFACE
515 001512 013777 004760 003116              MOV      NUMLIN,@DHSCR     ;SELECT LINE # & SET INTERRUPT ENABLE
516 001520 013777 004754 003114              MOV      SPEED,@DHLPR      ;SET LINE SPEED AND
517                                     ; CHARACTER LENGTH (TRANS. & REC.)
518 001526 012777 000000 003120              MOV      #0,@DHSSR         ;SET SILO ALARM LEVEL=0
519 001534 012777 004772 003102              MOV      #TBUF,@DHBA       ;ADDRESS OF TRANSMITTER
520                                     ; DATA BUFFER
521 001542 052777 100000 003066              BIS      #100000,@DHSCR    ;SET TRANSMIT "DONE"
522 001550 012777 001612 003102              MOV      #INTSVC,@DHVEC    ;SET UP INTERRUPT SERVICE
523 001556 013777 004764 003076              MOV      Prio,@DHLVL       ;AND LEVEL
524 001564 013737 004766 177776              MOV      LESS1,PS         ;ALLOW INTERRUPTS
525 001572 104401 005504              TYPE     ,MCHAR            ;TYPE "ANY CHARACTER"
526 001576 032737 000004 177570      DELAY:  BIT      #SW02,SWR    ;IF SW02=1 GET NEW LINE NUMBER
527 001604 001774              BEQ      DELAY              ;RETURN HERE AFTER "INTERRUPT"
528 001606 000137 001274              JMP      LINE
529
530
531                                     ; THE FOLLOWING IS THE RECEIVER INTERRUPT SVC ROUTINE
532 001612 105777 003020      INTSVC:  TSTB     @DHSCR          ;TEST REC. FLAG
533 001616 100401              BMI     .+4
534 001620 104000              HLT     0                   ;ERROR - INTERRUPT NOT CAUSED BY FLAG
535 001622 005777 003012      TST     @DHNRC              ;TEST FOR VALID CHARACTER
536 001626 100401              BMI     .+4
537 001630 104001              HLT     1                   ;NON- VALID CHARACTER
538 001632 017737 003002 004770      MOV     @DHNRC,@#RECDAT    ;MOVE CHARACTER TO OUTPUT AREA
539 001640 113737 004770 004772      MOVB   RECDAT,TBUF         ;MOVE CHARACTER TO CHECK FOR +C
540 001646 113737 004770 005710      MOVB   RECDAT,INBUF        ;STRIP JUNK PLUS PARITY
541 001654 042737 177600 005710      BIC    #+C<177>,INBUF      ;SAVE ONLY LINE NUMBER
542 001662 042737 170377 004770      BIC    #170377,@#RECDAT
543 001670 000337 004770      SWAB   RECDAT
544 001674 023737 004756 004770      CMP    LINENU,RECDAT       ;DOES THE LINE # COMPARE?
545 001702 001401              BEQ    .+4
546 001704 104002              HLT    2                   ;WRONG LINE NUMBER
547 001706 012777 177777 002732      MOV    #-1,@DHBC          ;! (OCTAL) BYTES WILL BE XMITTED
548 001714 032777 100000 002714      BIT    #100000,@DHSCR     ;TEST "FLAG" FOR DONE
549 001722 001001              BNE    .+4
550 001724 104003              HLT    3                   ;TRANSMITTER DONE SHOULD BE SET

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551 001726 123727 005710 000003 CMPB INBUF,#3 ;IS IT A 10 ?
552 001734 001006 BNE 1$ ;NO
553 001736 052777 004000 002672 BIS #BIT11,JDHSCR ;STOP DEVICE
554 001744 012716 002374 MOV #EOP,(SP) ;CRUNCH STACK
555 001750 000002 RTI
556 001752 012777 004772 002664 1$: MOV #TBUF,JDHBA ;ADDRESS OF TRANSMITTER
557 001760 013777 004762 002662 MOV NUMBAR,JDHBAR ;START XMITTER
558 001766 000002 RTI

;THIS TEST TRANSMITS A BINARY COUNT PATTERN
;VIA INTERRUPT MODE TO THE RECEIVER
;... THE LINE UNDER TEST MUST BE TERMINATED WITH THE TEST CONNECTOR
564 001770 012737 000340 177776 TEST2: MOV #340,PS ;DISABLE INTERRUPTS
565 001776 012737 001274 004702 MOV #LINE,ESCAPE
566 002004 012737 002374 004670 MOV #EOP,NEXT
567 002012 052777 004000 002616 BIS #BIT11,JDHSCR ;MASTER CLEAR INTERFACE
568 002020 013777 004760 002610 MOV NUMLIN,JDHSCR ;SELECT LINE # & REC. INTERRUPT ENABLE
569 002026 052777 020000 002602 BIS #BIT13,JDHSCR ;SET TRANSMITTER INTERRUPT ENABLE
570 ;& NON EXISTANT MEMORY INTR ENABLE
571 002034 013777 004754 002600 MOV SPEED,JDHLPR ;SET LINE SPEED
572 002042 012777 000000 002604 MOV #0,JDHSSR ;SET SILO ALARM LEVEL =0
573 002050 012777 006506 002566 MOV #TABLE,JDHBA ;ADDRESS OF TRANSMITTER DATA BUFFER
574 002056 012777 177400 002562 MOV #-256,JDHBC ;SET UP BYTE COUNT
575 002064 012777 002162 002566 MOV #INTREC,JDHVEC ;SET UP INTR SERVICE
576 002072 013777 004764 002562 MOV PRIO,JDHRLVL ;SET UP LEVEL
577 002100 012777 002332 002556 MOV #INTRAN,JDHTVEC ;SET UP INTR SERVICE
578 002106 013777 004764 002552 MOV PRIO,JDHTLVL ;SET UP LEVEL
579 002114 012701 006506 MOV #TABLE,R1 ;SET UP DATA POINTER
580 002120 013737 004766 177776 MOV LESS1,PS ;ALLOW INTERRUPTS
581 002126 013777 004762 002514 MOV NUMBAR,JDHBAR ;SET UP BAR BIT

;YOU RETURN HERE AFTER EVERY RECEIVER INTERRUPT
584 002134 032737 000004 177570 SPIN: BIT #SW02,SWR ;IF SW02=1 GET NEW LINE NUMBER
585 002142 001402 BEQ 1$ ;SW02=0
586 002144 000137 001274 JMP LINE ;SW02=1
587 002150 005237 004740 1$: INC LOCKUP ;INC TIMEOUT FLAG
588 002154 001367 BNE SPIN ;IF NOT 0 RETURN SPINNING
589 002156 104006 HLT 6 ;RECEIVER FAILED TO INTERRUPT CHECK CABLE/TERMINATOR
590 002160 104400 QUIT: SCOPE
591 002162 005037 004740 INTREC: CLR LOCKUP ;CLEAR TIMEOUT FLAG
592 002166 105777 002444 TSTB JDHSCR ;TEST REC DONE
593 002172 100401 BMI .+4 ;YES
594 002174 104000 HLT 0 ;FALSE INTERRUPT
595 002176 017737 002436 004770 MOV JDHNR,RECDAT ;SAVE WORD
596 002204 005737 004770 TST RECDAT ;TEST FOR VALID CHARACTER
597 002210 100401 BMI .+4
598 002212 104001 HLT 1 ;NON VALID CHARACTER
599 002214 032737 040000 004770 BIT #BIT14,RECDAT ;DATA OVERRUN ?
600 002222 001401 BEQ .+4 ;NO
601 002224 104007 HLT 7 ;YES
602 002226 032737 020000 004770 BIT #BIT13,RECDAT ;FRAMING ERROR ?
603 002234 001401 BEQ .+4 ;NO
604 002236 104010 HLT 10 ;YES
605 002240 032737 010000 004770 BIT #BIT12,RECDAT ;PARITY ERROR ?
606 002246 001401 BEQ .+4 ;NO

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607	002250	104011				HLT	11		; YES
608	002252	122137	004770			CMPB	(R1)+,RECDAT		; GOOD CHARACTER ?
609	002256	001401				BEQ	.+4		; YES
610	002260	104005				HLT	5		; NO
611	002262	042737	170377	004770		BIC	#170377,RECDAT		; SAVE ONLY LINE NUMBER
612	002270	000337	004770			SWAB	RECDAT		
613	002274	023737	004756	004770		CMP	LINENU,RECDAT		; DOES THE LINE # COMPARE ?
614	002302	001401				BEQ	.+4		; YES
615	002304	104002				HLT	2		; WRONG LINE #
616	002306	126127	177777	000377		CMPB	-1(R1),#377		; LAST CHARACTER ?
617	002314	001003				BNE	1\$		; NO
618	002316	012716	002160			MOV	#QUITS,(SP)		; CRUNCH STACK
619	002322	000402				BR	2\$		
620	002324	012716	002134		1\$:	MOV	#SPIN,(SP)		; CRUNCH STACK
621	002330	000002			2\$:	RTI			
622									
623	002332	032777	100000	002276	INTRAN:	BIT	#BIT15,JDHSCR		; TEST TRANSMIT FLAG
624	002340	001001				BNE	.+4		
625	002342	104003				HLT	3		; FALSE INTERRUPT
626	002344	032777	002000	002264		BIT	#BIT10,JDHSCR		; NON EXISTANT MEMORY ?
627	002352	001404				BEQ	1\$		
628	002354	104004				HLT	4		; NON EXISTANT MEMORY SHOULD NOT BE UP
629	002356	042777	000400	002252		BIC	#BIT08,JDHSCR		; CLEAR NON EXISTANT MEMORY BIT
630	002364	042777	100000	002244	1\$:	BIC	#BIT15,JDHSCR		; CLEAR DONE BIT FOR NEXT ROUND
631	002372	000002				RTI	;RETURN		

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632
633
634
635
636
637
638
639 002374 104401 EOP: TYPE ;TYPE NAME OF TEST
640 002376 005372 MEPASS
641 002400 005037 004742 CLR LAST ;CLEAR LAST ERROR PC
642 002404 005037 004672 CLR ERRFLG ;CLEAR ERROR FLAG
643 002410 005237 004674 INC PASCNT ;UPDATE PASS COUNT
644 002414 013737 004674 177570 MOV PASCNT,LIGHTS ;DISPLAY PASS COUNT
645 002422 013701 000042 MOV @#42,R1 ;CHECK FOR ACT-11 OR DDP
646 002426 001406 BEQ RESTRT ;IF NOT, CONTINUE TESTING
647 002430 000005 RESET
648 002432 004711 LOGICAL: JSR PC,(R1)
649 002434 000240 NOP
650 002436 000240 NOP
651 002440 000240 NOP
652 002442 000240 NOP
653 002444 000137 001360 RESTRT: JMP BEGIN
654
655 ;CHECK FOR LOOP ON CURRENT TEST
656 ;CHECK FOR ITERATION SUPPRESSION
657
658 002450 032737 002000 177570 SCOPER: BIT #SW10,SWR
659 002456 001030 BNE 4$
660 002460 032737 040000 177570 1$: BIT #SW14,SWR
661 002466 001021 BNE 3$
662 002470 032737 004000 177570 BIT #SW11,SWR
663 002476 001006 BNE 2$
664 002500 005237 004710 INC LPCNT
665 002504 023737 004710 004706 CMP LPCNT,ICOUNT
666 002512 001007 BNE 3$
667 002514 005037 004710 2$: CLR LPCNT
668 002520 005037 004672 CLR ERRFLG
669 002524 013737 004670 004700 MOV NEXT,RETURN
670 002532 013716 004700 3$: MOV RETURN,(SP) ;LOOPING
671 002536 000002 RTI
672 002540 005737 004672 4$: TST ERRFLG
673 002544 001745 BEQ 1$
674 002546 000762 BR 2$
675
676 ;CHECK FOR FREEZE ON CURRENT DATA
677
678 002550 032737 001000 177570 SCOP1R: BIT #SW09,SWR
679 002556 001402 BEQ 1$
680 002560 013716 004704 MOV FREEZ1,(SP)
681 002564 000002 1$: RTI
682
683 ;ERROR HANDLER
684
685 002566 032737 020000 177570 ERRORS: BIT #SW13,SWR
686 002574 001051 BNE HALTS
687 002576 021637 004742 CMP (SP),LAST

```



002

```

765 003022 016637 000004 004730 SV05P: MOV 4(SP), SAVPC
766 ;SAVE R0-R5
767
768 003030 010537 004724 SV05: MOV R5, SAVR5
769 003034 010437 004722 MOV R4, SAVR4
770 003040 010337 004720 MOV R3, SAVR3
771 003044 010237 004716 MOV R2, SAVR2
772 003050 010137 004714 MOV R1, SAVR1
773 003054 010037 004712 MOV R0, SAVR0
774 003060 000002 RTI
775 ;RESTORE R0-R5
776
777 003062 013700 004712 RS05: MOV SAVR0, R0
778 003066 013701 004714 MOV SAVR1, R1
779 003072 013702 004716 MOV SAVR2, R2
780 003076 013703 004720 MOV SAVR3, R3
781 003102 013704 004722 MOV SAVR4, R4
782 003106 013705 004724 MOV SAVR5, R5
783 RTI
784 ;TELETYPE OUTPUT ROUTINE
785
786 003114 017605 000000 TYPER: MOV 2(SP), R5
787 003120 062716 000002 ADD #2, (SP)
788 770 003124 105777 001502 1S: TSTB 2TPCSR
789 BPL 1S
790 TSTB (R5)
791 BNE 2S
792 RTI
793 774 003136 000002 2S: MOVB (R5)+, 2TPDBR
794 BR 1S
795
796 ;ASCII STRING INPUT ROUTINE
797
798 780 003146 017637 000000 003162 INSTRG: MOV 2(SP), MSG
799 003154 062716 000002 ADD #2, (SP)
800 782 003160 104401 INSTR1: TYPE
801 783 003162 000000 MSG: 0
802 784 003164 012704 005710 MOV #INBUF, R4
803 003170 012703 000007 MOV #7, R3
804 786 003174 105777 001426 1S: TSTB 2TKCSR
805 BPL 1S
806 MOVB 2TKDBR, (R4)
807 788 003200 117714 001422 BICB #200, (R4)
808 789 003206 142714 000200 CMPB (R4)+, #15
809 790 003212 122427 000015 BEQ INSTR2
810 791 003216 001413 MOVB 2TKDBR, 2TPDBR
811 792 003220 117777 001404 001406 2S: TSTB 2TPCSR
812 793 003226 105777 001400 BPL 2S
813 794 003232 100375 DEC R3
814 795 003234 005303 BNE 1S
815 796 003236 001356 INSTR2: TYPE
816 797 003240 104401 MOV INSTR1
817 798 003242 005274 BR
818 799 003244 000745
  
```



```

00000000 003443 012537 003622
00000001 003446 012537 003624
00000002 003450 112537 003626
00000003 003456 112537 003627
00000004 003464 005005
28: 003466 012704 005710
003472 122714 000015
003500 121427 000060
18: 003504 002421
003506 121427 000071
003512 003016
003514 142714 000060
003520 005002
003522 152402
003524 060205
003526 122714 000015
003532 001410
003534 006305
003536 010502
003540 006305
003542 006305
003544 060205
003546 000754
38: 003550 104404
003552 000744
003554 020537 003622
48: 003560 101373
003562 020537 003620
003566 103770
003570 133705 003626
003574 001365
003576 013704 003624
58: 003602 010524
003604 052705 000002
003610 105337 003627
003614 001372
003616 000902
68: 003620 000000
78: 003622 000000
88: 003624 000000
98: 003626 000
108: 003627 000

```

```

MOV (R5)+,7$
MOV (R5)+,8$
MOVB (R5)+,9$
MOVB (R5)+,10$
MOV R5,(SP)
28: CLR R5
MOV #INBUF,R4
CMPB #15,(R4)
BEQ 38
18: CMPB (R4),#'0
BLT 38
CMPB (R4),#'9
SGT 38
BICB #'0,(R4)
CLR R2
BISB (R4)+,R2
ADD R2,R5
CMPB #15,(R4)
BEQ 48
ASL R5 :X2
MOV R5,R2 :SAVE X2
ASL R5 :X4
ASL R5 :X8
ADD R2,R5 :TIMES 10
38: BR 18
INSTR 28
BR 28

```

:TEST TO SEE IF NUMBER IS WITHIN LIMITS

```

48: CMP R5,7$
BHI 38
CMP R5,6$
BLO 38
BITB 99,R5
BNE 38

```

:STORE NUMBER AT SPECIFIED ADDRESS

```

58: MOV 8$,R4
MOV R5,(R4)+
ADD #2,R5
DECB 10$
BNE 58
RTI
68: 0
78: 0
88: 0
98: .BYTE 0
108: .BYTE 0

```

```

:COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
:BUFFER TO THE CHARACTERS "E" AND "C"
:IF THE CHARACTER IS "E" CLEAR THE FLAG
:IF THE CHARACTER IS "C" SET THE FLAG

```

000000  
000001  
000002  
000003  
000004  
000005  
000006  
000007  
000008  
000009  
000010  
000011  
000012  
000013  
000014  
000015  
000016  
000017  
000018  
000019  
000020  
000021  
000022  
000023  
000024  
000025  
000026  
000027  
000028  
000029  
000030  
000031  
000032  
000033  
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000041  
000042  
000043  
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000048  
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000079  
000080  
000081  
000082  
000083  
000084  
000085  
000086  
000087  
000088  
000089  
000090  
000091  
000092  
000093  
000094  
000095  
000096  
000097  
000098  
000099  
000100

003630 017605 000000  
003634 122737 000105 005710  
003642 001002  
003644 105015  
003646 000406  
003650 122737 000103 005710  
003656 001005  
003660 112715 177777  
003664 062716 000002  
003670 000002  
003672 104404  
003674 000755

.PAWCH: MOV 0(SP),R5  
CMPB #'E,INBUF ;IS IT "E" ?  
BNE 1\$  
CLRB (R5) ;000  
BR 2\$  
1\$: CMPB #'C,INBUF ;IS IT "C" ?  
BNE 3\$  
MOV #1,(R5) ;377  
2\$: ADD #2,(SP)  
3\$: RTI  
BR .PAWCH ;RETRY

;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER

003676 104401  
003700 005301  
003702 104413  
003704 017601 000000  
003710 062716 000002  
003714 012137 004530  
003720 112137 004532  
003724 112137 004533  
003730 013137 004534  
003734 013704 004534  
003740 113705 004532  
003744 012700 005722  
003750 010403  
003752 042703 177770  
003756 062703 000260  
003762 110320  
003764 006204  
003766 006204  
003770 006204  
003772 005305  
003774 001365  
003776 012703 005734  
004002 114023  
004004 105337 004532  
004010 001374  
004012 105737 004533  
004016 001405  
004020 112723 000240  
004024 105337 004533  
004030 00 373  
004032 105013  
004034 104401  
004036 005724  
004040 005337 004530  
004044 001325  
004046 104407  
004050 000002

OCTASN: TYPE  
MCRLF  
SAVDS  
MOV 0(SP),R1  
ADD #2,(SP)  
MOV (R1)+,WRDCNT  
1\$: MOV (R1)+,CHRCNT  
MOV (R1)+,SPACNT  
2\$: MOV 0(R1)+,BINWRD  
MOV BINWRD,R4  
MOVB CHRCNT,R5  
3\$: MOV #TEMP,R0  
MOV R4,R3  
BIC #177770,R3  
ADD #260,R3  
MOV R3,(R0)+  
ASR R4  
ASR R4  
ASR R4  
DEC R5  
BNE 3\$  
4\$: MOV #MDATA,R3  
MOV -(R0),(R3)+  
DECB CHRCNT  
BNE 4\$  
TSTB SPACNT  
BEQ 6\$  
5\$: MOV #240,(R3)+  
DECB SPACNT  
BNE 5\$  
6\$: CLRB (R3)  
TYPE  
MDATA  
DEC WRDCNT  
BNE 1\$  
RESOS  
RTI

;THIS ROUTINE CONVERTS LINE SPEED (LINESP) AND  
;LINE NUMBER (LINENU) FOR DHLPR, DHBAR AND DHSOR

:REGISTER USAGE.

004052	013737	004756	004760	SET:	MOV	LINENU, 0#NUMLIN	:SAVE LINENU
004060	052737	000100	004760		BIS	#BIT06, 0#NUMLIN	:SET REC INTERRUPT ENABLE
004066	023727	004756	000000	BAR0:	CMP	LINENU, #0	:IS IT LINE 0?
004074	001004				BNE	BAR1	:NO
004076	012737	000001	004762		MOV	#1, 0#NUMBAR	:STORE BAR BIT 0
004104	000572				BR	SET1	
004106	023727	004756	000001	BAR1:	CMP	LINENU, #1	:IS IT LINE 1?
004114	001004				BNE	BAR2	:NO
004116	012737	000002	004762		MOV	#2, 0#NUMBAR	:STORE BAR BIT 1
004124	000562				BR	SET1	
004126	023727	004756	000002	BAR2:	CMP	LINENU, #2	:IS IT LINE 2?
004134	001004				BNE	BAR3	:NO
004136	012737	000004	004762		MOV	#4, 0#NUMBAR	:STORE BAR BIT 2
004144	000552				BR	SET1	
004146	023727	004756	000003	BAR3:	CMP	LINENU, #3	:IS IT LINE 3?
004154	001004				BNE	BAR4	:NO
004156	012737	000010	004762		MOV	#10, 0#NUMBAR	:STORE BAR BIT 3
004164	000542				BR	SET1	
004166	023727	004756	000004	BAR4:	CMP	LINENU, #4	:IS IT LINE 4?
004174	001004				BNE	BAR5	:NO
004176	012737	000020	004762		MOV	#20, 0#NUMBAR	:STORE BAR BIT 4
004204	000532				BR	SET1	
004206	023727	004756	000005	BAR5:	CMP	LINENU, #5	:IS IT LINE 5?
004214	001004				BNE	BAR6	:NO
004216	012737	000040	004762		MOV	#40, 0#NUMBAR	:STORE BAR BIT 5
004224	000522				BR	SET1	
004226	023727	004756	000006	BAR6:	CMP	LINENU, #6	:IS IT LINE 6?
004234	001004				BNE	BAR7	:NO
004236	012737	000100	004762		MOV	#100, 0#NUMBAR	:STORE BAR BIT 6
004244	000512				BR	SET1	
004246	023727	004756	000007	BAR7:	CMP	LINENU, #7	:IS IT LINE 7?
004254	001004				BNE	BAR8	:NO
004256	012737	000200	004762		MOV	#200, 0#NUMBAR	:STORE BAR BIT 7
004264	000502				BR	SET1	
004266	023727	004756	000010	BAR8:	CMP	LINENU, #10	:IS IT LINE 10?
004274	001004				BNE	BAR9	:NO
004276	012737	000400	004762		MOV	#400, 0#NUMBAR	:STORE BAR BIT 8
004304	000472				BR	SET1	
004306	023727	004756	000011	BAR9:	CMP	LINENU, #11	:IS IT LINE 11?
004314	001004				BNE	BAR10	:NO
004316	012737	001000	004762		MOV	#1000, 0#NUMBAR	:STORE BAR BIT 9
004324	000462				BR	SET1	
004326	023727	004756	000012	BAR10:	CMP	LINENU, #12	:IS IT LINE 12?
004334	001004				BNE	BAR11	:NO
004336	012737	002000	004762		MOV	#2000, 0#NUMBAR	:STORE BAR BIT 10
004344	000452				BR	SET1	
004346	023727	004756	000013	BAR11:	CMP	LINENU, #13	:IS IT LINE 13?
004354	001004				BNE	BAR12	:NO
004356	012737	004000	004762		MOV	#4000, 0#NUMBAR	:STORE BAR BIT 11
004364	000442				BR	SET1	
004366	023727	004756	000014	BAR12:	CMP	LINENU, #14	:IS IT LINE 14?
004374	001004				BNE	BAR13	:NO
004376	012737	010000	004762		MOV	#10000, 0#NUMBAR	:STORE BAR BIT 12
004404	000432				BR	SET1	

```

1024 004406 023727 004756 000015 BAR13: CMP LINENU,#15 ;IS IT LINE 15?
1025 004414 001004 BNE BAR14 ;NO
1026 004416 012737 020000 004762 MOV #20000,2#NUMBAR ;STORE BAR BIT 13
1027 004424 000422 BR SET1
1028 004426 023727 004756 000016 BAR14: CMP LINENU,#16 ;IS IT LINE 16?
1029 004434 001004 BNE BAR15 ;NO
1030 004436 012737 040000 004762 MOV #40000,2#NUMBAR ;STORE BAR BIT 14
1031 004444 000412 BR SET1
1032 004446 023727 004756 000017 BAR15: CMP LINENU,#17 ;IS IT LINE 17?
1033 004454 001004 BNE BARNUN ;NO
1034 004456 012737 100000 004762 MOV #100000,2#NUMBAR ;STORE BAR BIT 15
1035 004464 000402 BR SET1
1036 004466 005037 004762 BARNUN: CLR 2#NUMBAR ;CLEAR BAR BITS
1037 004472 012701 004536 SET1: MOV #TABLE2,R1
1038 004476 022137 004752 1$: CMP (R1)+,LINESP
1039 004502 001407 BEQ 2$
1040 004504 005721 TST (R1)+ ;IS IT THE END OF TABLE?
1041 004506 001373 BNE 1$ ;NO
1042 004510 104401 005404 TYPE ,MINVAL ;INVALID BAUD RATE,BEGIN AGAIN
1043 004514 012705 001324 MOV #BAUD,RS ;JUMP TO BAUD THRU RS
1044 004520 000402 BR 3$
1045 004522 011137 004754 2$: MOV (R1),SPEED ;SET UP BAUD RATE
1046 004526 000205 3$: RTS RS

```

```

WRDCNT: 0
CHRCNT: 0
SPACNT=CHRCNT+1
BINWRD: 0

```

TABLE2: ;THE FOLLOWING IS A TABLE OF LEGAL BAUD RATES (8 BITS/CHAR)

.WORD 50.	:50 BAUD
.WORD 2107	:TWO STOP BITS
.WORD 75.	:75 BAUD
.WORD 4207	:TWO STOP BITS
.WORD 110.	:110 BAUD
.WORD 6307	:TWO STOP BITS
.WORD 135.	:134.5 BAUD
.WORD 10407	:TWO STOP BITS
.WORD 150.	:150 BAUD
.WORD 12503	:ONE STOP BIT
.WORD 200.	:200 BAUD
.WORD 14603	:ONE STOP BIT
.WORD 300.	:300 BAUD
.WORD 16703	:ONE STOP BIT
.WORD 600.	:600 BAUD
.WORD 21003	:ONE STOP BIT
.WORD 1200.	:1200 BAUD
.WORD 23103	:ONE STOP BIT
.WORD 1800.	:1800 BAUD
.WORD 25203	:ONE STOP BIT
.WORD 2400.	:2400 BAUD
.WORD 27303	:ONE STOP BIT
.WORD 4800.	:4800 BAUD
.WORD 31403	:ONE STOP BIT
.WORD 9600.	:9600 BAUD

```

1055 004536 000062
1056 004540 002107
1057 004542 000113
1058 004544 004207
1059 004546 000156
1060 004550 006307
1061 004552 000207
1062 004554 010407
1063 004556 000226
1064 004560 012503
1065 004562 000310
1066 004564 014503
1067 004566 000454
1068 004570 016703
1069 004572 001130
1070 004574 021003
1071 004576 002260
1072 004600 023103
1073 004602 003410
1074 004604 025203
1075 004606 004540
1076 004610 027303
1077 004612 011300
1078 004614 031403
1079 004616 022600

```

1080 004620 033503  
1081 004622 177777 000000

.WORD 33503 :ONE STOP BIT  
.WORD -1,0 :TABLE TERMINATOR

:INDIRECT POINTERS

1082  
1083  
1084  
1085  
1086 004626 177560  
1087 004630 177562  
1088 004632 177564  
1089 004634 177566  
1090 004636 000000  
1091 004640 000000  
1092 004642 000000  
1093 004644 000000  
1094 004646 000000  
1095 004650 000000  
1096 004652 000000  
1097 004654 000000  
1098 004656 000000  
1099 004660 000000  
1100 004662 000000  
1101 004664 000000  
1102 004666 000000

TKCSR: 177560  
TKDBR: 177562  
TPCSR: 177564  
TPDBR: 177566  
DHSCR: 0  
DHNRC: 0  
DHLPR: 0  
DHBA: 0  
DHBC: 0  
DHBAR: 0  
DHBCR: 0  
DHSSR: 0  
DHSLR: 0  
DHRVEC: 0  
DHRLVL: 0  
DHTVEC: 0  
DHTLVL: 0

:PROGRAM VARIABLES

1103  
1104  
1105 004670 000000  
1106 004672 000000  
1107 004674 000000  
1108 004676 000000  
1109 004700 001100  
1110 004702 000000  
1111 004704 000000  
1112 004706 000012  
1113 004710 000000  
1114 004712 000000  
1115 004714 000000  
1116 004716 000000  
1117 004720 000000  
1118 004722 000000  
1119 004724 000000  
1120 004726 000000  
1121 004730 000000  
1122 004732 177777  
1123 004734 000000  
1124 004736 000000  
1125 004740 000000  
1126 004742 000000  
1127 004744 000000  
1128 004746 000000  
1129 004750 000000  
1130 004752 000156  
1131 004754 006307

NEXT: 0 :NEXT TEST #  
ERRFLG: 0 :ERROR FLAG  
PASCNT: 0 :PASS COUNT  
ERRCNT: 0 :ERROR COUNT  
RETURN: START :RETURN ADDRESS  
ESCAPE: 0 :ADDRESS FOR ERROR ESCAPE  
FREEZ1: 0 :DATA LOOPING RETURN ADDRESS  
ICOUNT: 10. :ITERATION COUNT FOR TEST IN PROGRESS  
LPCNT: 0 :NUMBER OF ITERATIONS THIS TEST  
SAVR0: 0 :R0 SAVE AREA  
SAVR1: 0 :R1 SAVE AREA  
SAVR2: 0 :R2 SAVE AREA  
SAVR3: 0 :R3 SAVE ARE  
SAVR4: 0 :R4 SAVE AREA  
SAVR5: 0 :R5 SAVE AREA  
SAVSP: 0 :STACK POINTER SAVE AREA  
SAVPC: 0 :CALLING ROUTINE SAVE AREA  
INIFLG: .WORD -1 :PROGRAM INITIALIZATION FLAG  
WCHFLG: 0 :ECHO OR CABLE FLAG  
STFLG: 0 :PROGRAM START FLAG  
LOCKUP: 0 :TIMEOUT FLAG  
LAST: 0 :LAST ERROR PC  
TDATA: 0  
RDATA: 0  
BYTCNT: 0  
LINE SP: 110.  
SPEED: 6307

:DEFAULT BAUD RATE  
:DEFAULT 110 BAUD, 9 BITS/CHAR.  
:FDX, 2 STOP BITS  
:DEFAULT VALUE, LINE 0  
:DEFAULT VALUE, REC. INTERRUPT ENABLED

1132  
1133 004756 000000  
1134 004760 000100  
1135

LINENU: 0  
NUMLIN: 100

```

1136 004762 000001          NUMBAR: 1          ;DEFAULT VALUE, BAR BIT 0
1137 004764 000240          PRIO: 240         ;DEFAULT DEVICE PRIORITY 5
1138 004766 000200          LESS1: 200        ;DEFAULT PRIORITY4, TO ALLOW INTERRUPTS
1139 004770 000000          RECDAT: 0
1140 004772 000000          TBUF: 0
1141                                     ;ENTER HERE ON POWER FAILURE
1142
1143
1144 004774 010046          PFAIL: MOV R0, -(SP) ;SAVE R0-R5 ON PROCESSOR STACK
1145 004776 010146          MOV R1, -(SP)
1146 005000 010246          MOV R2, -(SP)
1147 005002 010346          MOV R3, -(SP)
1148 005004 010446          MOV R4, -(SP)
1149 005006 010546          MOV R5, -(SP)
1150 005010 013746 000024    MOV 24, -(SP)
1151 005014 010637 004726    MOV SF, SAVSP ;SAVE STACK POINTER
1152 005020 012737 005032 000024  MOV #RESTART, 24 ;SET UP FOR POWER UP TRAP
1153 005026 000000          HALT ;HALT ON POWER DOWN NORMAL
1154 005030 000777          BR .
1155
1156                                     ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
1157
1158 005032 013706 004726    RESTAR: MOV SAVSP, SP ;RESTORE STACK POINTER
1159 005036 012605          MOV (SP)+, R5 ;RESTORE R0-R5
1160 005040 012604          MOV (SP)+, R4
1161 005042 012603          MOV (SP)+, R3
1162 005044 012602          MOV (SP)+, R2
1163 005046 012601          MOV (SP)+, R1
1164 005050 012600          MOV (SP)+, R0
1165 005052 012737 004774 000024  MOV #PFAIL, 24 ;SET UP FOR POWER FAILURE
1166 005060 012737 000340 177776  MOV #340, P5
1167 005066 012706 001100    MOV #STACK, SP
1168 005072 005037 005722    CLR TEMP
1169 005076 005237 005722    INC TEMP
1170 005102 001375          BNE .-4
1171 005104 104402          OCTASC
1172 005106 005130          PFTAB
1173 005110 104401          TYPE
1174 005112 005304          MPFAIL
1175 005114 005037 004672    CLR ERRFLG
1176 005120 005037 004742    CLR LAST
1177 005124 000177 177550    JMP @RETURN
1178 005130 000001          PFTAB: 1
1179 005132 006 002 .BYTE 6, 2
1180 005134 000207          RETURN
1181 005136 005015 042812 030510  MTITLE: .ASCII <15><12><12>?DH11 ECHO/CABLE TEST ?<15><12>
005170 055104 044104 020112 .ASCIZ /DZDHJ REVISION B /
005214 005015 042526 052103 MVECTO: .ASCIZ <15><12>/VECTOR ADDRESS- /
005237 015 041412 047117 MREGAD: .ASCIZ <15><12>/CONTROL REGISTER ADDRESS- /
005274 020040 020077 000 MQM: .ASCIZ / ? /
005301 015 000012 MCRLF: .ASCIZ <15><12>
005304 020040 047520 042527 MPFAIL: .ASCIZ / POWER FAILURE, PROGRAM RESTART AT TEST IN PROGRESS /
005372 005015 055104 044104 MEPASS: .ASCIZ <15><12>/DZDHJB /
005404 005015 047111 040526 MINVAL: .ASCIZ <15><12>/INVALID BAUD RATE - /
005433 015 046012 047111 MLINE: .ASCIZ <15><12>/LINE NUMBER IN OCTAL - /
005465 015 041012 052501 MSPEED: .ASCIZ <15><12>/BAUD RATE - /

```

005504	005015	054524	042520	MCHAR:	.ASCIZ	<15><12>/TYPE A CHAR. ON DH11 TERMINAL /
005545	015	053412	044510	MWHICH:	.ASCIZ	<15><12>/WHICH TEST ? ECHO OR CABLE (E OR C) /
005614	005015	042524	046522	MTERM:	.ASCIZ	<15><12>/TERMINAL ECHO TEST /
005642	005015	040503	046102	MCABLE:	.ASCIZ	<15><12>/CABLE TEST /
					.EVEN	

;TABLE OF POINTERS FOR TRAP DECODING

1192				TRPTAB:	SCOPER
1193					TYPER
1194	005660	002450			OCTASN
1195	005662	003114			INSTRG
1196	005664	003676			INSTRE
1197	005666	003146			PARAMS
1198	005670	003240			SVQSP
1199	005672	003250			RSQ5
1200	005674	003022			SCOP1R
1201	005676	003062			.PARAMD
1202	005700	002550			.PAWCH
1203	005702	003434			SVQ5
1204	005704	003630			
1205	005706	003030			

;BUFFERS FOR INPUT-OUTPUT

1196				INBUF:	0
1197				.=.+10	
1198				TEMP:	0
1199	005710	000000		.=.+10	
1200		005722		MDATA:	0
1201	005722	000000		.=.+10	
1202		005734			
1203	005734	000000			
1204		005746			

;TABLE OF POINTERS TO ERROR MESSAGES AND DATA

1205				ERRTAB:	EM1
1206					0
1207					EM2
1208	005746				0
1209	005746	006016			EM3
1210	005750	000000			0
1211	005752	006065			EM4
1212	005754	000000			0
1213	005756	006122			EM5
1214	005760	000000			0
1215	005762	006155			EM6
1216	005764	000000			0
1217	005766	006225			EM7
1218	005770	000000			0
1219	005772	006262			EM8
1220	005774	000000			0
1221	005776	006313			EM9
1222	006000	000000			0
1223	006002	006411			EM10
1224	006004	000000			0
1225	006006	006437			
1226	006010	000000			
1227	006012	006466			
1228	006014	000000			
1229	006016	005015	051105	047522	EM1: .ASCIZ <15><12>/ERROR- INTERRUPT NOT CAUSED BY FLAG /
	006065	015	042412	051122	EM2: .ASCIZ <15><12>/ERROR-NON VALID CHARACTER /
	006122	005015	051105	047522	EM3: .ASCIZ <15><12>/ERROR-WRONG LINE NUMBER /

006155	015	042412	051122	EM4:	.ASCIZ	<15><12>/ERROR-TRANSMITTER DONE SHOULD BE SET /
006225	015	042412	051122	EM5:	.ASCIZ	<15><12>/ERROR-NON-EXISTANT MEMORY /
006262	005015	051105	047522	EM6:	.ASCIZ	<15><12>/ERROR-WRONG CHARACTER /
006313	015	042412	051122	EM7:	.ASCIZ	<15><12>/ERROR- NOT RECEIVING CHARACTERS -CHECK CABLE OR TERMINATOR /
006411	015	042412	051122	EM8:	.ASCIZ	<15><12>/ERROR-DATA OVERRUN /
006437	015	042412	051122	EM9:	.ASCIZ	<15><12>/ERROR-FRAMING ERROR /
006466	005015	040520	044522	EM10:	.ASCIZ	<15><12>/PARITY ERROR /

.EVEN  
TABLE:

1230	006506	000	.BYTE	0
1231	006507	001	.BYTE	1
1232	006510	002	.BYTE	2
1233	006511	003	.BYTE	3
1234	006512	004	.BYTE	4
1235	006513	005	.BYTE	5
1236	006514	006	.BYTE	6
1237	006515	007	.BYTE	7
1238	006516	010	.BYTE	10
1239	006517	011	.BYTE	11
1240	006520	012	.BYTE	12
1241	006521	013	.BYTE	13
1242	006522	014	.BYTE	14
1243	006523	015	.BYTE	15
1244	006524	016	.BYTE	16
1245	006525	017	.BYTE	17
1246	006526	020	.BYTE	20
1247	006527	021	.BYTE	21
1248	006530	022	.BYTE	22
1249	006531	023	.BYTE	23
1250	006532	024	.BYTE	24
1251	006533	025	.BYTE	25
1252	006534	026	.BYTE	26
1253	006535	027	.BYTE	27
1254	006536	030	.BYTE	30
1255	006537	031	.BYTE	31
1256	006540	032	.BYTE	32
1257	006541	033	.BYTE	33
1258	006542	034	.BYTE	34
1259	006543	035	.BYTE	35
1260	006544	036	.BYTE	36
1261	006545	037	.BYTE	37
1262	006546	040	.BYTE	40
1263	006547	041	.BYTE	41
1264	006550	042	.BYTE	42
1265	006551	043	.BYTE	43
1266	006552	044	.BYTE	44
1267	006553	045	.BYTE	45
1268	006554	046	.BYTE	46
1269	006555	047	.BYTE	47
1270	006556	050	.BYTE	50
1271	006557	051	.BYTE	51
1272	006560	052	.BYTE	52
1273	006561	053	.BYTE	53
1274	006562	054	.BYTE	54
1275	006563	055	.BYTE	55
1276	006564	056	.BYTE	56

1277	006565	057	.BYTE	57
1278	006566	060	.BYTE	60
1279	006567	061	.BYTE	61
1280	006570	062	.BYTE	62
1281	006571	063	.BYTE	63
1282	006572	064	.BYTE	64
1283	006573	065	.BYTE	65
1284	006574	066	.BYTE	66
1285	006575	067	.BYTE	67
1286	006576	070	.BYTE	70
1287	006577	071	.BYTE	71
1288	006600	072	.BYTE	72
1289	006601	073	.BYTE	73
1290	006602	074	.BYTE	74
1291	006603	075	.BYTE	75
1292	006604	076	.BYTE	76
1293	006605	077	.BYTE	77
1294	006606	100	.BYTE	100
1295	006607	101	.BYTE	101
1296	006610	102	.BYTE	102
1297	006611	103	.BYTE	103
1298	006612	104	.BYTE	104
1299	006613	105	.BYTE	105
1300	006614	106	.BYTE	106
1301	006615	107	.BYTE	107
1302	006616	110	.BYTE	110
1303	006617	111	.BYTE	111
1304	006620	112	.BYTE	112
1305	006621	113	.BYTE	113
1306	006622	114	.BYTE	114
1307	006623	115	.BYTE	115
1308	006624	116	.BYTE	116
1309	006625	117	.BYTE	117
1310	006626	120	.BYTE	120
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1312	006630	122	.BYTE	122
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1329	006651	143	.BYTE	143
1330	006652	144	.BYTE	144
1331	006653	145	.BYTE	145
1332	006654	146	.BYTE	146

1333	006655	147
1334	006656	150
1335	006657	151
1336	006660	152
1337	006661	153
1338	006662	154
1339	006663	155
1340	006664	156
1341	006665	157
1342	006666	160
1343	006667	161
1344	006670	162
1345	006671	163
1346	006672	164
1347	006673	165
1348	006674	166
1349	006675	167
1350	006676	170
1351	006677	171
1352	006700	172
1353	006701	173
1354	006702	174
1355	006703	175
1356	006704	176
1357	006705	177
1358	006706	200
1359	006707	201
1360	006710	202
1361	006711	203
1362	006712	204
1363	006713	205
1364	006714	206
1365	006715	207
1366	006716	210
1367	006717	211
1368	006720	212
1369	006721	213
1370	006722	214
1371	006723	215
1372	006724	216
1373	006725	217
1374	006726	220
1375	006727	221
1376	006730	222
1377	006731	223
1378	006732	224
1379	006733	225
1380	006734	226
1381	006735	227
1382	006736	230
1383	006737	231
1384	006740	232
1385	006741	233
1386	006742	234
1387	006743	235
1388	006744	236

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.BYTE	234
.BYTE	235
.BYTE	236













TRPOK 003002  
 TRPSRV 002770  
 TRPTAB 005660  
 TYPDAT 002704  
 TYPE = 104401  
 TYPER 003114  
 TYPMSG 002666  
 VEC1 001166  
 VEC2 001176  
 WCHNLG 004734  
 WDCNT = 004530  
 SQ = 000400

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854#	1193#												
912#	924#	1194#											

= 007106

PRGRM 003424  
 PRNCH 003630

REL 359# 534 537 546 550 589 594 598 601 604 607 610 615 625 628



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TST	493	496	502	535	596	672	701	703	710	715	1040				
TSTB	532	592	770	772	785	793	954								
.ASO11	1181	1229													
.ASO11	1181	1229													
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	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480	1481	1482	1483	1484	1485
.ENABL	272														
.END	1486														
.EQUIV	359														
.GIVEN	1181	1229													
.TRP	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244
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	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480	1481	1482	1483	1484
.LIST	1485														
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	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283
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	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313
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	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358
	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373
	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388
	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403

CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418
	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433
	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448
	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463
	1464	1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1476	1477	1478
	1479	1480	1481	1482	1483	1484	1485	1486							
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ERRORS DETECTED: 0  
DEFAULT GLOBALS GENERATED: 0

\*.DZDHJB.SEG/SOL/CRF/PAGNUM=DZDHJB  
RUN-TIME: 7 11 3 SECONDS  
RUN-TIME RATIO: 67/22=2.9  
CORE USED: 9K (15 PAGES)