

```
000.001      1 H8410 EQU 1          DON'T ASSEMBLE FOR H8-4 CARD
000.001      2      IF H8410
              3      TITLE 'ATDUD - AT: DEVICE DRIVER, FOR H8-4 MULTI PORT SERIAL I/O'
              4      ELSE
              5      ENDIF
```

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```

8 *** ATDVD - AT DEVICE DRIVER.
9 *
10 * J.G. LETWIN
11 *
12 * G. Chandler 78.10
13 * 79.11
14 * 79.12

```

```

16 ** ATDVD IS THE DEVICE DRIVER FOR THE DEVICE
17 *
18 * AT:
19 *
20 * IF H84ID=0
21 * THEN
22 * PORT = 374-5
23 * ELSE
24 * PORT = 320-7
25 *
26
27
28 XTEXT ASCII

```

000.000

```

30X ** ASCII CHARACTER EQUIVALENCES.
31X
000.015 32X CR EQU 13 CARRIAGE RETURN
000.012 33X LF EQU 10 LINE FEED
000.200 34X NULL EQU 2000 PAD CHARACTER
000.000 35X NUL2 EQU 0
000.007 36X BELL EQU 7 BELL CHARACTER
000.177 37X RUBOUT EQU 1770
000.010 38X BKSP EQU 100 CTL-H
000.026 39X C.SYN EQU 260 SYNC
000.002 40X C.STX EQU 2 STX
000.047 41X QUOTE EQU 470
000.011 42X TAB EQU 110
000.033 43X ESC EQU 330
000.012 44X NL EQU 120 NEW LINE (HDOS SYSTEMS)
000.212 45X ENL EQU NL+2000 NL + END-OF-LINE-FLAG
000.014 46X FF EQU 140 FORM FEED
000.001 47X CTLA EQU 010 CTL-A
000.002 48X CTLB EQU 020 CTL-B
000.003 49X CTLC EQU 030 CTL-C
000.004 50X CTLD EQU 040 CTL-D
000.017 51X CTLE EQU 170 CTL-E
000.020 52X CTLP EQU 200 CTL-P
000.021 53X CTLQ EQU 210 CTL-Q
000.023 54X CTLS EQU 230 CTL-S
000.032 55X CTLZ EQU 320 CTL-Z
000.000 56 XTEXT DDEF

```

58X ** DEVICE DRIVER COMMUNICATION FLAGS:

59X *

60X

000.000

61X

ORG

0

62X

000.000

63X

DC.REA

DS

1

READ

000.001

64X

DC.WRI

DS

1

WRITE

000.002

65X

DC.RER

DS

1

READ REGARDLESS

000.003

66X

DC.OPR

DS

1

OPEN FOR READ

000.004

67X

DC.OPW

DS

1

OPEN FOR WRITE

000.005

68X

DC.OPU

DS

1

OPEN FOR UPDATE

000.006

69X

DC.CLO

DS

1

CLOSE

000.007

70X

DC.ABT

DS

1

ABORT

000.010

71X

DC.MOU

DS

1

MOUNT DEVICE

000.011

72X

DC.LOD

DS

1

LOAD DEVICE DRIVER

000.012

73X

DC.MAX

DS

1

MAXIMUM ENTRY INDEX

000.013

74

XTEXT HTR

77X ** MTR - PAM/8 EQUIVALENCES.

78X *

79X * THIS DECK CONTAINS SYMBOLIC DEFINITIONS USED TO

80X * MAKE USE OF THE PAM/8 CODE AND CONTROL BYTES.

82X ** IO PORTS

83X

| | | | | |
|---------|------------|-----|------|----------------------------|
| 000.360 | 84X IP.PAD | EQU | 360Q | PAD INPUT PORT |
| 000.360 | 85X OP.CTL | EQU | 360Q | CONTROL OUTPUT PORT |
| 000.360 | 86X OP.DIG | EQU | 360Q | DIGIT SELECT OUTPUT PORT |
| 000.361 | 87X OP.SEG | EQU | 361Q | SEGMENT SELECT OUTPUT PORT |

89X ** FRONT PANEL CONTROL BITS.

90X

| | | | | |
|---------|------------|-----|-----------|------------------------|
| 000.020 | 91X CB.SSI | EQU | 00010000B | SINGLE STEP INTERRUPT |
| 000.040 | 92X CB.MTL | EQU | 00100000B | MONITOR LIGHT |
| 000.100 | 93X CB.CLI | EQU | 01000000B | CLOCK INTERRUPT ENABLE |
| 000.200 | 94X CB.SPK | EQU | 10000000B | SPEAKER ENABLE |

96X ** MONITOR MODE FLAGS.

97X

| | | | | |
|---------|------------|-----|---|----------------|
| 000.000 | 98X DM.MR | EQU | 0 | MEMORY READ |
| 000.001 | 99X DM.MW | EQU | 1 | MEMORY WRITE |
| 000.002 | 100X DM.RR | EQU | 2 | REGISTER READ |
| 000.003 | 101X DM.RW | EQU | 3 | REGISTER WRITE |

103X ** USER OPTION BITS.

104X *

105X * THESE BITS ARE SET IN CELL .MFLAG.

106X

| | | | | |
|---------|-------------|-----|-----------|------------------------------------|
| 000.200 | 107X UD.HLT | EQU | 10000000B | DISABLE HALT PROCESSING |
| 000.100 | 108X UD.NFR | EQU | CB.CLI | NO REFRESH OF FRONT PANEL |
| 000.002 | 109X UD.DDU | EQU | 00000010B | DISABLE DISPLAY UPDATE |
| 000.001 | 110X UD.CLK | EQU | 00000001B | ALLOW PRIVATE INTERRUPT PROCESSING |

112X ** MONITOR IDENTIFICATION FLAGS

113X *

114X * THESE BYTES IDENTIFY THE ROM MONITOR.

115X * THEY ARE THE VARIOUS VALUES OF LOCATION .IDENT

116X

| | | | | |
|---------|-------------|-----|------|---|
| 000.021 | 117X M.PAMB | EQU | 021Q | 'LXI' INSTRUCTION AT 000.000 IN PAM-8 |
| 000.303 | 118X M.FOX | EQU | 303Q | 'JMP' INSTRUCTION AT 000.000 IN FOX ROM |

120X ** ROUTINE ENTRY POINTS.

121X *

122X

| | | | | |
|---------|-------------|-----|-------|--------------------------|
| 000.000 | 123X .IDENT | EQU | 0000A | IDENTIFICATION LOCATION |
| 000.053 | 124X .DLY | EQU | 0053A | DELAY |
| 001.267 | 125X .LOAD | EQU | 1267A | TAPE LOAD |
| 001.374 | 126X .DUMP | EQU | 1374A | TAPE DUMP |
| 002.136 | 127X .ALARM | EQU | 2136A | ALARM ROUTINE |
| 002.140 | 128X .HORN | EQU | 2140A | HORN |
| 002.172 | 129X .CTC | EQU | 2172A | CHECK TAPE CHECKSUM |
| 002.205 | 130X .TPEKR | EQU | 2205A | TAPE ERROR ROUTINE |
| 002.264 | 131X .PCHL | EQU | 2264A | PCHL INSTRUCTION |
| 002.265 | 132X .SRS | EQU | 2265A | SCAN RECORD START |
| 002.325 | 133X .RNP | EQU | 2325A | READ NEXT PAIR |
| 002.331 | 134X .RNB | EQU | 2331A | READ NEXT BYTE |
| 002.347 | 135X .CRC | EQU | 2347A | CRC-16 CALCULATOR |
| 003.017 | 136X .WNP | EQU | 3017A | WRITE NEXT PAIR |
| 003.024 | 137X .WNB | EQU | 3024A | WRITE NEXT BYTE |
| 003.122 | 138X .DOD | EQU | 3122A | DECODE FOR OCTAL DISPLAY |
| 003.260 | 139X .RCK | EQU | 3260A | READ CONSOLE KEYS |
| 003.356 | 140X .DODA | EQU | 3356A | SEGMENT CODE TABLE |

142X ** RAM CELLS USED BY H8MTR.

143X *

144X

| | | | | |
|---------|---------------|-------|--------|--------------------------|
| 040.000 | 145X .START | EQU | 40000A | START DUMP ADDRESS |
| 040.002 | 146X .IOWRK | EQU | 40002A | IN OR OUT INSTRUCTION |
| 040.005 | 147X .REGI | EQU | 40005A | DISPLAYED REGISTER INDEX |
| 040.006 | 148X .DISPROT | EQU | 40006A | PERIOD FLAG BYTE |
| 040.007 | 149X .DSPMOD | EQU | 40007A | DISPLAY MODE |
| 040.010 | 150X .MFLAG | EQU | 40010A | USER OPTION BYTE |
| 040.011 | 151X .CTLFLG | EQU | 40011A | PANEL CONTROL BYTE |
| 040.013 | 152X .ALEDS | EQU | 40013A | ABUSS LEDS |
| 040.021 | 153X .DLEDS | EQU | 40021A | DBUSS LEDS |
| 040.024 | 154X .ABUSS | EQU | 40024A | ABUSS REGISTER |
| 040.027 | 155X .CRCSUM | EQU | 40027A | CRC SUM WORD |
| 040.031 | 156X .TPEKR | EQU | 40031A | TAPE ERROR EXIT VECTOR |
| 040.033 | 157X .TICCNT | EQU | 40033A | CLOCK TICK COUNTER |
| 040.035 | 158X .REGPTR | EQU | 40035A | REGISTER POINTER |
| 040.037 | 159X .UIVEC | EQU | 40037A | USER INTERRUPT VECTORS |
| 000.013 | 160 | XTEXT | H0SEQU | |

162X ** HDOS SYSTEM EQUIVALENCES.

163X *

164X

| | | | | |
|---------|--------------|-----|--------|----------------------|
| 024.000 | 165X S.GRT0 | EQU | 24000A | SYSTEM AREA FOR GRT0 |
| 025.000 | 166X S.GRT1 | EQU | 25000A | SYSTEM AREA FOR GRT1 |
| 026.000 | 167X S.GRT2 | EQU | 26000A | SYSTEM AREA FOR GRT2 |
| | 168X | | | |
| 030.000 | 169X ROMBOOT | EQU | 30000A | ROM BOOT ENTRY |
| | 170X | | | |

PAM/8. EQUIVALENCES.

HDOSEQU

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| | | | | |
|---------|--------------|-------|----------|----------------------------|
| 040.100 | 171X | ORG | 40100A | FREE SPACE FROM PAM-8 |
| | 172X | | | |
| 040.100 | 173X | DS | 8 | JUMP TO SYSTEM EXIT |
| 040.110 | 174X D.CON | DS | 16 | DISK CONSTANTS |
| 040.130 | 175X SYDD | EQU | * | SYSTEM DISK ENTRY POINT |
| 040.130 | 176X D.VEC | DS | 24*3 | SYSTEM ROM ENTRY VECTORS |
| 040.240 | 177X D.RAM | DS | 31 | SYSTEM ROM WORK AREA |
| 040.277 | 178X S.VAL | DS | 36 | SYSTEM VALUES |
| 040.343 | 179X S.INT | DS | 115 | SYSTEM INTERNAL WORK AREAS |
| 041.126 | 180X | DS | 16 | |
| 041.146 | 181X S.SOV | DS | 2 | STACK OVERFLOW WARNING |
| 041.150 | 182X | DS | 42200A-* | SYSTEM STACK |
| 001.032 | 183X STACKL | EQU | *-S.SOV | STACK SIZE |
| | 184X | | | |
| 042.200 | 185X STACK | EQU | * | LWA+1 SYSTEM STACK |
| 042.200 | 186X USERFWA | EQU | * | USER FWA |
| 042.200 | 187 | XTEXT | ESVAL | |

189X ** S.VAL - SYSTEM VALUE DEFINITIONS.

190X *

191X * THESE VALUES ARE SET AND MAINTAINED BY THE SYSTEM.

192X *

193X * THE DECK HDOSEQU MUST BE MODIFIED WHEN THIS IS MODIFIED.

194X

195X

040.277 196X ORG S.VAL

197X

040.277 198X S.DATE DS 9 SYSTEM DATE (IN ASCII)

040.310 199X S.DATC DS 2 CODED DATE

040.312 200X S.TIME DS 4 TIME FROM MIDNIGHT (IN TICS)

040.316 201X S.HIMEM DS 2 HARDWARE HIGH MEMORY ADDRESS+1

202X

040.320 203X S.SYSM DS 2 FWA RESIDENT SYSTEM

204X

040.322 205X S.USRM DS 2 LWA USER MEMORY

206X

040.324 207X S.OMAX DS 2 MAX OVERLAY SIZE FOR SYSTEM

208X

209X

210X ** THE FOLLOWING FIVE CELLS SHOULD BE MODIFIED/READ ONLY VIA THE .CONSL SYSCALL

211X

000.200 212X CSL.ECH EQU 10000000B SUPPRESS ECHO

000.002 213X CSL.WRP EQU 00000010B WRAP LINES AT WIDTH

000.001 214X CSL.CHR EQU 00000001B OPERATE IN CHARACTER MODE

215X

000.000 216X I.CSLMD EQU 0 S.CSLMD IS FIRST BYTE

040.326 217X S.CSLMD DS 1 CONSOLE MODE

218X

000.200 219X CTP.BKS EQU 10000000B TERMINAL PROCESSES BACKSPACES

000.040 220X CTP.MLI EQU 00100000B MAP LOWER CASE TO UPPER ON INPUT

000.020 221X CTP.MLO EQU 00010000B MAP LOWER CASE TO UPPER ON OUTPUT

000.010 222X CTP.2SB EQU 00001000B TERMINAL NEEDS TWO STOP BITS

000.002 223X CTP.BKM EQU 00000010B MAP BKSP. (UPON INPUT) TO RUBOUT

| | | | |
|---------|------------------|-------------------|--|
| 000.001 | 224X CTF.TAB EQU | 00000001B | TERMINAL SUPPORTS TAB CHARACTERS |
| | 225X | | |
| 000.001 | 226X I.CONTY EQU | 1 | S.CONTY IS 2ND BYTE |
| 000.000 | 227X ERRNZ | *-S.CSLMD-I.CONTY | |
| 040.327 | 228X S.CONTY DS | 1 | CONSOLE TYPE FLAGS |
| 000.002 | 229X I.CUSOR EQU | 2 | S.CUSOR IS 3RD BYTE |
| 000.000 | 230X ERRNZ | *-S.CSLMD-I.CUSOR | |
| 040.330 | 231X S.CUSOR DS | 1 | CURRENT CURSOR POSITION |
| 000.003 | 232X I.CONWI EQU | 3 | S.CONWI IS 4TH BYTE |
| 000.000 | 233X ERRNZ | *-S.CSLMD-I.CONWI | |
| 040.331 | 234X S.CONWI DS | 1 | CONSOLE WIDTH |
| | 235X | | |
| 000.001 | 236X C0.FLG EQU | 00000001B | CTL-0 FLAG |
| 000.200 | 237X CS.FLG EQU | 10000000B | CTL-S FLAG |
| | 238X | | |
| 000.004 | 239X I.CONFL EQU | 4 | S.CONFL IS 5TH BYTE |
| 000.000 | 240X ERRNZ | *-S.CSLMD-I.CONFL | |
| 040.332 | 241X S.CONFL DS | 1 | CONSOLE FLAGS |
| | 242X | | |
| 040.333 | 243X S.CAADR DS | 2 | ADDRESS FOR ABORT PROCESSING (>256 IF VALID) |
| 040.335 | 244X S.CCTAB DS | 6 | ADDR FOR CTL-A, CTL-B, CTL-C PROCESSING |
| 040.343 | 245 | XTEXT ECDEF | |

247X ** ERROR CODE DEFINITIONS.

| | | | |
|---------|-------------|-----|---|
| | 248X | | |
| 000.000 | 249X | ORG | 0 |
| 000.000 | 250X | DS | 1 |
| 000.001 | 251X EC.EOF | DS | 1 |
| 000.002 | 252X EC.EOM | DS | 1 |
| 000.003 | 253X EC.ILC | DS | 1 |
| 000.004 | 254X EC.CNA | DS | 1 |
| 000.005 | 255X EC.DNS | DS | 1 |
| 000.006 | 256X EC.IDN | DS | 1 |
| 000.007 | 257X EC.IFN | DS | 1 |
| 000.010 | 258X EC.NRD | DS | 1 |
| 000.011 | 259X EC.FNO | DS | 1 |
| 000.012 | 260X EC.YLR | DS | 1 |
| 000.013 | 261X EC.FUC | DS | 1 |
| 000.014 | 262X EC.FNF | DS | 1 |
| 000.015 | 263X EC.UND | DS | 1 |
| 000.016 | 264X EC.ICN | DS | 1 |
| 000.017 | 265X EC.DIF | DS | 1 |
| 000.020 | 266X EC.IFC | DS | 1 |
| 000.021 | 267X EC.NEM | DS | 1 |
| 000.022 | 268X EC.RF | DS | 1 |
| 000.023 | 269X EC.WF | DS | 1 |
| 000.024 | 270X EC.WPV | DS | 1 |
| 000.025 | 271X EC.WP | DS | 1 |
| 000.026 | 272X EC.FAP | DS | 1 |
| 000.027 | 273X EC.DDA | DS | 1 |
| 000.030 | 274X EC.FL | DS | 1 |
| 000.031 | 275X EC.FAO | DS | 1 |
| 000.032 | 276X EC.YS | DS | 1 |
| 000.033 | 277X EC.UUN | DS | 1 |

NO ERROR #0
END OF FILE
END OF MEDIA
ILLEGAL SYSCALL CODE
CHANNEL NOT AVAILABLE
DEVICE NOT SUITABLE
ILLEGAL DEVICE NAME
ILLEGAL FILE NAME
NO ROOM FOR DEVICE DRIVER
CHANNEL NOT OPEN
ILLEGAL REQUEST
FILE USAGE CONFLICT
FILE NAME NOT FOUND
UNKNOWN DEVICE
ILLEGAL CHANNEL NUMBER
DIRECTORY FULL
ILLEGAL FILE CONTENTS
NOT ENOUGH MEMORY
READ FAILURE
WRITE FAILURE
WRITE PROTECTION VIOLATION
DISK WRITE PROTECTED
FILE ALREADY PRESENT
DEVICE DRIVER ABORT
FILE LOCKED
FILE ALREADY OPEN
ILLEGAL SWITCH
UNKNOWN UNIT NUMBER

PAM/B. EQUIVALENCES.

ECDEF

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| | | | | | |
|---------|------|--------|--------|---|--|
| 000.034 | 278X | EC.FNR | DS | 1 | FILE NAME REQUIRED |
| 000.035 | 279X | EC.DIW | DS | 1 | DEVICE IS NOT WRITABLE (OR WRITE LOCKED) |
| 000.036 | 280X | EC.UNA | DS | 1 | UNIT NOT AVAILABLE |
| 000.037 | 281X | EC.ILV | DS | 1 | ILLEGAL VALUE |
| 000.040 | 282X | EC.ILO | DS | 1 | ILLEGAL OPTION |
| 000.041 | 283X | EC.VPM | DS | 1 | VOLUME PRESENTLY MOUNTED ON DEVICE |
| 000.042 | 284X | EC.NVM | DS | 1 | NO VOLUME PRESENTLY MOUNTED |
| 000.043 | 285X | EC.FOD | DS | 1 | FILE OPEN ON DEVICE |
| 000.044 | 286X | EC.NPM | DS | 1 | NO PROVISIONS MADE FOR REMOUNTING MORE DISKS |
| 000.045 | 287X | EC.DNI | DS | 1 | DISK NOT INITIALIZED |
| 000.046 | 288X | EC.DNR | DS | 1 | DISK IS NOT READABLE |
| 000.047 | 289X | EC.DSC | DS | 1 | DISK STRUCTURE IS CORRUPT |
| 000.050 | 290X | EC.NCV | DS | 1 | NOT CORRECT VERSION OF HDOS |
| 000.051 | 291X | EC.NOS | DS | 1 | NO OPERATING SYSTEM MOUNTED |
| 000.052 | 292X | EC.IOI | DS | 1 | ILLEGAL OVERLAY INDEX |
| 000.053 | 293X | EC.OTL | DS | 1 | OVERLAY TOO LARGE |
| 000.054 | 294 | XTEXT | PICDEF | | |

PIC FORMAT EQUIVALENCES.

| | | | | | |
|---------|------|---------|--------|---|-----------------------------|
| 000.000 | 296X | ** | | | |
| | 297X | | | | |
| | 298X | ORG | | 0 | |
| | 299X | | | | |
| 000.000 | 300X | PIC.ID | DS | 1 | 377Q = BINARY FILE FLAG |
| 000.001 | 301X | | DS | 1 | FILE TYPE (FT.PIC) |
| 000.002 | 302X | PIC.LEN | DS | 2 | LENGTH OF ENTIRE RECORD |
| 000.004 | 303X | PIC.PTR | DS | 2 | INDEX OF START OF PIC TABLE |
| | 304X | | | | |
| 000.006 | 305X | PIC.COD | DS | 0 | CODE STARTS HERE |
| 000.006 | 306 | XTEXT | DEVDEF | | |

DEVICE TABLE ENTRIES.

| | | | | | |
|---------|------|---------|-----|-----------|-------------------------------|
| | 308X | ** | | | |
| | 309X | | | | |
| 000.000 | 310X | ORG | | 0 | |
| | 311X | | | | |
| 000.000 | 312X | DEV.NAM | DS | 2 | DEVICE NAME |
| 000.000 | 313X | DEV.EL | EQU | 00000000B | END OF DEVICE LIST FLAG |
| 000.001 | 314X | DEV.NU | EQU | 00000001B | DEVICE ENTRY NOT IN USE |
| | 315X | | | | |
| 000.002 | 316X | DEV.RES | DS | 1 | DRIVER RESIDENCE CODE |
| 000.001 | 317X | DR.IM | EQU | 00000001B | DRIVER IN MEMORY |
| 000.002 | 318X | DR.PR | EQU | 00000010B | DRIVER PERMANENTLY RESIDENT |
| | 319X | | | | |
| 000.003 | 320X | DEV.JMP | DS | 1 | JMP TO PROCESSOR |
| 000.004 | 321X | DEV.DDA | DS | 2 | DRIVER ADDRESS |
| 000.006 | 322X | DEV.FLG | DS | 1 | FLAG BYTE |
| 000.001 | 323X | DT.DD | EQU | 00000001B | DIRECTORY DEVICE |
| 000.002 | 324X | DT.CR | EQU | 00000010B | CAPABLE OF READ OPERATION |
| 000.004 | 325X | DT.CW | EQU | 00000100B | CAPABLE OF WRITE OPERATION |
| | 326X | | | | |
| 000.007 | 327X | DEV.SPG | DS | 1 | SECTORS PER GROUP THIS DEVICE |
| 000.010 | 328X | DEV.MUM | DS | 1 | MOUNTED UNIT MASK |

DEV

| | | | |
|---------|------------------|---|-------------------------------------|
| 000.011 | 329X DEV.MNU DS | 1 | MAXIMUM NUMBER OF UNITS |
| 000.012 | 330X DEV.UNT DS | 2 | ADDRESS OF UNIT SPECIFIC DATA TABLE |
| | 331X | | |
| 000.014 | 332X DEV.DVL DS | 2 | DRIVER BYTE LENGTH |
| 000.016 | 333X DEV.DVG DS | 1 | DRIVER ROUTINE GROUP ADDRESS |
| | 334X | | |
| 000.017 | 335X DEVELEN EQU | * | DEVICE TABLE ENTRY LENGTH |

337X ** UNIT SPECIFIC DEVICE DATA TABLE ENTRIES

| | | | | |
|---------|------------------|-------|---|--|
| | 338X | | | |
| 000.000 | 339X | ORG | 0 | |
| | 340X | | | |
| 000.000 | 341X UNT.FLG DS | 1 | UNIT SPECIFIC *DEV.FLG* | |
| 000.001 | 342X UNT.GRT DS | 2 | ADDRESS OF GROUP RESERVATION TABLE (IF DT.DD) | |
| 000.003 | 343X UNT.GTS DS | 2 | GRT SECTOR NUMBER | |
| 000.005 | 344X UNT.DIS DS | 2 | DIRECTORY FIRST SECTOR NUMBER | |
| | 345X | | | |
| 000.007 | 346X UNT.SIZ EQU | * | SIZE OF UNIT SPECIFIC DATA TABLE PER UNIT | |
| 000.007 | 347 | XTEXT | DVDDEF | |

349X ** DEVICE DRIVER EQUIVALENCES.

| | | | | |
|---------|------------------|-------|--|-------------------------|
| | 350X | | | |
| 000.307 | 351X DVD.FLV EQU | 3070 | DEVICE DRIVER FLAG VALUE | |
| | 352X | | | |
| 000.006 | 353X | ORG | PIC.COD | STARTS AT PIC CODE AREA |
| | 354X | | | |
| 000.006 | 355X DVD.DVD DS | 1 | MUST BE DVD.FLV, FLAGS TO HDOS AS DRIVER | |
| 000.007 | 356X DVD.CAP DS | 1 | DEVICE CAPABILITY FLAG | |
| 000.010 | 357X DVD.MUM DS | 1 | MOUNTED UNIT MASK | |
| 000.011 | 358X DVD.MNU DS | 1 | MAXIMUM NUMBER OF UNITS | |
| 000.012 | 359X DVD.UFL DS | 8 | UNIT SUB-CAPABILITY FLAGS FOR UNITS 0-7 | |
| 000.022 | 360X DVD.SET DS | 1 | = DVD.FLV IFF DRIVER WILL TAKE SET OPTIONS | |
| 000.023 | 361X | DS | 24 | RESERVED, MUST BE 0 |
| 000.053 | 362X DVD.STE EQU | * | ENTRY FOR 'SET' INVOCATION | |
| | 363X | | | |
| 002.000 | 364X DVD.ENT EQU | 2000A | DRIVER ENTRY POINT (MUST BE MULT OF 256) | |
| 000.053 | 365 | XTEXT | SETCAL | |

367X ** SETCAL - FIXED ADDRESS ROUTINES IN SET

| | | | | |
|---------|--------|-----|---|--|
| | 368X * | | | |
| | 369X * | | THESE VECTORS ARE FIXED ENTRY POINTS INTO THE | |
| | 370X * | | SET PROGRAM TO UTILIZED BY DEVICE DRIVERS IN | |
| | 371X * | | PROCESSING SET COMMANDS. | |
| | 372X * | | | |
| | 373X | | | |
| 042.201 | 374X | ORG | USERFWA+1 | |
| | 375X | | | |

| | | | | |
|---------|--------------|-------|-------|----------|
| 042.201 | 376X \$SNA | DS | 3 | |
| | 377X | | | |
| 042.204 | 378X \$DCS | DS | 3 | |
| | 379X | | | |
| 042.207 | 380X \$CNA | DS | 3 | |
| | 381X | | | |
| 042.212 | 382X \$FST | DS | 3 | |
| | 383X | | | |
| 042.215 | 384X \$TBLS | DS | 3 | |
| | 385X | | | |
| 042.220 | 386X \$WTBLS | DS | 3 | |
| | 387X | | | |
| 042.223 | 388X \$LBD | DS | 3 | |
| | 389X | | | |
| 042.226 | 390X \$SOP | DS | 3 | |
| | 391X | | | |
| 042.231 | 392X \$PBF | DS | 3 | |
| | 393X | | | |
| 042.234 | 394X \$PBV | DS | 3 | |
| | 395X | | | |
| 042.237 | 396X | DS | 60 | RESERVED |
| 042.333 | 397 | XTEXT | U8250 | |

399X ** 8250 UART CONTROL AND BIT DEFINITIONS.

| | | | | |
|---------|-------------|-----|-----------|---|
| | 400X | | | |
| 000.350 | 401X SC.ACE | EQU | 3500 | SYSTEM CONSOLE PORT IF 8250 ACE |
| 000.156 | 402X AC.DLY | EQU | 110 | 220 MIL. SEC. DELAY FOR 8250 |
| | 403X | | | |
| 000.000 | 404X UR.RBR | EQU | 0 | RECEIVER BUFFER REGISTER (READ ONLY) |
| | 405X | | | |
| 000.000 | 406X UR.THR | EQU | 0 | TRANSMITTER HOLDING REGISTER (WRITE ONLY) |
| | 407X | | | |
| 000.000 | 408X UR.DLL | EQU | 0 | DIVISOR LATCH (LEAST SIGNIFICANT) |
| | 409X | | | |
| 000.001 | 410X UR.DLM | EQU | 1 | DIVISOR LATCH (MOST SIGNIFICANT) |
| | 411X | | | |
| 000.001 | 412X UR.IER | EQU | 1 | INTERRUPT ENABLE REGISTER |
| 000.001 | 413X UC.EDA | EQU | 00000001B | ENABLE RECEIVED DATA AVAILABLE INTERRUPT |
| 000.002 | 414X UC.TRE | EQU | 00000010B | ENABLE TRANSMIT HOLD REGISTER EMPTY INTERRUPT |
| 000.004 | 415X UC.RSI | EQU | 00000100B | ENABLE RECEIVE STATUS INTERRUPT |
| 000.010 | 416X UC.MSI | EQU | 00001000B | ENABLE MODEM STATUS INTERRUPT |
| | 417X | | | |
| 000.002 | 418X UR.IIR | EQU | 2 | INTERRUPT IDENTIFICATION REGISTER |
| 000.001 | 419X UC.IIP | EQU | 00000001B | INVERTED INTERRUPT PENDING (0 MEANS PENDING) |
| 000.006 | 420X UC.IID | EQU | 00000110B | INTERRUPT ID |
| | 421X | | | |
| 000.003 | 422X UR.LCR | EQU | 3 | LINE CONTROL REGISTER |
| 000.000 | 423X UC.5BW | EQU | 00000000B | 5 BIT WORDS |
| 000.001 | 424X UC.6BW | EQU | 00000001B | 6 BIT WORDS |
| 000.002 | 425X UC.7BW | EQU | 00000010B | 7 BIT WORDS |
| 000.003 | 426X UC.8BW | EQU | 00000011B | 8 BIT WORDS |
| 000.004 | 427X UC.2SB | EQU | 00000100B | TWO STOP BITS SELECTED |
| 000.010 | 428X UC.PEN | EQU | 00001000B | PARITY COMPUTATION ENABLED |

| | | | |
|---------|-----------------|-----------|------------------------------------|
| 000.020 | 429X UC.EFS EQU | 00010000B | EVEN PARITY SELECT |
| 000.040 | 430X UC.SKP EQU | 00100000B | STICK PARITY |
| 000.100 | 431X UC.SB EQU | 01000000B | SET BREAK |
| 000.200 | 432X UC.DLA EQU | 10000000B | DIVISOR LATCH ACCESS |
| | 433X | | |
| 000.004 | 434X UR.MCR EQU | 4 | MODEM CONTROL REGISTER |
| 000.001 | 435X UC.DTR EQU | 00000001B | DATA TERMINAL READY |
| 000.002 | 436X UC.RTS EQU | 00000010B | REQUEST TO SEND |
| 000.004 | 437X UC.OU1 EQU | 00000100B | OUT 1 |
| 000.010 | 438X UC.OU2 EQU | 00001000B | OUT 2 |
| 000.020 | 439X UC.LOO EQU | 00010000B | LOOP |
| | 440X | | |
| 000.005 | 441X UR.LSR EQU | 5 | LINE STATUS REGISTER |
| 000.001 | 442X UC.DR EQU | 00000001B | DATA READY |
| 000.002 | 443X UC.DR EQU | 00000010B | OVERRUN |
| 000.004 | 444X UC.PE EQU | 00000100B | PARITY ERROR |
| 000.010 | 445X UC.FE EQU | 00001000B | FRAMING ERROR |
| 000.020 | 446X UC.BI EQU | 00010000B | BREAK INTERRUPT |
| 000.040 | 447X UC.THE EQU | 00100000B | TRANSMITTER HOLDING REGISTER EMPTY |
| 000.100 | 448X UC.TSE EQU | 01000000B | TRANSMITTER SHIFT REGISTER EMPTY |
| | 449X | | |
| 000.006 | 450X UR.MSR EQU | 6 | MODEM STATUS REGISTER |
| 000.001 | 451X UC.DCS EQU | 00000001B | DELTA CLEAR TO SEND |
| 000.002 | 452X UC.DDR EQU | 00000010B | DELTA DATA SET READY |
| 000.004 | 453X UC.YER EQU | 00000100B | TRAILING EDGE OF RING |
| 000.010 | 454X UC.DRL EQU | 00001000B | DELTA RECEIVE LINE SIGNAL DETECT |
| 000.020 | 455X UC.CTS EQU | 00010000B | CLEAR TO SEND |
| 000.040 | 456X UC.DSR EQU | 00100000B | DATA SET READY |
| 000.100 | 457X UC.RI EQU | 01000000B | RING INDICATOR |
| 000.200 | 458X UC.RLS EQU | 10000000B | RECEIVED LINE SIGNAL DETECT |
| 042.333 | 459 XTEXT | U8251 | |

```

462X **      8251 USART BIT DEFINITIONS.
463X *
464X
465X **      PORT ADDRESSES
466X
000.000      467X UDR      EQU      0      DATA REGISTER IS EVEN
000.001      468X USR      EQU      1      STATUS REGISTER IS NEXT
469X
000.372      470X SC.USART EQU      3720      CONSOLE USART ADDRESS (IFF 8251)
471X
472X
473X **      MODE INSTRUCTION CONTROL BITS.
474X
000.100      475X UMI.1B EQU      01000000B      1 STOP BIT
000.200      476X UMI.HB EQU      10000000B      1 1/2 STOP BITS
000.300      477X UMI.2B EQU      11000000B      2 STOP BITS
000.040      478X UMI.PE EQU      00100000B      EVEN PARITY
000.020      479X UMI.PA EQU      00010000B      USE PARITY
000.000      480X UMI.L5 EQU      00000000B      5 BIT CHARACTERS
000.004      481X UMI.L6 EQU      00000100B      6 BIT CHARACTERS
000.010      482X UMI.L7 EQU      00001000B      7 BIT CHARACTERS
000.014      483X UMI.L8 EQU      00001100B      8 BIT CHARACTERS
000.001      484X UMI.1X EQU      00000001B      CLOCK X 1
000.002      485X UMI.16X EQU      00000010B      CLOCK X 16
000.003      486X UMI.64X EQU      00000011B      CLOCK X 64
487X
488X **      COMMAND INSTRUCTION BITS.
489X
000.100      490X UCI.1R EQU      01000000B      INTERNAL RESET
000.040      491X UCI.R0 EQU      00100000B      READER-ON CONTROL FLAG
000.020      492X UCI.ER EQU      00010000B      ERROR RESET
000.004      493X UCI.RE EQU      00000100B      RECEIVE ENABLE
000.002      494X UCI.IE EQU      00000010B      ENABLE INTERRUPTS FLAG
000.001      495X UCI.TE EQU      00000001B      TRANSMIT ENABLE
496X
497X **      STATUS READ COMMAND BITS.
498X
000.040      499X USR.FE EQU      00100000B      FRAMING ERROR
000.020      500X USR.OE EQU      00010000B      OVERRUN ERROR
000.010      501X USR.PE EQU      00001000B      PARITY ERROR
000.004      502X USR.TXE EQU      00000100B      TRANSMITTER EMPTY
000.002      503X USR.RXR EQU      00000010B      RECEIVER READY
000.001      504X USR.TXR EQU      00000001B      TRANSMITTER READY
505
506
041.061      507 AIO.UNI EQU      041061A      ADDRESS OF I/O UNIT NUMBER
508
509
510 *      CODE HEADER
511
512      CODE      PIC
513
000.006 307      514      DB      DVDFLV      DEVICE DRIVER FLAG VALUE
000.007 006      515      DB      DT.CR+DT.CW      DEVICE CAPABILITY: READ AND WRITE
000.010 001      516      DB      00000001B      MOUNTED UNIT MASK
000.011 001      517      DB      1      ONLY 1 UNIT

```

| | | | | | | |
|---------|-----|-----|-------|--------------|------|------------------|
| 000.012 | 006 | 518 | DB | DT.CR+DT.CW | 0: | CAPABLE OF WRITE |
| 000.013 | | 519 | DS | 7 | 1-7: | IGNORED |
| 000.022 | 307 | 520 | DB | DVDFLV | | |
| | | 521 | | | | |
| 000.000 | | 522 | ERRNZ | *-023Q | | |
| 000.023 | | 523 | DS | DVD.STE-023Q | | RESERVED AREAS |

```

526 *** ASSEMBLY CONSTANTS
527 *
528 *
529 *
530 ** DEFAULT DEVICE DEFINITIONS
531 *
532
000.001 533 IF H8410
534 DFLT.AT EQU 3200 PORT ADDRESS
535 DFLT.BD EQU 1200A 300 BAUD
536 ELSE
000.374 537 DFLT.AT EQU 3740 PORT ADDRESS
000.000 538 DFLT.BD EQU 000A
539 ENDIF
540
000.000 541 DFLT.PD EQU 0 DEFAULT NUMBER OF PAD CHARACTERS
000.120 542 DFLT.WD EQU 80 80 COLUMN WIDTH
000.001 543 DFLT.CX EQU 1 INITIAL COLUMN INDEX
000.000 544 DFLT.CS EQU 0 DEFAULT CTL-S SETTING
  
```

```

546 **
547 *
548
000.000 549 SB.1 EQU 00000000B ONE STOP BIT
000.200 550 SB.2 EQU 10000000B TWO STOP BITS
551
000.000 552 MLC EQU 00000000B MAP LOWER CASE
000.001 553 NOMLC EQU 00000001B NO MAP OF LOWER CASE
  
```

```

556 *** SET CODE ENTRY POINT
557 *
558 * SET COMMANDS ENTER HERE
559 *
560 *
561 * ENTRY: (DE) = LINE POINTER
562 * (A) = UNIT NUMBER
563 *
564 * EXIT: 'C' CLEAR IF OK
565 * 'C' SET IF ERROR
566 * (A) = ERROR CODE
567 *
568 * USES: ALL
569 *
570
000.053 571 SETNTR EQU *
000.000 572 ERRNZ *-DVD.STE
000.053 247 573 ANA A
000.054 302 103 000 574 JNZ SET1
000.057 102 575 MOV B,D
000.060 113 576 MOV C,E (BC) = PARAMETER LIST ADDRESS
000.061 021 166 001 577 LXI D,PRCTAB (DE) = PROCESSOR TABLE ADDRESS
000.064 041 044 001 578 LXI H,OPTTAB (HL) = OPTION TABLE ADDRESS
000.067 315 226 042 579 CALL $SOP
000.072 330 580 RC
000.073 315 201 042 581 CALL $SNA
000.076 310 582 RZ AT END OF LINE
000.077 076 040 583 MVI A,EC.ILO ILLEGAL OPTION SPECIFICATION
000.101 067 584 STC
000.102 311 585 RET
586
000.103 076 033 587 SET1 MVI A,EC.UUN UNKNOWN UNIT NUMBER
000.105 067 588 STC
000.106 311 589 RET

```

SET CODE

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591 *** PROCESSORS
592 *

594 ** FLAG - PROCESS FLAG OPTIONS
595 *
596 * ENTRY, EXIT, AND USE THE SAME AS PBF.
597 *

000.107 303 231 042 598
599 FLAG JMP \$PBF

601 ** VAL - PROCESS VALUE OPTIONS
602 *
603 * ENTRY, EXIT, AND USE THE SAME AS PBF.
604 *

000.112 303 234 042 605
000.001 606 VAL JMP \$PBV
607 IF HB410
608 BAUD SPACE 4,10
609 ** BAUD - PROCESS BAUD RATE OPTION SPECIFICATION

610 *
611 *
612 * ENTRY: (BC) = TEXT ADDRESS
613 *
614 * EXIT: (BC) = TEXT ADDRESS UPDATED
615 * 'C' CLEAR IF OK
616 * 'C' SET IF ERROR
617 * (A) = ERROR CODE
618 *

619 * USES: ALL
620 *

621
622 BAUD MVI A,10 (A) = DEFAULT RADIX
623 CALL \$CNA
624 JC BAU1
625 XCHG (DE) = BAUD RATE VALUE
626 CALL \$LBD
627 JNZ BAU1
628 SHLD TAT,BAU SET BAUD RATE WORD
629 RET

630
631 BAU1 MVI A,EC,ILV
632 STC
633 RET
634 ENDIF

SET CODE

HELP

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```
636 **      HELP - PROCESS HELP OPTION
637 *
638 *      TYPE VALID OPTIONS ON USER CONSOLE
639 *
640
000.115 315 136 031 641 HELP CALL $TYPTX
000.120 012 012 123 642 DB NL,NL,"Set Options",NL,NL
000.140 061 123 102 643 DB '1SB One stop bit',NL
000.162 062 123 102 644 DB '2SB Two stop bits',NL
000.205 115 114 103 645 DB 'MLC Map Lower Case',NL
000.231 116 117 115 646 DB 'NOMLC No mapping of Lower Case',NL
000.271 127 111 104 647 DB 'WIDTH n Page width',NL
000.314 120 101 104 648 DB 'PAD n Number of Pad characters for <CR>',NL
000.364 120 117 122 649 DB 'PORT n Port address',NL
000.001 650 IF H8410
651 DB 'BAUD n Baud rate',NL
652 ENDIF
001.010 110 105 114 653 DB 'HELP Type this message',NL
001.040 012 212 654 DB NL,ENL
001.042 257 655 XRA A CLEAR CARRY
001.043 311 656 RET
```

658 *** TABLES
659 *
660 *

662 ** OPTTAB - OPTION TABLE

663 *
664

| OPTTAB | DW | OPTTAB | END ADDRESS OF TABLE NUMBER OF DATA BYTES |
|---------------------|-----|-----------|--|
| 001.044 165 001 | 665 | OPTTAB | 6 |
| 001.046 006 | 666 | | |
| 001.047 061 123 302 | 668 | DB | '1S', 'B'+200Q, FLAG1, SB, 1, SB, 2, SB, 1 |
| 001.055 241 003 | 669 | DW | TAT, SB |
| 001.057 000 | 670 | DB | 0 |
| 001.060 062 123 302 | 672 | DB | '2S', 'B'+200Q, FLAG1, SB, 1, SB, 2, SB, 2 |
| 001.066 241 003 | 673 | DW | TAT, SB |
| 001.070 000 | 674 | DB | 0 |
| 001.071 115 114 303 | 676 | DB | 'ML', 'C'+200Q, FLAG1, MLC, NOMLC, MLC |
| 001.077 242 003 | 677 | DW | TAT, CON |
| 001.101 000 | 678 | DB | 0 |
| 001.102 116 117 115 | 680 | DB | 'NOML', 'C'+200Q, FLAG1, MLC, NOMLC, NOMLC |
| 001.112 242 003 | 681 | DW | TAT, CON |
| 001.114 000 | 682 | DB | 0 |
| 001.115 127 111 104 | 684 | DB | 'WIDT', 'H'+200Q, VALI, 10, 20, 132 |
| 001.126 244 003 | 685 | DW | TAT, WID |
| 001.130 120 101 304 | 687 | DB | 'PA', 'D'+200Q, VALI, 10, 0, 15 |
| 001.137 243 003 | 688 | DW | TAT, PAD |
| 001.141 120 117 122 | 690 | DB | 'POR', 'T'+200Q, VALI, 8, 0, 3770 |
| 001.151 237 003 | 691 | DW | TAT, POR |
| 000.001 | 692 | | |
| | 693 | IF | H8410 |
| | 694 | DB | 'BAU', 'D'+200Q, BAUDI |
| | 695 | DB | 0, 0, 0, 0, 0 |
| | 696 | ENDIF | |
| 001.153 110 105 114 | 698 | DB | 'HEL', 'P'+200Q, HELPI |
| 001.160 000 000 000 | 699 | DB | 0, 0, 0, 0, 0 |
| 001.165 000 | 701 | OPTTAB DB | 0 |

END OF TABLE

```

703 ** PRCTAB - PROCESSOR TABLE
704 *
705
001.166 706 PRCTAB DS 0
707
000.000 708 FLAGI EQU *-PRCTAB/2
001.166 107 000 709 DW FLAG
710
000.001 711 VALI EQU *-PRCTAB/2
001.170 112 000 712 DW VAL
713
000.001 714 IF HB4IO
715 BAUDI EQU *-PRCTAB/2
716 DW BAUD
717 ENDIF
718
000.002 719 HELPI EQU *-PRCTAB/2
001.172 115 000 720 DW HELP

```

```

000.001 722 IF HB4IO
723 ELSE
001.174 724 DS 0640
725 ENDIF
726
001.260 727 SET 1260A
000.000 728 ERRNZ *-
001.260 729 DS DVD.ENT-

```

ACCOUNT FOR CONDITIONAL ASSEMBLY

```

732 *** ATDVD ENTRY POINT.
733 *
734 * ENTRY (A) = PROCESS CODE
735 * (BC) = BYTE COUNT (USUALLY)
736 * (DE) = MEMORY ADDRESS (USUALLY)
737 * EXIT 'C' CLEAR IF OK
738 * 'C' SET IF ERROR
739 * (A) = ERROR CODE
740 * USES ALL
741
742
002.000 743 ATDVD EQU * ENTRY POINT
000.000 744 ERRNZ *-DVD.ENT
002.000 315 076 031 745 CALL $TBRA ENTER PROCESSOR
002.003 054 746 DB ATREAD-* READ
002.004 121 747 DB ATWRITE-* WRITE
002.005 010 748 DB ATABTR-* READR
002.006 021 749 DB ATOPE-* OPENR
002.007 020 750 DB ATOPE-* OPENW
002.010 005 751 DB ATABTR-* OPENU
002.011 041 752 DB ATNOP-* CLOSE
002.012 007 753 DB ATABT-* ABORT
002.013 002 754 DB ATABTR-* MOUNT
002.014 011 755 DB ATLOAD-* LOAD
  
```

```

757 ** ATABTR - ISSUE DEVICE DRIVER ABORT TO REQUEST.
758
002.015 076 027 759 ATABTR MVI A,EC.DDA DEVICE DRIVER ABORT
002.017 067 760 STC
002.020 311 761 RET
  
```

```

763 ** ATABT - ABORT DEVICE DRIVER
764 *
765
002.021 315 366 002 766 ATABT CALL CRLF
002.024 311 767 RET
  
```

```

769 ** ATLOAD - LOAD DEVICE DRIVER
770 *
771
002.025 772 ATLOAD EQU *
002.025 247 773 ANA A CLEAR CARRY
002.026 311 774 RET
  
```

```

776 **      ATOPE - OPEN (READ OR WRITE)
777 *
778
779
002.027 257      780 ATOPE   XRA     A
002.030 062 124 002 781     STA     EOFLG      CLEAR EOF ON INPUT FLAG
002.033 072 237 003 782     LDA     TAT.POR
002.036 052 240 003 783     LHLD    TAT.BAU
000.001          784     IF      H8410
          785     CALL    I8250
          786     ELSE
002.041 315 123 003 787     CALL    I8251
          788     ENDIF
002.044 076 015      789     MVI     A,CR
002.046 315 146 002 790     CALL    TCH      RESET COLUMN INDEX, AND RETURN CARRIAGE
002.051 311          791     RET

```

```

793 **      ATNOP - IGNORE REQUEST.
794
795
002.052 247      796 ATNOP   ANA     A
002.053 311      797     RET      DO NOTHING

```

ATREAD - READ

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```

800 **      ATREAD - READ DATA FROM CONSOLE.
801 *
802 *      ATREAD READS BYTES UNTIL THE REQUEST IS SATISFIED,
803 *      OR A CTL-D IS STRUCK. THE CTL-D IS TAKEN AS EOF.
804
002.054 022 805 ATR2 STAX D      STORE CHAR
002.055 023 806      INX D
002.056 013 807      DCX B
808
002.057      809 ATREAD EQU *
002.057 072 124 002 810 LDA EOFFLG
002.062 037 811 RAR
002.063 330 812 RC      IS EOF
813
002.064 170 814 MOV A,B
002.065 261 815 ORA C
002.066 310 816 RZ      ALL DONE
817
818 *      TAKE A CHAR
819
002.067 315 222 002 820 ATR1 CALL RCHAR      READ CHARACTER
002.072 332 102 002 821 JC ATREOF
002.075 376 004 822 CPI 04
002.077 302 054 002 823 JNE ATR2      NOT CTL-D
824
825 *      HAVE EOF CHARACTER. FILL THIS SECTOR WITH 0'S
826
002.102 076 003 827 ATREOF MVI A,EC.EOF*2+1
002.104 062 124 002 828 STA EOFFLG      FLAG EOF
002.107 257 829 ATR4 XRA A
002.110 022 830 STAX D      STORE 0
002.111 023 831 INX D
002.112 013 832 DCX B
002.113 171 833 MOV A,C
002.114 261 834 ORA C
002.115 302 107 002 835 JNZ ATR4
002.120 076 001 836 MVI A,EC.EOF
002.122 067 837 STC      SET EOF
002.123 311 838 RET
839
840
002.124 000 841 EOFFLG DB 0      EOF FLAG

```

```

844
845 *** ATWRITE - WRITE TO AT DEVICE.
846 *
847 * ATWRITE WRITES THE DATA TO THE AT DEVICE.
848 *
849 * THE SPECIAL CHARACTERS:
850 *
851 * TAB
852 * FF
853 * NULL
854 * NL
855 *
856 * ARE TREATED SEPERATELY.
857 *
858 * IF AN ABORT IS POSTED BEFORE THE OPERATION COMPLETS,
859 * ATWRITE EXITS.
860
861
002.125 862 ATWRITE EQU *
002.125 072 334 040 863 LDA S,CAADR+1 SEE IF ADDRESS
002.130 247 864 ANA A
002.131 300 865 RNZ ABORT, CLAIM ALL DONE
002.132 170 866 MOV A,B
002.133 261 867 ORA C CHECK BYTE COUNT LEFT
002.134 310 868 RZ ALL DONE
869
870 * (A) = CHARACTER. SEE IF NEEDS SPECIAL PROCESSING:
871 *
872 * NULL
873 * NL
874 * TAB
875 * FF
876
002.135 032 877 LDAX D
002.136 315 146 002 878 CALL TCH TYPE CHARACTER
002.141 023 879 ATW2 INX D INCREMENT POINTER
002.142 013 880 DCX B DECREMENT COUNT
002.143 303 125 002 881 JMP ATWRITE
  
```

```

883 ** TCH - TYPE CHARACTER
884 *
885 * (A) = CHARACTER
886 * EXIT NONE
887 * USES A,F
888
002.146 247 889 TCH ANA A
002.147 310 890 RZ IS NULL
002.150 376 012 891 CPI NL
002.152 312 366 002 892 JE CRLF IS NEW LINE
002.155 376 014 893 CPI FF
002.157 302 176 002 894 JNE TCH2 IS NOT FF
002.162 076 006 895 MVI A,6
002.164 365 896 TCH1 PUSH PSW
  
```

ATWRITE - WRITE TO AT

TCH

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```

002.165 315 366 002 897 CALL CRLF
002.170 361 898 POP PSW
002.171 075 899 DCR A
002.172 302 164 002 900 JNZ TCH1
002.175 311 901 RET
          902
002.176 376 011 903 TCH2 CPI TAB
002.200 302 271 002 904 JNE WCHAR IS NOT TAB, JUST PRINT IT
002.203 076 040 905 WCH3 MVI A, ' '
002.205 315 271 002 906 CALL WCHAR WRITE BLANK
002.210 072 245 003 907 LDA TAT.CX
002.213 075 908 DCR A
002.214 346 007 909 ANI 7
002.216 302 203 002 910 JNZ WCH3
002.221 311 911 RET

```


SUBROUTINES

RCHAR

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```

915 **      RCHAR - READ CHARACTER.
916 *
917 *      ENTRY  NONE
918 *      EXIT   'C' CLEAR IF CHARACTER
919 *             (A) = CHARACTER
920 *             'C' SET IF USER CONSOLE INTERRUPT
921 *      USES   A,F
922
923
002.222 072 334 040 924 RCHAR LDA    S,CAADR+1
002.225 247          925      ANA    A
002.226 067          926      STC
002.227 300          927      RNZ          CONSOLE INTERRUPT
928
002.230 315 022 003 929      CALL   INCHAR
002.233 312 222 002 930      JZ      RCHAR
002.236 346 177      931      ANI     177H          MASK OUT HIGH ORDER BIT
932
002.240 376 015      933      CPI     CR
002.242 302 247 002 934      JNE     RCHAR2          NOT CR
002.245 076 012      935      MVI     A,NL
936
002.247 365          937 RCHAR2 PUSH   PSW
002.250 072 242 003 938      LDA    TAT,CON
002.253 346 001      939      ANI     MLC!NOMLC
002.255 302 265 002 940      JNZ     RCHAR3          NO MAPPING OF LOWER CASE
002.260 361          941      POP     PSW
002.261 315 225 003 942      CALL   $MCU
002.264 365          943      PUSH   PSW
944
002.265 361          945 RCHAR3 POP     PSW
002.266 247          946      ANA    A          CLEAR CARRY
002.267 311          947      RET

```

```

949 **      WAIT - WAIT FOR THE HANDSHAKE
950 *
951
002.270          952 WAIT   EQU    *
002.270 311      953      RET

```

```

955 **      WCHAR - WRITE CHARACTER
956 *
957 *      ENTRY  (A) = CHARACTER
958 *      EXIT   NONE
959 *      USES   A,F
960
961
002.271 365          962 WCHAR PUSH   PSW
002.272 376 040      963      CPI     /
002.274 332 315 002 964      JC      WCHAR0          NOT PRINTABLE, SO SKIP COUNT CHECK!

```

SUBROUTINES.

WCHAR.

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```

002.277 072 245 003 965 LDA TAT.CX
002.302 075 966 RCR A
002.303 041 244 003 967 LXI H,TAT.WID
002.306 276 968 CMP M
002.307 332 315 002 969 JC WCHARO TAT.CX-1 < TAT.WID
002.312 315 366 002 970 CALL CRLF
002.315 072 242 003 971 WCHARO LDA TAT.CON
002.320 346 001 972 ANI MLCINDMLC
002.322 302 332 002 973 JNZ WCHAR1 NO MAPPING
002.325 361 974 POP PSW
002.326 315 225 003 975 CALL $MCU
002.331 365 976 PUSH PSW
977
002.332 361 978 WCHAR1 POP PSW
979
002.333 315 055 003 980 CALL OUTCHAR
981
002.336 376 015 982 CPI CR
002.340 312 360 002 983 JZ WCHAR2
002.343 376 040 984 CPI /
002.345 332 365 002 985 JC WCHAR3 NOT PRINTABLE
002.350 072 245 003 986 LDA TAT.CX
002.353 074 987 INR A
002.354 062 245 003 988 STA TAT.CX
002.357 311 989 RET
990
002.360 076 001 991 WCHAR2 MVI A,1
002.362 062 245 003 992 STA TAT.CX
002.365 311 993 WCHAR3 RET

```

```

995 ** CRLF - TYPE CRLF.
996 *
997
998
002.366 076 015 999 CRLF MVI A,CR
002.370 315 271 002 1000 CALL WCHAR
002.373 076 012 1001 MVI A,LF
002.375 315 271 002 1002 CALL WCHAR
003.000 072 243 003 1003 LDA TAT.PAD
003.003 267 1004 ORA A
003.004 312 021 003 1005 CRLF1 JZ CRLF2
003.007 365 1006 PUSH PSW
003.010 257 1007 XRA A
003.011 315 271 002 1008 CALL WCHAR
003.014 361 1009 POP PSW
003.015 075 1010 DCR A
003.016 303 004 003 1011 JMP CRLF1
003.021 311 1012 CRLF2 RET
003.022 311 1013 XTEXT DVDIO

```

```

1015X **      INCHAR - INPUT CHARACTER
1016X *
1017X *      INPUT CHARACTER FROM SPECIFIED DEVICE
1018X *
1019X *      ENTRY  NONE
1020X *
1021X *      EXIT   (PSW) = 'Z' CLEAR IF THERE IS A CHARACTER
1022X *              (A) = CHARACTER
1023X *              = 'Z' SET   IF THERE IS NOT A CHARACTER
1024X *
1025X *      USES   (PSW)
1026X *
1027X
003.022      1028X INCHAR EQU  *
003.022 345   1029X      PUSH  H
003.023 072 237 003 1030X      LDA  D,PORT
003.026 147     1031X      MOV  H,A
1032X
1033X *      CHECK FOR DATA
1034X
000.001      1035X      IF    H84IO
1036X
1037X      MVI  L,UR,LSR
1038X      CALL IN
1039X      ANI  UC,DR          'Z' SET IF THERE IS DATA
1040X      JZ   INC1          NO DATA
1041X      MVI  L,UR,RBR
1042X      CALL IN
1043X      JMP  INC2
1044X
1045X      ELSE
1046X
003.027 056 001   1047X      MVI  L,USR
003.031 315 203 003 1048X      CALL IN
003.034 346 002   1049X      ANI  USR,RXR          'Z' SET IF THERE IS NO DATA
003.036 312 052 003 1050X      JZ   INC1          NO DATA
003.041 056 000   1051X      MVI  L,UDR
003.043 315 203 003 1052X      CALL IN
003.046 247     1053X      ANA  A          IGNORE NULL CHARACTERS
003.047 303 053 003 1054X      JMP  INC2
1055X
1056X      ENDIF
1057X
003.052 067     1058X INC1   STC
1059X
003.053 341     1060X INC2   POP  H
003.054 311     1061X      RET

```

SUBROUTINES

OUTCHAR

18:26:26 16-MAY-80

```

1063X **      OUTCHAR - OUTPUT CHARACTER
1064X *
1065X *      OUTPUT CHARACTER TO SPECIFIED DEVICE
1066X *
1067X *      ENTRY (A) = CHARACTER
1068X *
1069X *      EXIT NONE
1070X *
1071X *      USES (PSW)
1072X *
1073X
003.055      1074X OUTCHAR EQU *
003.055 345   1075X PUSH H
1076X
003.056 365   1077X PUSH PSW
003.057 072 237 003 1078X LDA D,PORT
003.062 147   1079X MOV H,A
1080X
000.001      1081X IF H&410
1082X
1083X MVI L,UR,LSR
1084X CALL WAIT WAIT FOR THE HAND-SHAKE! /79.11.6C/
1085X OUTC0 LDA S,CAADR+1
1086X ANA A
1087X JNZ OUTC1 IF CTL-Z,-A,-B,-C HIT
1088X CALL IN
1089X ANI UC,THE
1090X JZ OUTC0 IF NOT READY FOR TRANSMIT
1091X POP PSW
1092X MVI L,UR,THR
1093X CALL OUT
1094X JMP OUTC2
1095X
1096X ELSE
1097X
003.063 056 001 1098X MVI L,USR
003.065 315 270 002 1099X CALL WAIT WAIT FOR THE HAND-SHAKE /79.11.6C/
003.070 072 334 040 1100X OUTC0 LDA S,CAADR+1
003.073 247 1101X ANA A
003.074 302 120 003 1102X JNZ OUTC1 IF CTL-Z,-A,-B,-C HIT
003.077 315 203 003 1103X CALL IN
003.102 344 001 1104X ANI USR,THR
003.104 312 070 003 1105X JZ OUTC0 IF NOT READY FOR TRANSMIT
003.107 361 1106X POP PSW
003.110 056 000 1107X MVI L,UDR
003.112 315 213 003 1108X CALL OUT
003.115 303 121 003 1109X JMP OUTC2
1110X
1111X ENDIF
1112X
003.120 361 1113X OUTC1 POP PSW
1114X
003.121 341 1115X OUTC2 POP H
003.122 311 1116X RET
000.001 1117X IF H&410
1118X I&250 SPACE 4,10

```

```

1119X **      I8250 - INITIALIZE 8250
1120X *
1121X *      INITIALIZE AN 8250 PORT.  STOLEN AS CAP FROM CONSL. DRIVER.
1122X *
1123X *      ENTRY      (A)      = PORT ADDRESS
1124X *      (HL)[0-14] = NEW BAUD RATE
1125X *      (HL)[15]  = 1 IF TWO STOP BITS
1126X *
1127X *      EXIT      NONE
1128X *
1129X *      USES      (A)
1130X *
1131X
1132X I8250 EQU *
1133X PUSH D
1134X
1135X      XCHG
1136X      MOV  H,A
1137X      MVI  L,UR.IER      /79.02.6C/
1138X      XRA  A      /79.02.6C/
1139X      CALL OUT      /79.02.6C/
1140X      MVI  L,UR.MCR      /79.01.6C/
1141X      MVI  A,UC.LOO      /79.01.6C/
1142X      CALL OUT      SET LOOP-BACK      /79.01.6C/
1143X      MVI  L,UR.LCR
1144X      MVI  A,UC.DLA
1145X      CALL OUT
1146X      MVI  L,UR.DLL
1147X      MOV  A,E
1148X      CALL OUT
1149X      MVI  L,UR.DLM
1150X      MOV  A,D
1151X      ANI  1770
1152X      CALL OUT
1153X      MVI  L,UR.LCR
1154X      MOV  A,D
1155X      RLC
1156X      RLC
1157X      RLC
1158X      ERRNZ UC.2SB-4
1159X      ANI  UC.2SB
1160X      ORI  UC.8BW      8 BIT WORDS
1161X      CALL OUT
1162X      MVI  L,UR.RBR
1163X      CALL IN      REMOVE GARBAGE
1164X      MVI  A,AC.DLY
1165X      CALL .DLY      /79.01.6C/
1166X      MVI  L,UR.MCR      /79.01.6C/
1167X      CALL IN      /79.01.6C/
1168X      ANI  3770-UC.LOO      /79.01.6C/
1169X      CALL OUT      TURN OFF LOOP-BACK      /79.01.6C/
1170X
1171X      POP  D
1172X      RET
1173X      ELSE

```

SUBROUTINES

I8251

I8:26:27 16-MAY-80

```

1175X **      I8251 - INITIALIZE 8251
1176X *
1177X *      INITIALIZE AN 8251 PORT
1178X *
1179X *      ENTRY      (A)      = PORT ADDRESS
1180X *      (HL)[15] = 1 IF TWO STOP BITS
1181X *
1182X *      EXIT      NONE
1183X *
1184X *      USES      ALL
1185X *
1186X
003.123      1187X I8251 EQU *
003.123 353   1188X      XCHG
003.124 147   1189X      MOV H,A
003.125 056 001 1190X      MVI L,USR
003.127 172   1191X      MOV A,D
003.130 346 200 1192X      ANI 200Q      (A) = 200Q IF TWO STOP BITS
000.000      1193X      ERNZ 200Q+UMI.1B-UMI.2B
003.132 366 116 1194X      ORI UMI.1B+UMI.L8+UMI.16X
003.134 062 201 003 1195X      STA I8251.B
003.137 001 172 003 1196X      LXI B,I8251.A
003.142 012   1197X I8251.1 LDAX B
003.143 376 377   1198X      CPI #377Q
003.145 312 157 003 1199X      JZ I8251.2
003.150 315 213 003 1200X      CALL OUT
003.153 003      1201X      INX B
003.154 303 142 003 1202X      JMP I8251.1
003.157 076 025 1203X I8251.2 MVI A,UCI.ER+UCI.TE+UCI.RE
003.161 315 213 003 1204X      CALL OUT
003.164 056 000 1205X      MVI L,UDR
003.166 315 203 003 1206X      CALL IN
003.171 311      1207X      RET
003.172 000 000 000 1208X I8251.A DB 0,0,0,0,0,0
003.200 100      1209X      DB UCI.IR
003.201 000      1210X I8251.B DB 0
003.202 377      1211X      DB 377Q      CONFIGURATION BYTE
1212X      ENDIF

```

```

1214X **      IN - INPUT
1215X *
1216X *      INPUT BYTE FROM SPECIFIED PORT
1217X *
1218X *      ENTRY      (H)      = PORT ADDRESS
1219X *      (L)      = OFFSET
1220X *
1221X *      EXIT      (A)      = BYTE READ
1222X *
1223X *      USES      (PSW)
1224X *
1225X
003.203      1226X IN EQU *
003.203 174   1227X      MOV A,H

```

```

003.204 205      1228X      ADD    L
003.205 062 211 003 1229X      STA    IN,ADD
003.210 333 000      1230X      IN     *-*
003.211      1231X IN,ADD EQU    *-1
003.212 311      1232X      RET

```

```

1234X **      OUT - OUTPUT
1235X *
1236X *      OUTPUT BYTE TO SPECIFIED PORT
1237X *
1238X *      ENTRY    (A) = BYTE TO BE WRITTEN
1239X *              (H) = PORT ADDRESS
1240X *              (L) = OFFSET
1241X *
1242X *      EXIT     NONE
1243X *
1244X *      USES     NONE
1245X *
1246X

```

```

003.213      1247X OUT     EQU    *
003.213 365      1248X      PUSH   PSW
003.214 174      1249X      MOV    A,H
003.215 205      1250X      ADD    L
003.216 062 223 003 1251X      STA    OUT,ADD
003.221 361      1252X      POP    PSW
003.222 323 000      1253X      OUT     *-*
003.223      1254X OUT,ADD EQU    *-1
003.224 311      1255X      RET
003.225      1256      XTEXT    MCU

```

```

1258X **      MCU - MAP LOWER CASE TO UPPER CASE.
1259X *
1260X *      MCU MAPS A LOWER CASE ALPHABETIC TO UPPER
1261X *      CASE.
1262X *
1263X *      ENTRY    (A) = CHARACTER
1264X *      EXIT     (A) = CHARACTER RESULT
1265X *      USES     A,F
1266X
1267X

```

```

003.225 376 141      1268X $MCU  CPI     'a'
003.227 330      1269X      RC
003.230 376 173      1270X      CPI     'z'+1      NOT LOWER CASE
003.232 320      1271X      RNC
003.233 326 040      1272X      SUI     'a'-1      NOT LOWER CASE
003.235 311      1273X      RET

```

| | | | | | |
|-----------------|------|-------------|------------------------------------|------------------------------|--|
| | 1275 | *** | TAT.UNT - TABLE AT: UNIT CONSTANTS | | |
| | 1276 | * | | | |
| | 1277 | | | | |
| 003.236 | 1278 | TAT.UNA EQU | * | | |
| | 1279 | | | | |
| 003.236 000 | 1280 | TAT.UNT DB | 0 | UNIT NUMBER | |
| | 1281 | | | | |
| 003.236 | 1282 | TAT.AS EQU | TAT.UNT | [?] = 1 IF ASSIGNED | |
| | 1283 | | | | |
| 003.237 374 | 1284 | TAT.POR DB | DFLT.AT | PORT NUMBER | |
| 003.237 | 1285 | D.POR EQU | TAT.POR | | |
| | 1286 | | | | |
| 003.240 000 000 | 1287 | TAT.BAU DW | DFLT.BD | BAUD RATE | |
| 003.241 | 1288 | TAT.SB EQU | *-1 | [?] = 1 IF TWO STOP BITS | |
| | 1289 | | | | |
| 003.242 000 | 1290 | TAT.CON DB | MLC | CONFIGURATION BYTE | |
| | 1291 | | | | |
| 003.243 000 | 1292 | TAT.PAD DB | DFLT.PD | NUMBER OF PAD CHAR. FOR <CR> | |
| | 1293 | | | | |
| 003.244 120 | 1294 | TAT.WID DB | DFLT.WD | TERMINAL WIDTH | |
| | 1295 | | | | |
| 003.245 001 | 1296 | TAT.CX DB | DFLT.CX | COLUMN INDEX | |
| | 1297 | | | | |
| 003.246 000 | 1298 | TAT.CTS DB | DFLT.CS | CTL-S FLAG | |

003.247

1301

XTEXT TBRA

1303X ** \$TBRA - BRANCH RELATIVE THOUGH TABLE.
1304X *
1305X * \$TBRA USES THE SUPPLIED INDEX TO SELECT A BYTE FROM THE
1306X * JUMP TABLE. THE CONTENTS OF THIS BYTE ARE ADDED TO THE
1307X * ADDRESS OF THE BYTE, YEILDING THE PROCESSOR ADDRESS.
1308X *
1309X * CALL \$TBRA
1310X * DB LAB1-* INDEX = 0 FOR LAB1
1311X * DB LAB2-* INDEX = 1 FOR LAB2
1312X * DB LABN-* INDEX = N-1 FOR LABN
1313X *
1314X * ENTRY (A) = INDEX
1315X * (RET) = TABLE FWA
1316X * EXIT TO COMPUTED ADDRESS
1317X * USES F,H,L
1318X
1319X

031.076

1320X \$TBRA

EQU 31076A

IN H17 ROM

003.247

1321

XTEXT TYPTX

1323X ** \$TYPTX - TYPE TEXT.
1324X *
1325X * \$TYPTX IS CALLED TO TYPE A BLOCK OF TEXT ON THE SYSTEM CONSOLE.
1326X *
1327X * IMBEDDED ZERO BYTES INDICATE A CARRIAGE RETURN LINE FEED,
1328X * A BYTE WITH THE 200Q BIT SET IS THE LAST BYTE IN THE MESSAGE.
1329X *
1330X * ENTRY (RET) = TEXT
1331X * EXIT TO (RET+LENGTH)
1332X * USES A,F
1333X
1334X

031.136

1335X \$TYPTX

EQU 31136A

IN H17 ROM

031.144

1337X \$TYPTX

EQU 31144A

IN H17 ROM

003.247

114 122

1338

DW

RL

DUMY ADDRESS FOR RELOCATION

003.251

1340

DS

64

PATCH AREA

1341

1342

LON

G

1343

003.351

055 000 062

1344

END

000 065 000

044 001 055

001 066 001

077 001 112

001 126 001

137 001 151

SUBROUTINES

.IYPTX

18:26:37 16-MAY-80

001 166 001
170 001 172
001 022 002
031 002 034
002 037 002
042 002 047
002 060 002
070 002 073
002 100 002
105 002 116
002 137 002
144 002 153
002 160 002
166 002 173
002 201 002
206 002 211
002 217 002
231 002 234
002 243 002
251 002 256
002 262 002
275 002 300
002 304 002
310 002 313
002 316 002
323 002 327
002 334 002
341 002 346
002 351 002
355 002 363
002 371 002
376 002 001
003 005 003
012 003 017
003 024 003
032 003 037
003 044 003
050 003 060
003 066 003
075 003 100
003 105 003
113 003 116
003 135 003
140 003 146
003 151 003
155 003 162
003 167 003
206 003 217
003 000 000

ASSEMBLY COMPLETE

1344 STATEMENTS

0 ERRORS DETECTED

12564 BYTES FREE

ATDVD - AT: DEVICE DRIVER, FOR H8-5 SERIAL I/O
CROSS REFERENCE TABLE

XREF V1.1
PAGE 35

| | | | | | |
|---------|--------|-------|-------|-------|------|
| \$CNA | 042207 | 380L | | | |
| \$DCS | 042204 | 378L | | | |
| \$FST | 042212 | 382L | | | |
| \$LBD | 042223 | 388L | | | |
| \$MCU | 003225 | 942 | 975 | 1268L | |
| \$PBF | 042231 | 392L | 599 | | |
| \$PBV | 042234 | 394L | 606 | | |
| \$SNA | 042201 | 378L | 581 | | |
| \$SOP | 042226 | 390L | 579 | | |
| \$TBL5 | 042215 | 384L | | | |
| \$TBRA | 031076 | 745 | 1320E | | |
| \$TYPTX | 031136 | 641 | 1335E | | |
| \$TYPTX | 031144 | 1337E | | | |
| \$WTBL5 | 042220 | 386L | | | |
| . | 001260 | 727S | 728 | 729 | |
| .ABUSS | 040024 | 154E | | | |
| .ALARM | 002136 | 127E | | | |
| .ALEDS | 040013 | 152E | | | |
| .CRC | 002347 | 135E | | | |
| .CRCSUM | 040027 | 155E | | | |
| .CTC | 002172 | 129E | | | |
| .CTLFLG | 040011 | 151E | | | |
| .DLEDS | 040021 | 153E | | | |
| .DLY | 000053 | 124E | | | |
| .DOD | 003122 | 138E | | | |
| .DODA | 003356 | 140E | | | |
| .DSPMOD | 040007 | 149E | | | |
| .DSPROT | 040006 | 148E | | | |
| .DUMP | 001374 | 126E | | | |
| .HORN | 002140 | 128E | | | |
| .IDENT | 000000 | 123E | | | |
| .IOWRK | 040002 | 146E | | | |
| .LOAD | 001267 | 125E | | | |
| .MFLAG | 040010 | 150E | | | |
| .PCHL | 002264 | 131E | | | |
| .RCK | 003260 | 139E | | | |
| .REGI | 040005 | 147E | | | |
| .REGPTR | 040035 | 158E | | | |
| .RNB | 002331 | 134E | | | |
| .RNP | 002325 | 133E | | | |
| .SRS | 002265 | 132E | | | |
| .START | 040000 | 145E | | | |
| .TICCNT | 040033 | 157E | | | |
| .TPERR | 002205 | 130E | | | |
| .TPERRX | 040031 | 156E | | | |
| .UIVEC | 040037 | 159E | | | |
| .WNR | 003024 | 137E | | | |
| .WNP | 003017 | 136E | | | |
| AC.DLY | 000156 | 402E | | | |
| AIO.UNI | 041061 | 507E | | | |
| ATABT | 002021 | 753 | 766L | | |
| ATABTR | 002015 | 748 | 751 | 754 | 759L |
| ATDVD | 002000 | 743E | | | |
| ATLOAD | 002025 | 755 | 772E | | |
| ATNOP | 002052 | 752 | 796L | | |
| ATOPE | 002027 | 749 | 750 | 780L | |
| ATR1 | 002067 | 820L | | | |
| ATR2 | 002054 | 805L | 823 | | |

CROSS-REFERENCE TABLE

| | | | | | | | |
|---------|---------|-------|-------|-------|-----|------|--|
| ATR4 | 002107' | 829L | 835 | | | | |
| ATREAD | 002057' | 746 | 809E | | | | |
| ATREOF | 002102' | 821 | 827L | | | | |
| ATW2 | 002141' | 879L | | | | | |
| ATWRITE | 002125' | 747 | 842E | 881 | | | |
| BELL | 000007 | 36E | | | | | |
| BKSP | 000010 | 38E | | | | | |
| C.STX | 000002 | 40E | | | | | |
| C.SYN | 000026 | 39E | | | | | |
| CB.CLI | 000100 | 93E | 108 | | | | |
| CB.MTL | 000040 | 92E | | | | | |
| CB.SPK | 000200 | 94E | | | | | |
| CB.SSI | 000020 | 91E | | | | | |
| CO.FLG | 000001 | 236E | | | | | |
| CR | 000015 | 32E | 789 | 933 | 982 | 999 | |
| CRLF | 002366' | 766 | 892 | 897 | 970 | 999L | |
| CRLF1 | 003004' | 1005L | 1011 | | | | |
| CRLF2 | 003021' | 1005 | 1012L | | | | |
| CS.FLG | 000200 | 237E | | | | | |
| CSL.CHR | 000001 | 214E | | | | | |
| CSL.ECH | 000200 | 212E | | | | | |
| CSL.WRP | 000002 | 213E | | | | | |
| CTLA | 000001 | 47E | | | | | |
| CTLB | 000002 | 48E | | | | | |
| CTLC | 000003 | 49E | | | | | |
| CTLD | 000004 | 50E | | | | | |
| CTLQ | 000017 | 51E | | | | | |
| CTLP | 000020 | 52E | | | | | |
| CTLR | 000021 | 53E | | | | | |
| CTLS | 000023 | 54E | | | | | |
| CTLZ | 000032 | 55E | | | | | |
| CTP.2SB | 000010 | 222E | | | | | |
| CTP.BKM | 000002 | 223E | | | | | |
| CTP.BKS | 000200 | 219E | | | | | |
| CTP.MLI | 000040 | 220E | | | | | |
| CTP.MLO | 000020 | 221E | | | | | |
| CTP.TAB | 000001 | 224E | | | | | |
| D.CON | 040110 | 174L | | | | | |
| D.FORI | 003237' | 1030 | 1078 | 1285E | | | |
| D.RAM | 040240 | 177L | | | | | |
| D.VEC | 040130 | 176L | | | | | |
| DC.ABT | 000007 | 70L | | | | | |
| DC.CLD | 000006 | 69L | | | | | |
| DC.LOD | 000011 | 72L | | | | | |
| DC.MAX | 000012 | 73L | | | | | |
| DC.MOU | 000010 | 71L | | | | | |
| DC.QPR | 000003 | 66L | | | | | |
| DC.OPU | 000005 | 68L | | | | | |
| DC.QPW | 000004 | 67L | | | | | |
| DC.REA | 000000 | 63L | | | | | |
| DC.RER | 000002 | 65L | | | | | |
| DC.WRI | 000001 | 64L | | | | | |
| DEV.DDA | 000004 | 321L | | | | | |
| DEV.DVG | 000016 | 333L | | | | | |
| DEV.DVL | 000014 | 332L | | | | | |
| DEV.FLG | 000006 | 322L | | | | | |
| DEV.JMP | 000003 | 320L | | | | | |
| DEV.MNU | 000011 | 329L | | | | | |

CROSS REFERENCE TABLE

| | | | | |
|---------|--------|------|------|-----|
| DEV.MUM | 000010 | 328L | | |
| DEV.NAM | 000000 | 312L | | |
| DEV.RES | 000002 | 316L | | |
| DEV.SPG | 000007 | 327L | | |
| DEV.UNT | 000012 | 330L | | |
| DEVELEN | 000017 | 335E | | |
| DFLT.AT | 000374 | 537E | 1284 | |
| DFLT.BD | 000000 | 538E | 1287 | |
| DFLT.CS | 000000 | 544E | 1298 | |
| DFLT.CX | 000001 | 543E | 1296 | |
| DFLT.PD | 000000 | 541E | 1292 | |
| DFLY.WD | 000120 | 542E | 1294 | |
| DM.MR | 000000 | 98E | | |
| DM.MW | 000001 | 99E | | |
| DM.RR | 000002 | 100E | | |
| DM.RW | 000003 | 101E | | |
| DR.IM | 000001 | 317E | | |
| DR.FR | 000002 | 318E | | |
| DT.CR | 000002 | 324E | 515 | 518 |
| DT.CW | 000004 | 325E | 515 | 518 |
| DT.DD | 000001 | 323E | | |
| DV.EL | 000000 | 313E | | |
| DV.NU | 000001 | 314E | | |
| DVD.CAF | 000007 | 356L | | |
| DVD.DVD | 000006 | 355L | | |
| DVD.ENT | 002000 | 364E | 729 | 744 |
| DVD.MNU | 000011 | 358L | | |
| DVD.MUM | 000010 | 357L | | |
| DVD.SET | 000022 | 360L | | |
| DVD.STE | 000053 | 362E | 523 | 572 |
| DVD.UFL | 000012 | 359L | | |
| DVDFLV | 000307 | 351E | 514 | 520 |
| EC.CNA | 000004 | 254L | | |
| EC.BDA | 000027 | 273L | 759 | |
| EC.DIF | 000017 | 265L | | |
| EC.DIW | 000035 | 279L | | |
| EC.DNI | 000045 | 287L | | |
| EC.DNR | 000046 | 288L | | |
| EC.DNS | 000005 | 255L | | |
| EC.DSC | 000047 | 289L | | |
| EC.EOF | 000001 | 251L | 827 | 836 |
| EC.EOM | 000002 | 252L | | |
| EC.FAD | 000031 | 275L | | |
| EC.FAF | 000026 | 272L | | |
| EC.FL | 000030 | 274L | | |
| EC.FNF | 000014 | 262L | | |
| EC.FNO | 000011 | 259L | | |
| EC.FNR | 000034 | 278L | | |
| EC.FOD | 000043 | 285L | | |
| EC.FUC | 000013 | 261L | | |
| EC.ICN | 000016 | 264L | | |
| EC.IDN | 000006 | 256L | | |
| EC.IFC | 000020 | 266L | | |
| EC.IFN | 000007 | 257L | | |
| EC.ILC | 000003 | 253L | | |
| EC.ILO | 000040 | 282L | 583 | |
| EC.ILR | 000012 | 260L | | |
| EC.ILV | 000037 | 281L | | |

[illegible]

CROSS REFERENCE TABLE

| | | | | | | | |
|---------|---------|-------|-------|-------|------|-------|-------|
| OUTC0 | 003070' | 1100L | 1105 | | | | |
| OUTC1 | 003120' | 1102 | 1113L | | | | |
| OUTC2 | 003121' | 1109 | 1115L | | | | |
| OUTCHAR | 003055' | 980 | 1074E | | | | |
| PIC.COD | 000006 | 305L | 353 | | | | |
| PIC.ID | 000000 | 300L | | | | | |
| PIC.LEN | 000002 | 302L | | | | | |
| PIC.PTR | 000004 | 303L | | | | | |
| PRCTAB | 001166' | 577 | 706L | 708 | 711 | 719 | |
| QDUTE | 000047' | 41E | | | | | |
| RCHAR | 002222' | 820 | 924L | 930 | | | |
| RCHAR2 | 002247' | 934 | 937L | | | | |
| RCHAR3 | 002265' | 940 | 945L | | | | |
| ROMBOOT | 030000 | 169E | | | | | |
| RUBOUT | 000177 | 37E | | | | | |
| S.CAADR | 040333 | 243L | 863 | 924 | 1100 | | |
| S.CCTAB | 040335 | 244L | | | | | |
| S.CONFL | 040332 | 241L | | | | | |
| S.CONTY | 040327 | 228L | | | | | |
| S.CONWI | 040331 | 234L | | | | | |
| S.CSLMD | 040326 | 217L | 227 | 230 | 233 | 240 | |
| S.CUSOR | 040330 | 231L | | | | | |
| S.DATC | 040310 | 199L | | | | | |
| S.DATE | 040277 | 198L | | | | | |
| S.GRT0 | 024000 | 165E | | | | | |
| S.GRT1 | 025000 | 166E | | | | | |
| S.GRT2 | 026000 | 167E | | | | | |
| S.HIMEM | 040316 | 201L | | | | | |
| S.INT | 040343 | 179L | | | | | |
| S.OMAX | 040324 | 207L | | | | | |
| S.SOVR | 041146 | 181L | 183 | | | | |
| S.SYSM | 040320 | 203L | | | | | |
| S.TIME | 040312 | 200L | | | | | |
| S.USERM | 040322 | 205L | | | | | |
| S.VAL | 040277 | 178L | 196 | | | | |
| SB.1 | 000000 | 549E | 668 | 668 | 672 | | |
| SB.2 | 000200 | 550E | 668 | 672 | 672 | | |
| SC.ACE | 000350 | 401E | | | | | |
| SC.UART | 000372 | 470E | | | | | |
| SET1 | 000103' | 574 | 587L | | | | |
| SETNTR | 000053' | 571E | | | | | |
| STACK | 042200 | 185E | | | | | |
| STACKL | 001032 | 183E | | | | | |
| SYDD | 040130 | 175E | | | | | |
| TAB | 000011 | 42E | 903 | | | | |
| TAT.AS | 003236' | 1282E | | | | | |
| TAT.BAU | 003240' | 783 | 1287L | | | | |
| TAT.CON | 003242' | 677 | 681 | 938 | 971 | 1290L | |
| TAT.CTS | 003246' | 1298L | | | | | |
| TAT.CX | 003245' | 907 | 965 | 986 | 988 | 992 | 1296L |
| TAT.FAD | 003243' | 688 | 1003 | 1292L | | | |
| TAT.FOR | 003237' | 691 | 782 | 1284L | 1285 | | |
| TAT.SB | 003241' | 669 | 673 | 1288E | | | |
| TAT.UNA | 003236' | 1278E | | | | | |
| TAT.UNT | 003236' | 1280L | 1282 | | | | |
| TAT.WID | 003244' | 685 | 967 | 1294L | | | |
| TCH | 002146' | 790 | 878 | 889L | | | |
| TCHI | 002164' | 896L | 900 | | | | |

CROSS REFERENCE TABLE

| | | | |
|---------|--------|------|----------------|
| TCH2 | 002176 | 894 | 903L |
| UC.2SB | 000004 | 427E | |
| UC.5BW | 000000 | 423E | |
| UC.6BW | 000001 | 424E | |
| UC.7BW | 000002 | 425E | |
| UC.8BW | 000003 | 426E | |
| UC.BI | 000020 | 446E | |
| UC.CTS | 000020 | 455E | |
| UC.DCS | 000001 | 451E | |
| UC.DDR | 000002 | 452E | |
| UC.DLA | 000200 | 432E | |
| UC.DR | 000001 | 442E | |
| UC.DRL | 000010 | 454E | |
| UC.DSR | 000040 | 456E | |
| UC.DTK | 000001 | 435E | |
| UC.EDA | 000001 | 413E | |
| UC.EFS | 000020 | 428E | |
| UC.FE | 000010 | 445E | |
| UC.IID | 000004 | 420E | |
| UC.IIP | 000001 | 419E | |
| UC.L00 | 000020 | 439E | |
| UC.MSI | 000010 | 416E | |
| UC.OR | 000002 | 443E | |
| UC.OU1 | 000004 | 437E | |
| UC.OU2 | 000010 | 438E | |
| UC.PE | 000004 | 444E | |
| UC.PEN | 000010 | 428E | |
| UC.RI | 000100 | 457E | |
| UC.RLS | 000200 | 458E | |
| UC.RSI | 000004 | 415E | |
| UC.RTS | 000002 | 436E | |
| UC.SB | 000100 | 431E | |
| UC.SKP | 000040 | 430E | |
| UC.TER | 000004 | 453E | |
| UC.THE | 000040 | 447E | |
| UC.TRE | 000002 | 414E | |
| UC.JSE | 000100 | 448E | |
| UCI.ER | 000020 | 492E | 1203 |
| UCI.IE | 000002 | 494E | |
| UCI.IR | 000100 | 490E | 1209 |
| UCI.RE | 000004 | 493E | 1203 |
| UCI.RO | 000040 | 491E | |
| UCI.TE | 000001 | 495E | 1203 |
| UDR | 000000 | 467E | 1051 1107 1205 |
| UMI.16X | 000002 | 485E | 1194 |
| UMI.1B | 000100 | 475E | 1193 1194 |
| UMI.1X | 000001 | 484E | |
| UMI.2B | 000300 | 477E | 1193 |
| UMI.64X | 000003 | 486E | |
| UMI.HB | 000200 | 476E | |
| UMI.L5 | 000000 | 480E | |
| UMI.L6 | 000004 | 481E | |
| UMI.L7 | 000010 | 482E | |
| UMI.L8 | 000014 | 483E | 1194 |
| UMI.PA | 000020 | 479E | |
| UMI.PE | 000040 | 478E | |
| UNT.DIS | 000005 | 344L | |
| UNT.FLG | 000000 | 341L | |

CROSS REFERENCE TABLE

| | | | | | | | |
|---------|--------|------|------|------|------|------|------|
| UNT.GRT | 000001 | 342L | | | | | |
| UNT.GTS | 000003 | 343L | | | | | |
| UNT.SIZ | 000007 | 346E | | | | | |
| UD.CLK | 000001 | 110E | | | | | |
| UD.DDU | 000002 | 109E | | | | | |
| UD.HLT | 000200 | 107E | | | | | |
| UD.NFR | 000100 | 108E | | | | | |
| UR.DLL | 000000 | 408E | | | | | |
| UR.DLM | 000001 | 410E | | | | | |
| UR.IER | 000001 | 412E | | | | | |
| UR.IIR | 000002 | 418E | | | | | |
| UR.LCR | 000003 | 422E | | | | | |
| UR.LSR | 000005 | 441E | | | | | |
| UR.MCR | 000004 | 434E | | | | | |
| UR.MSR | 000006 | 450E | | | | | |
| UR.RBR | 000000 | 404E | | | | | |
| UR.THR | 000000 | 406E | | | | | |
| USERFWA | 042200 | 186E | 374 | | | | |
| USR | 000001 | 468E | 1047 | 1098 | 1190 | | |
| USR.FE | 000040 | 499E | | | | | |
| USR.OE | 000020 | 500E | | | | | |
| USR.FE | 000010 | 501E | | | | | |
| USR.RXR | 000002 | 503E | 1049 | | | | |
| USR.TXE | 000004 | 502E | | | | | |
| USR.TXR | 000001 | 504E | 1104 | | | | |
| VAL | 000112 | 606L | 712 | | | | |
| VALI | 000001 | 684 | 687 | 690 | 711E | | |
| WAIT | 002270 | 952E | 1099 | | | | |
| WCH3 | 002203 | 905L | 910 | | | | |
| WCHAR | 002271 | 904 | 906 | 962L | 1000 | 1002 | 1008 |
| WCHAR0 | 002315 | 964 | 969 | 971L | | | |
| WCHAR1 | 002332 | 973 | 978L | | | | |
| WCHAR2 | 002360 | 983 | 991L | | | | |
| WCHAR3 | 002365 | 985 | 993L | | | | |

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