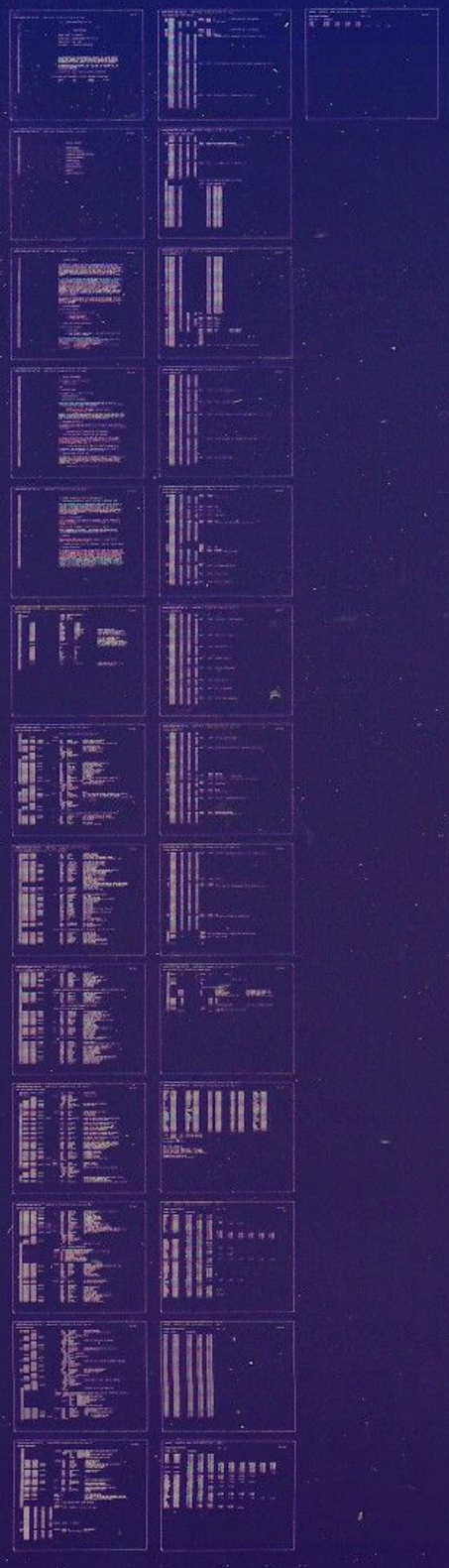
# KDJ11-B

EEPROM SWED LANG LDR
COEEGB0

AH-FF29B-MC
1 OF 1 OCT 1985


digital
MADE IN USA



```
                .TITLE  COEEGB EEPROM SWED LANG LDR


                                                .REM &

                                IDENTIFICATION
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                PRODUCT CODE:   AC-FF28B-MC

                PRODUCT NAME:   COEEGB0 EEPROM SWED LANG LDR

                PRODUCT DATE:   JUNE, 1985

                MAINTAINER:     DIAGNOSTIC ENGINEERING









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## 1. PROGRAM ABSTRACT

The KDJ11-B is a PDP-11 CPU that incorporates the J11 chip set as the heart of the processor. It is a quad height Q22 bus module. The KDJ11-B has two on-board ROM's. One of them, the 16-bit addressable ROM, contains the self-test and the boot codes. The other ROM, the 8-bit addressable one, contains the base area with hardware selection parameters, optional bootstraps, optional UFD (User Friendly Diagnostic) system desctiption area, and optional foreign language text.

On units to be shipped to non-English speaking countries, a dummy or "null" language is loaded into the EEPROM. The purpose of this is to disable English language error messages when the system is first installed. If and when the system passes its internal self tests, the user will be instructed to run a UFD (User Friendly Diagnostics) package which will be part of a "country kit" for each seperate language. The UFD package will use the local language for the particular country and, in addition, will load diagnostic and error messages in the local language into the EEPROM, so each subsequent power-up or reboot will have diagnostic and error messages in the user's own language.

The purpose of this program is to load the local language into the EEPROM. If it detects an error, the program will attempt to restore the "old" language, if any and will print a message informing the user of that fact.

## 2. SYSTEM REQUIREMENTS

Hardware Requirements

To run successfully this utility needs:

1. KDJ11-B CPU module
2. console terminal
3. at least 28K of memory

## 3. LOADING AND STARTING PROCEDURES

To start-up this program:

1. Boot XXDP+

2. Type "R NAME", where NAME is the name of the BIN or BIC file for this program.

The starting address of the program is 1000.
Note: if trying to restart the program in an arbitrary place after HALT on Break the following registers should be set up:

| | |
|---|---|
| 17777572=0 | to disable memmory management |
| 17777520=1000 | to clear diagnostic mode (bit 8), but still save HALT on Break |
| 17777746=400 | to flush the cache |

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## 4. SPECIAL ENVIRONMENTS

The program is not APT compatible.

## 5. PROGRAM OPTIONS

None.

## 6. EXECUTION TIMES

The program runs in under 20 seconds.

## 7. ERROR INFORMATION

### 7.1 DEFECTIVE BYTE IN EEPROM

After each write, the Byte which should have been written is compared to the Byte in the proper location, and if it is not correct, the following error message is displayed:

```
EEPROM write error, PCR page n, address mmmmmm.
Data written qqq, data read rrr.
```

where n is the EEPROM page selected by the Page Control Register (PCR), mmmmmm is the physical address of the bad byte in question, qqq is the byte value that was written out to the address and rrr what was read back in after the write. (should be identical to qqq)

### 7.2 PROCESSOR NOT KDJ11-B

The program checks the type of CPU it is running on, which must be a KDJ11-B processor (MFPT returns 5 in r0). If not, the following message is printed:

```
Language area not supported by this processor.
```

### 7.3 "OLD" BOOT ROM CODE, LANGUAGE AREA NOT SUPPORTED

The program checks to see if the ROM code version is 7.0 or later. Earlier versions do not support the language area in the EEPROM and would print garbage if one was loaded. The program prints the following message in that case:

```
Current Boot ROM version does not support language area.
```

In addition, the language bit in the setup area of the EEPROM is cleared, to prevent "garbage" from being printed.

### 7.4 CHECKSUM ERROR IN SETUP AREA

The checksum in the setup area is checked to see if it contains a valid checksum. Also, bytes 6 and 103 (addresses 17765022 and 17765314, respectively) are checked to see if they contain 0 and 252 octal, respectively. If any of these conditions is not met, the following message is printed:

```
EEPROM checksum error in setup area.
```

No attempt is made to correct a checksum error.

7.5 DIFFERENCES BETWEEN UFD "QUIET" MODE AND "STANDALONE" MODE

When this program is run in UFD "Quiet" mode (which will usually be the case) none of the error messages will appear. If no error is detected, no messages whatsoever are printed. If any error is detected, the program will attempt to restore the UFD and language areas to the state they were in when the program was started. If the restoration was successful, the following message is printed in the user's language:

Unable to load <language>

where <language> is the name of the language. If the restoration was not successful, or there was no local language, the following message is printed.

Unable to load <language> - reverting to U.S. English

where <language> is as above. The program then clears the bit in the EEPROM setup area selecting a local language which means that the ROM English will be used from now on.

8. EXAMPLES

After booting XXDP+ and running the program, no message should appear, just the XXDP dot prompt ( . )

If a problem occurred, one of the messages in section 7 should appear.

9. PROGRAM DESCRIPTION

The program consists of a body of code which loads the language into the local language area of the EEPROM. The routine that performs the write first checks the current value of the byte to be written and if it is the same, no write is performed. This is done to extend the life of the EEPROM. The write routine also checks the value in the EEPROM after the write to insure it was written correctly. After a succesful run, no message appears, after an unsuccessful attempt to write any of the bytes in the EEPROM, one of the message in section 7 appears. If run under UFD "Quiet" mode, no message is printed if the program was successful, otherwise one of the messages in 7.5 appear. In both cases, the XXDP prompt appears.

PROGRAM CONSTANTS

```
                                        .SBTTL  PROGRAM CONSTANTS
000000                                  .ENABL  ABS
                                        .NLIST  MD,CND
                                        .LIST   ME

        177520                  BCSR    =       177520
        177522                  PCR     =       177522
        177522                  PCRLB   =       177522
        165000                  E2PROM  =       165000
        165316                  E2PAR   =       E2PROM+316      ;E2PROM PARITY BYTE
        165006                  E2LLB   =       E2PROM+6        ;LOCAL LANGUAGE BIT IN E2PROM
        166000                  ENDE2R  =       E2PROM+1000     ;LAST ADDRESS OF E2PROM+2
        173002                  RMVTST  =       173002          ;WORD TO TEST ROM VERSION NUMBER
        025370                  DELAY   =       11000.
        000140                  LNGHDR  =       140             ;I.D. OF A LANGUAGE AREA
        000040                  UFDHDR  =       040             ;I.D. OF A UFD BLOCK
        000002                  RETRY   =       2               ;NUMBER OF ATTEMPTS TO WRITE A
                                                                ;BYTE IN E2PROM BEFORE GIVING UP
        000004                  MAXERR  =       4               ;NO. OF ERRORS ALLOWED IN LOCAL
                                                                ;LANGUAGE TEXT BEFORE QUITTING
        177524                  BDR     =       177524
        000015                  CR      =       15
        000012                  LF      =       12
        000200                  BIT7    =       200
        000100                  BIT6    =       100
        000011                  tab     =       11
        000010                  backsp  =       10
        000040                  space   =       40
        000033                  esc     =       33

        001551                  ROMSZ   =       FLEND-TEXT      ;SIZE IN BYTES OF TEXT TO BE
                                                                ;LOADED INTO EEPROM
```

CHECK FOR CERTAIN EXCEPTIONS FIRST

```
                                        .SBTTL  CHECK FOR CERTAIN EXCEPTIONS FIRST

                001000                  .=1000

001000  005037  177522        START:  CLR     @#PCR           ;SELECT PAGE 0 OF EEPROM
001004  013746  177520                MOV     @#BCSR,-(SP)    ;SAVE OLD BCSR VALUE
001010  112737  000067  177520        MOVB    #67,@#BCSR      ;WRITE ENABLE THE E2PROM & ENABLE ROM

001016  000007                        MFPT                    ;GET PROCESSOR TYPE
001020  020027  000005                CMP     R0,#5           ;CHECK TO SEE IF ORION
001024  001404                        BEQ     1$              ;YES - CONTINUE
001026                                .TYPMSG #FMSG2          ;FIELD-SERVICE MESSAGE
                000001                .NARG   NARGS
                000027                .NTYPE  NTYPE,#FMSG2
001026  012700  002563                  MOV   #FMSG2,R0
001032  104003                          EMT   3
001034  000443                        BR      99$

001036  012700  165000        1$:     MOV     #E2PROM,R0      ;STARTING ADDRESS TO CHECKSUM
001042  005001                        CLR     R1              ;INITIALIZE CHECKSUM
001044  012703  000151                MOV     #105.,R3        ;NO. OF BYTES TO CKSUM
001050  012005                201$:   MOV     (R0)+,R5        ;GET A BYTE
001052  042705  177400                BIC     #177400,R5      ;NO BUS NOISE, THANK YOU.
001056  060501                        ADD     R5,R1           ;ACCUMULATE CHECKSUM
001060  077305                        SOB     R3,201$         ;CONTINUE TILL DONE
001062  105701                        TSTB    R1              ;IS CKSUM 0?
001064  001007                        BNE     202$            ;NO, ERROR
001066  105737  165022                TSTB    @#E2PROM+22     ;BYTE TO TEST FOR VALID ROM, SHOULD BE 0
001072  001004                        BNE     202$            ;NO, ERROR
001074  123727  165314  000252        CMPB    @#E2PROM+314,#252       ;BYTE TO TEST FOR VALID ROM
001102  001404                        BEQ     300$            ;GO TO NEXT CHECK IF OK
001104                        202$:   .TYPMSG #FMSG4          ;FIELD SERVICE MESSAGE
                000001                .NARG   NARGS
                000027                .NTYPE  NTYPE,#FMSG4
001104  012700  002737                  MOV   #FMSG4,R0
001110  104003                          EMT   3
001112  000414                        BR      99$             ;QUIT
001114  005067  001304        300$:   CLR     OLDSIZ          ;SET FLAG THAT ROM EXISTS, CURRENTLY NO LANGUAGE
001120  012737  000016  177522        MOV     #7*2,@#PCR      ;SEL. LAST PAGE OF 2K E2PROM, PG0 OF ROM
001126  023727  173002                CMP     @#RMVTST,(PC)+  ;SEE IF ROM VER. 7 OR LATER (CAN SUPPORT LANGUAGE AREA)
001132  000250                        CLN
001134  001405                        BEQ     2$              ;YES - CONTINUE
001136                                .TYPMSG #FMSG3
                000001                .NARG   NARGS
                000027                .NTYPE  NTYPE,#FMSG3
001136  012700  002644                  MOV   #FMSG3,R0
001142  104003                          EMT   3
001144  000167  000636        99$:    JMP     QUIT1

                                        .SBTTL  SAVE OLD LANGUAGE/UFD AREA IN CASE IT MUST BE RESTORED

001150  012700  165776        2$:     MOV     #ENDE2R-2,R0    ;LAST ADDRESS (CKSUM) OF E2PROM
001154  012701  000005                MOV     #5,R1           ;NO. OF BYTES IN HEADER TO CHECKSUM
001160  010005                        MOV     R0,R5           ;SAVE ADDRESS
001162  005003                        CLR     R3              ;
001164  111004                4$:     MOVB    (R0),R4         ;GET A BYTE
001166  060403                        ADD     R4,R3           ;ACCUMULATE CHECKSUM
```

```
SAVE OLD LANGUAGE/UFD AREA IN CASE IT MUST BE RESTORED

 355 001170  005740                        TST     -(R0)           ;CORRECT ADDRESS
 356 001172  077104                        SOB     R1,4$           ;LOOP FOR 5 BYTES
 357 001174  105703                        TSTB    R3              ;IF NOT ZERO, NO LANGUAGE LOADED
 358 001176  001131                        BNE     WRLANG          ;NON-EXISTANT OR CORRUPTED LANGUAGE - SKIP
 359
 360 001200  014504                        MOV     -(R5),R4        ;HIGH BYTE OF BYTE COUNT
 361 001202  014546                        MOV     -(R5),-(SP)     ;LOW BYTE OF BYTE COUNT
 362 001204  110466  000001                MOVB    R4,1(SP)        ;SET UPPER BYTES OF SIZE
 363 001210  042704  177437                BIC     #177437,R4      ;EXTRACT ID CODE
 364 001214  012601                        MOV     (SP)+,R1        ;GET SIZE BACK
 365 001216  042701  160000                BIC     #160000,R1      ;R1 NOW CONTAINS SIZE OF BLOCK IN BYTES
 366 001222  062701  000005                ADD     #5,R1           ;ADD BYTE COUNT FOR HEADER BLOCK
 367 001226  120427  000040                CMPB    R4,#UFDHDR      ;SEE IF IT IS A UFD BLOCK
 368 001232  001013                        BNE     LANG            ;NO, CHECK FOR A LANGUAGE
 369 001234  010104                        MOV     R1,R4           ;SAVE SIZE
 370 001236  012702  004655                MOV     #BUFF,R2        ;ADDRESS OF SAVE BUFFER
 371 001242  004767  000666                CALL    MOVROM          ;MOVE UFD AREA TO MEMORY
 372 001246  001105                        BNE     WRLANG          ;BAD CKSUM, QUIT
 373                                                               ;NOTE - R3 CONTAINS CHECKSUM OF BLOCK AND HEADER
 374                                                               ;HOWEVER THE CHECKSUM OF HEADER IS ALREADY KNOWN
 375                                                               ;TO BE 0 SO R3 IS A VALID CHECK OF UFD BLOCK
 376 001250  010167  001150                MOV     R1,OLDSIZ       ;SAVE TOTAL SIZE
 377 001254  010167  001146                MOV     R1,UFDSIZ       ;SAVE SIZE OF UFD AREA
 378 001260  000500                        BR      WRLANG
 379
 380 001262  120427  000140          LANG: CMPB    R4,#LNGHDR      ;IS THIS A LANGUAGE HEADER?
 381 001266  001075                        BNE     WRLANG          ;NO - QUIT
 382 001270  010167  001130                MOV     R1,OLDSIZ       ;SAVE SIZE FOR NOW
 383 001274  062701  000005                ADD     #5,R1           ;ADD SIZE OF (POSSIBLE) UFD HEADER
 384 001300  004767  001036                CALL    ROMADR          ;SET UP PCR AND R0
 385 001304  005003                        CLR     R3              ;INITIALIZE CKSUM
 386 001306  004767  001002                CALL    REAROM          ;GET A BYTE
 387 001312  004767  000776                CALL    REAROM          ;GET A BYTE
 388 001316  004767  000772                CALL    REAROM          ;GET A BYTE
 389 001322  010546                        MOV     R5,-(SP)        ;SAVE LOW BYTE OF SIZE FOR LATER
 390 001324  004767  000764                CALL    REAROM          ;GET A BYTE
 391 001330  110566  000001                MOVB    R5,1(SP)        ;SAVE HIGH BYTE OF SIZE AND ID
 392 001334  004767  000754                CALL    REAROM          ;GET A BYTE
 393 001340  116600  000001                MOVB    1(SP),R0        ;GET I.D.
 394 001344  012601                        MOV     (SP)+,R1        ;GET SIZE
 395 001346  105703                        TSTB    R3              ;SEE IF VALID CKSUM
 396 001350  001025                        BNE     1$              ;NO - WE HAVE LANGUAGE ONLY.
 397
 398 001352  042700  177437                BIC     #177437,R0      ;GET ID ONLY
 399 001356  120027  000040                CMPB    R0,#UFDHDR      ;IS THIS A UFD BLOCK?
 400 001362  001020                        BNE     1$              ;NO, IGNORE IT.
 401
 402                              ;WE HAVE BOTH A LANGUAGE AREA AND A UFD BLOCK.  SAVE THE UFD BLOCK.
 403
 404 001364  042701  160000                BIC     #160000,R1      ;GET RID OF ID
 405 001370  062701  000005                ADD     #5,R1           ;SIZE OF HEADER
 406 001374  010104                        MOV     R1,R4           ;BYTE COUNT TO MOVE
 407 001376  010167  001024                MOV     R1,UFDSIZ       ;SAVE UFD SIZE
 408 001402  066701  001016                ADD     OLDSIZ,R1       ;ADD SIZE OF LANGUAGE AREA
 409 001406  012702  004655                MOV     #BUFF,R2        ;MEMORY ADDRESS TO SAVE TO
 410 001412  004767  000516                CALL    MOVROM          ;SAVE UFD AREA
 411 001416  001404                        BEQ     2$              ;YES, IT IS VALID, CONTINUE
```

```
SAVE OLD LANGUAGE/UFD AREA IN CASE IT MUST BE RESTORED

    412 001420  005067  001002                  CLR     UFDSIZ          ;NO UFD AREA
    413 001424  012702  004655          1$:     MOV     #BUFF,R2        ;RESET R2
    414 001430  016701  000770          2$:     MOV     OLDSIZ,R1       ;SIZE OF LANGUAGE AREA
    415 001434  010104                          MOV     R1,R4           ;BYTES TO MOVE
    416 001436  066767  000764  000760          ADD     UFDSIZ,OLDSIZ   ;OLDSIZ IS THE TOTAL SIZE
    417 001444  004767  000464                  CALL    MOVROM          ;SAVE LANGUAGE AREA
    418 001450  001404                          BEQ     WRLANG          ;LANGUAGE IS GOOD
    419 001452  005067  000746                  CLR     OLDSIZ          ;NO LANGUAGE
    420 001456  005067  000744                  CLR     UFDSIZ          ;NO UFD AREA
    421
    422                                 ;GENERATE CHECKSUM FOR FOREIGN LANGUAGE TEST FILE & WRITE TO THE MEMORY IMAGE
    423
    424 001462  012700  003104          WRLANG: MOV     #TEXT,R0        ;ADDRESS OF BEGINNING OF TEXT
    425 001466  005001                          CLR     R1              ;INIT CHECKSUM
    426 001470  112002                  25$:    MOVB    (R0)+,R2        ;READ A BYTE
    427 001472  160201                          SUB     R2,R1           ;ACCUMULATE CHECKSUM
    428 001474  020027  004647                  CMP     R0,#CKSUM       ;FINISHED ALL TEXT ?
    429 001500  001373                          BNE     25$             ;NO-CONTINUE
    430 001502  110110                          MOVB    R1,(R0)         ;WRITE THE CHECKSUM
    431
    432                                         .SBTTL  LOAD LOCAL LANGUAGE INTO E2PROM
    433
    434                                 ;WRITE UFD & LOCAL LANGUAGE BLOCKS
    435
    436 001504  016701  000716                  MOV     UFDSIZ,R1       ;GET THE LENGTH OF THE UFD
    437 001510  062701  001551                  ADD     #ROMSZ,R1       ;... & THE TEXT AREA
    438 001514  004767  000622                  JSR     PC,ROMADR       ;COMPUTE E2PROM PAGE AND ADDR
    439 001520  016701  000702                  MOV     UFDSIZ,R1       ;SIZE OF UFD AREA TO SAVE
    440 001524  001406                          BEQ     40$             ;NO UFD AREA - SKIP
    441 001526  012702  004655                  MOV     #BUFF,R2        ;ADDRESS OF BEGINNING OF UFD AREA
    442 001532  112205                  35$:    MOVB    (R2)+,R5        ;GET SOME DATA
    443 001534  004767  000126                  CALL    E2WRIT          ;GO WRITE IT
    444 001540  077104                          SOB     R1,35$          ;FINISHED UFD?
    445                                                                 ;YES-DO LANGUAGE
    446 001542  012702  003104          40$:    MOV     #TEXT,R2        ;ADDRESS OF EEPROM LANGUAGE TEXT
    447 001546  012701  001551                  MOV     #ROMSZ,R1       ;BYTES TO MOVE
    448 001552  112205                  50$:    MOVB    (R2)+,R5        ;GET SOME DATA
    449 001554  004767  000106                  CALL    E2WRIT          ;WRITE A BYTE
    450 001560  077104                          SOB     R1,50$          ;ARE WE DONE?
    451                                                                 ;YES - EXIT
    452 001562  112705  000200                  MOVB    #BIT7,R5        ;TURN ON LOCAL LANGUAGE BIT IN
    453                                                                 ;SETUP AREA, THEN EXIT
    454
    455 001566  105037  177522          EXIT:   CLRB    @#PCRLB         ;SELECT PAGE 0
    456 001572  012700  165006                  MOV     #E2LLB,R0       ;E2PROM WORD CONTAINING LOCAL LANG. BIT
    457 001576  111001                          MOVB    (R0),R1
    458 001600  142701  177577                  BICB    #^CBIT7,R1      ;GET CURRENT LOCAL LANGUAGE BIT
    459 001604  120501                          CMPB    R5,R1           ;SEE IF BIT ALREADY CORRECT
    460 001606  001415                          BEQ     EXIT1           ;YES, JUST RETURN
    461 001610  112701  000200                  MOVB    #BIT7,R1        ;LOCAL LANGUAGE BIT
    462 001614  111005                          MOVB    (R0),R5         ;GET OLD WORD AGAIN
    463 001616  074105                          XOR     R1,R5           ;FLIP THE BIT
    464 001620  004767  000336                  CALL    WRBYTE          ;CHANGE LOCAL LANGUAGE BIT IN E2PROM
    465 001624  001006                          BNE     EXIT1           ;WOULD NOT WRITE, JUST GIVE UP
    466 001626  012700  165316                  MOV     #E2PAR,R0       ;ADDRESS OF CKSUM BYTE
    467 001632  111005                          MOVB    (R0),R5         ;GET OLD CKSUM BYTE
    468 001634  074105                          XOR     R1,R5           ;CORRECT THE CKSUM
```

LOAD LOCAL LANGUAGE INTO E2PROM

```
    469 001636  004767  000320                  CALL    WRBYTE          ;UPDATE E2ROM
    470
    471 001642                          EXIT1:  .FRCTYP #CRLF           ;COMPLETE LINE
                000001                          .NARG   NARGS
                000027                          .NTYPE  NTYPE,#CRLF
        001642  012700  002560                    MOV   #CRLF,R0
        001646  104044                            EMT   44
    472 001650  142716  000060                  BICB    #60,(SP)        ;BE SURE ROM IS DISABLED
    473 001654  012637  177520                  MOV     (SP)+,@#BCSR    ;RESTORE BCSR
    474 001660  005037  177522                  CLR     @#PCR           ;
    475 001664  000207                          RTS     PC
    476
    477 001666  004767  000270          E2WRIT: CALL    WRBYTE          ;WRITE THE BYTE TO E2PROM
    478 001672  001431                          BEQ     3$              ;OK THIS TIME
    479 001674  005267  000522                  INC     WERR            ;FLAG BAD BYTE
    480
    481 001700  026727  000516  000004        CMP     WERR,#MAXERR    ;CHECK TO SEE IF PAST THE MAXIMUM ERROR
    482 001706  003036                          BGT     QUIT            ;LIMIT OF BAD BYTES ALLOWED
    483
    484 001710  020227  003201                  CMP     R2,#M001        ;CHECK TO SEE IF ERROR IS IN MESSAGE
    485 001714  101433                          BLOS    QUIT            ;BYTE COUNT (MUST BE CORRECT)
    486
    487 001716  020227  004646                  CMP     R2,#MEND1       ;CHECK TO BE SURE DICTIONARY AND UFD
    488 001722  101030                          BHI     QUIT            ;BLOCKS ARE NOT CORRUPTED
    489
    490 001724  132705  000140                  BITB    #140,R5         ;CHECK TO SEE IF IT SHOULD BE A CONTROL
    491 001730  001425                          BEQ     QUIT            ;CODE (POSSIBLY DICTIONARY ENTRY)
    492
    493 001732  132710  000140                  BITB    #140,(R0)       ;IF CONTROL CODE (DICTIONARY REFERENCE
    494 001736  001422                          BEQ     QUIT            ;PERHAPS) CALL IT QUITS
    495
    496 001740  111004                          MOVB    (R0),R4         ;WE WILL LIVE WITH THIS ERROR, CORRECT
    497 001742  116703  002701                  MOVB    CKSUM,R3        ;THE CHECKSUM TO ACCOUNT FOR NEW VALUE
    498 001746  060503                          ADD     R5,R3           ;CANCEL OUT WHAT WAS SUPPOSED TO BE
    499 001750  160403                          SUB     R4,R3           ;CORRECT FOR ERRONEOUS VALUE
    500 001752  110367  002671                  MOVB    R3,CKSUM        ;PUT BACK CORRECTED VALUE
    501
    502 001756  062700  000002          3$:     ADD     #2,R0           ;INCREMENT LOCATION
    503 001762  020027  166000                  CMP     R0,#ENDE2R      ;FINISHED THIS PAGE ?
    504 001766  001005                          BNE     10$             ;NO-RETURN
    505 001770  012700  165000                  MOV     #E2PROM,R0      ;YES-RESET ADDRESS
    506 001774  062737  000002  177522          ADD     #2,@#PCR        ;INCREMENT PCR TO NEXT PAGE
    507 002002  000207                  10$:    RETURN
    508
    509 002004  005726                  QUIT:   TST     (SP)+           ;CORRECT STACK
    510 002006  032737  000100  000052  QUIT1:  BIT     #BIT6,@#52      ;SEE IF UFD QUIET
    511 002014  001403                          BEQ     5$              ;NO
    512 002016                                  .FRCTYP #MSG000         ;MESSAGE FOR USER IN HIS OWN LANGUAGE
                000001                          .NARG   NARGS
                000027                          .NTYPE  NTYPE,#MSG000
        002016  012700  003006                    MOV   #MSG000,R0
        002022  104044                            EMT   44
    513 002024  016701  000374          5$:     MOV     OLDSIZ,R1
    514 002030  100704                          BMI     EXIT1           ;ERROR WAS NOT ORION OR CKSUM ERROR, DO NOT
    515                                                                 ;TRY TO CLEAR LANGUAGE BIT
    516 002032  001427                          BEQ     40$             ;IF NO OLD LANGUAGE TO RESTORE
    517 002034  004767  000302                  JSR     PC,ROMADR       ;COMPUTE STARTING ADDRESS OF OLD LANG IN E2PROM
```

LOAD LOCAL LANGUAGE INTO E2PROM  SEQ 0011

```
                                        MOV     #BUFF,R2        ;STARTING ADDRESS OF OLD LANGUAGE TEXT
                                10$:    MOVB    (R2)+,R5        ;GET A BYTE
                                        CALL    WRBYTE          ;WRITE IT OUT
                                        BNE     40$             ;IF ERROR, GIVE UP
                                        ADD     #2,R0           ;INCREMENT LOCATION
                                        CMP     R0,#ENDE2R      ;FINISHED THIS PAGE ?
                                        BNE     20$             ;NO-CONTINUE
                                        MOV     #E2PROM,R0      ;YES-RESET ADDRESS
                                        ADD     #2,@#PCR        ;INCREMENT PCR TO NEXT PAGE
                                20$:    SOB     R1,10$          ;LOOP UNTIL DONE
                                        CMP     UFDSIZ,OLDSIZ   ;IF THE SAME THEN NO LANGUAGE
                                        BNE     EXIT1           ;IF LANGUAGE, LEAVE E2PROM LANG. BIT AS IT WAS
                                40$:    CLR     R5              ;TURN OFF LOCAL LANGUAGE BIT IN E2PROM
                                        BIT     BIT6,@#52       ;SEE IF UFD QUIET
                                        BEQ     EXIT            ;NO
                                        .FRCTYP #MSG001
                                        .NARG   NARGS
                                        .NTYPE  NTYPE,#MSG001
                                          MOV   #MSG001,R0
                                          EMT   44
                                        BR      EXIT            ;AND CALL IT A DAY

                                        .SBTTL  PROGRAM SUBROUTINES

                                ;MOVROM - MOVE BYTES FROM EEPROM TO MEMORY
                                ;ENTRY- R1 = STARTING ADDRESS IN EEPROM (# OF BYTES FROM END)
                                ;       R2 = ADDRESS OF MEMORY BUFFER
                                ;       R4 = # OF BYTES TO MOVE
                                ;EXIT   R1 - UNCHANGED
                                ;       R2 - UPDATED MEMORY ADDRESS
                                ;       R3 = (BYTE) 0 IF VALID CKSUM
                                ;       "Z" FLAG SET IF CKSUM VALID

                                MOVROM: MOV     R4,R3           ;SAVE R4
                                        CALL    ROMADR          ;LOAD PCR AND R0 WITH LANGUAGE START AREA
                                        MOV     R3,R4           ;RESTORE BYTE COUNT
                                        CLR     R3              ;INIT CHECKSUM
                                5$:     CALL    REAROM          ;GET A BYTE
                                        MOVB    R5,(R2)+        ;SAVE IT
                                        SOB     R4,5$           ;LOOP TILL DONE
                                        TSTB    R3              ;IS CHECKSUM GOOD?
                                        RETURN

                                WRBYTE: CMPB    R5,(R0)         ;IS THE NEW DATA DIFFERENT ?
                                        BEQ     10$             ;NO-DO NOT WRITE OVER

                                        MOV     #RETRY,R3
                                1$:     MOV     R5,(R0)         ;WRITE A LOCATION
                                        MOV     #DELAY,R4       ;11 MS WAIT
                                        SOB     R4,.            ;WASTE TIME
                                        CMPB    R5,(R0)         ;SEE IF IT TOOK
                                        BEQ     10$             ;YES, ALL OKAY
                                        SOB     R3,1$           ;IF AT FIRST YOU DON'T SUCCEED...
                                        MOVB    @#PCRLB,R4      ;PCR PAGE OF BAD BYTE
                                        ASRB    R4              ;CONVERT TO PAGE #
                                        ADD     #'0,R4          ;CONVERT TO OCTAL
                                        MOVB    R4,FMSG1A       ;STORE IT FOR PRINTING
```

PROGRAM SUBROUTINES

```
                                        MOV     R0,-(SP)        ;SAVE ROM ADDRESS
                                        .ITOA   ,#FMSG1B        ;CONVERT ROM ADDRESS TO OCTAL
                        000002          .NARG   NARGS
                        000027             .NTYPE       NTYPE,#FMSG1B
002230  012701  002500                     MOV  #FMSG1B,R1
002234  104030                             EMT  30
                                        .TYPMSG #FMSG1          ;PRINT OUT FIRST PART OF MESSAGE
                        000001          .NARG   NARGS
                        000027          .NTYPE  NTYPE,#FMSG1
002236  012700  002430                    MOV   #FMSG1,R0
002242  104003                           EMT   3
                                        BIC     #177400,R5      ;MAKE SURE R5 IS POSITIVE AND A BYTE
                                        .ITOA   R5,#DUMMY1      ;CONVERT TO OCTAL
                        000002          .NARG   NARGS
                        000005            .NTYPE       NTYPE,R5
002250  010500                            MOV  R5,R0
                        000027              .NTYPE       NTYPE,#DUMMY1
002252  012701  002526                     MOV  #DUMMY1,R1
002256  104030                             EMT  30
                                        .TYPMSG #FMSG1C         ;PRINT OUT LAST 3 DIGITS OF NUMBER & MESSAGE
                        000001          .NARG   NARGS
                        000027          .NTYPE  NTYPE,#FMSG1C
002260  012700  002531                    MOV   #FMSG1C,R0
002264  104003                           EMT   3
                                        MOV     @(SP)+,R0       ;GET BYTE AT ROM ADDRESS
                                        BIC     #177400,R0      ;GET RID OF BUS NOISE
                                        .ITOA   ,#DUMMY2        ;CONVERT TO OCTAL
                        000002          .NARG   NARGS
                        000027             .NTYPE       NTYPE,#DUMMY2
002274  012701  002551                     MOV  #DUMMY2,R1
002300  104030                             EMT  30
                                        .TYPMSG #FMSG1D         ;PRINT LOWER 3 BYTES & REST OF MESSAGE
                        000001          .NARG   NARGS
                        000027          .NTYPE  NTYPE,#FMSG1D
002302  012700  002554                    MOV   #FMSG1D,R0
002306  104003                           EMT   3
002310  000244                          CLZ                     ;COULDN'T DO IT, SET ERROR FLAG
002312  000207                  10$:    RETURN

                                ;REAROM - READS A BYTE FROM E2PROM ADDRESS (R0)+ INTO R5. AUTOMATICLY ADJUSTS
                                ;PCRLB.  UPDATES CKSUM IN R3
                                ;       ENTRY - R0      ADDRESS IN ROM TO READ FROM
                                ;               R3      PARTIAL CKSUM
                                ;               PCRLB   CORRECT VALUE FOR BYTE TO READ
                                ;       EXIT    R0      ADDRESS OF NEXT BYTE
                                ;               R3      UPDATED CKSUM
                                ;               R5      BYTE READ
                                ;               PCRLB   CORRECT VALUE FOR NEXT BYTE

002314  012005                  REAROM: MOV     (R0)+,R5        ;GET A BYTE & UPDATE ADDR. BY 2
002316  060503                          ADD     R5,R3           ;UPDATE CKSUM
002320  020027  166000                  CMP     R0,#ENDE2R      ;SEE IF WE SHOULD SWITCH PAGES
002324  001005                          BNE     10$             ;NO
002326  012700  165000                  MOV     #E2PROM,R0      ;YES - GO TO START OF PAGE
002332  062737  000002  177522          ADD     #2,@#PCR                ;ADVANCE A PAGE
002340  000207                  10$:    RETURN
```

PROGRAM SUBROUTINES

```
                                        ;ROMADR - CALCULATE PAGE OFFSET FROM END OF ROM GIVEN SIZE IN BYTES
                                        ;       ENTRY - R1      SIZE IN BYTES
                                        ;       EXIT -  R0      INITIAL ADDRESS FOR FIRST BYTE IN ROM
                                        ;               R1      SIZE IN BYTES
                                        ;               PCRLB   CORRECT VALUE FOR FIRST BYTE IN ROM

002342  010100                ROMADR: MOV     R1,R0           ;COPY BYTE COUNT
002344  010105                        MOV     R1,R5           ;SECOND COPY
002346  072527  177770                ASH     #-8.,R5         ;DIVIDE BYTE COUNT BY 256. BYTE PAGES
002352  012704  000010                MOV     #7+1,R4         ;LAST PAGE IN 2 K PART + 1
002356  160504                        SUB     R5,R4           ;STARTING PAGE NUMBER

002360  042700  177400                BIC     #177400,R0      ;LEAVE ONLY BITS 7:0
002364  006300                        ASL     R0              ;DOUBLE VALUE
002366  001003                        BNE     20$
002370  012700  165000                MOV     #E2PROM,r0      ;
002374  000406                        BR      30$             ;IF 0

002376  005400                20$:    NEG     R0              ;MAKE STARTING ADDRESS BITS 8:0
002400  042700  177000                BIC     #177000,R0      ;
002404  052700  165000                BIS     #E2PROM,R0      ;MAKE A E2PROM ADDRESS
002410  005304                        DEC     R4              ;DECREMENT PAGE NUMBER BY 1

002412  006304                30$:    ASL     R4              ;MAKE PAGE NUMBER CORRECT FOR PCR
002414  110437  177522                MOVB    R4,@#PCRLB      ;CORRECT PAGE IN PCRLB
002420  000207                        RTS     PC              ;RETURN

002422  000000                WERR:   0                       ;FLAG FOR BAD BYTE
002424  177777                OLDSIZ: -1                      ;>0 - SIZE IN BYTES OF OLD LANGUAGE, 0 IF NO
                                                                ;LANGUAGE, -1 IF E2PROM MAY BE BAD/NONEXISTANT
002426  000000                UFDSIZ: 0                       ;SIZE IN BYTES OF OLD UFD AREA

                                .SBTTL  "FIELD SERVICE MODE" ERROR MESSAGES

                                .ENABL LC
002430      105     105     120 FMSG1:  .ASCII  /EEPROM write error, PCR page /
002433      122     117     115
002436      040     167     162
002441      151     164     145
002444      040     145     162
002447      162     157     162
002452      054     040     120
002455      103     122     040
002460      160     141     147
002463      145     040
002465      130     054     040 FMSG1A: .ASCII  /X, address /
002470      141     144     144
002473      162     145     163
002476      163     040
002500                      FMSG1B: .BLKB   6               ;FOR ADDRESS
002506      015     012     104         .ASCIZ  <CR><LF>/Data written /
002511      141     164     141
002514      040     167     162
002517      151     164     164
002522      145     156     040
002525      000
```

"FIELD SERVICE MODE" ERROR MESSAGES  SEQ 0014

```
                                                DUMMY1: .BLKB   3               ;3 UPPER BYTES NOT TO BE PRINTED
                                                FMSG1C: .BLKB   3
002534  054     040     104                             .ASCIZ  /, Data read /
002537  141     164     141
002542  040     162     145
002545  141     144     040
002550  000
                                                DUMMY2: .BLKB   3               ;3 UPPER BYTES NOT TO BE PRINTED
                                                FMSG1D: .BLKB   3
002557  056                                             .ASCII  /./
002560  015     012     000                     CRLF:   .ASCIZ  <CR><LF>
002563  114     141     156                     FMSG2:  .ASCIZ  /Language Area not supported on this processor./<CR><LF>
002566  147     165     141
002571  147     145     040
002574  101     162     145
002577  141     040     156
002602  157     164     040
002605  163     165     160
002610  160     157     162
002613  164     145     144
002616  040     157     156
002621  040     164     150
002624  151     163     040
002627  160     162     157
002632  143     145     163
002635  163     157     162
002640  056     015     012
002643  000
002644  103     165     162                     FMSG3:  .ASCIZ  /Current boot ROM version does not support language area./<CR><LF>
002647  162     145     156
002652  164     040     142
002655  157     157     164
002660  040     122     117
002663  115     040     166
002666  145     162     163
002671  151     157     156
002674  040     144     157
002677  145     163     040
002702  156     157     164
002705  040     163     165
002710  160     160     157
002713  162     164     040
002716  154     141     156
002721  147     165     141
002724  147     145     040
002727  141     162     145
002732  141     056     015
002735  012     000
002737  103     150     145                     FMSG4:  .ASCIZ  /Checksum error in EEPROM setup area./<CR><LF>
002742  143     153     163
002745  165     155     040
002750  145     162     162
002753  157     162     040
002756  151     156     040
002761  105     105     120
002764  122     117     115
002767  040     163     145
```

"FIELD SERVICE MODE" ERROR MESSAGES

```
        002772  164     165     160
        002775  040     141     162
        003000  145     141     056
        003003  015     012     000
    652                                 .SBTTL  TRANSLATED LOADER ERROR MESSAGES
    653 003006  015     123     171     MSG000: .ASCIZ  <CR>!Systemet kan ej ladda Svenska!
        003011  163     164     145
        003014  155     145     164
        003017  040     153     141
        003022  156     040     145
        003025  152     040     154
        003030  141     144     144
        003033  141     040     123
        003036  166     145     156
        003041  163     153     141
        003044  000
    654 003045  040     055     040     MSG001: .ASCIZ  ! - ]tergOr till U.S. English.!<CR>
        003050  135     164     145
        003053  162     147     175
        003056  162     040     164
        003061  151     154     154
        003064  040     125     056
        003067  123     056     040
        003072  105     156     147
        003075  154     151     163
        003100  150     05o     015
        003103  000
    655                                 .SBTTL  START OF AREA TO BE LOADED INTO E2PROM
    656
    657                                 .SBTTL  Svenska LANGUAGE TEXT
    658
    659 003104  075                     TEXT:   .BYTE   M001-TEXT
    660 003105  010                             .BYTE   M002-M001
    661 003106  002                             .BYTE   M003-M002
    662 003107  006                             .BYTE   M004-M003
    663 003110  006                             .BYTE   M005-M004
    664 003111  005                             .BYTE   M006-M005
    665 003112  002                             .BYTE   M007-M006
    666 003113  002                             .BYTE   M010-M007
    667 003114  002                             .BYTE   M011-M010
    668 003115  000                             .BYTE   M012-M011
    669 003116  000                             .BYTE   M013-M012
    670 003117  000                             .BYTE   M014-M013
    671 003120  000                             .BYTE   M015-M014
    672 003121  000                             .BYTE   M016-M015
    673 003122  000                             .BYTE   M017-M016
    674 003123  000                             .BYTE   M020-M017
    675 003124  037                             .BYTE   M021-M020
    676 003125  025                             .BYTE   M022-M021
    677 003126  026                             .BYTE   M023-M022
    678 003127  117                             .BYTE   M024-M023
    679 003130  021                             .BYTE   M025-M024
    680 003131  001                             .BYTE   M026-M025
    681 003132  020                             .BYTE   M027-M026
    682 003133  004                             .BYTE   M030-M027
    683 003134  010                             .BYTE   M031-M030
    684 003135  012                             .BYTE   M032-M031
```

Svenska LANGUAGE TEXT

```
685 003136  002                         .BYTE   M033-M032
686 003137  050                         .BYTE   M034-M033
687 003140  000                         .BYTE   M035-M034
688 003141  001                         .BYTE   M036-M035
689 003142  000                         .BYTE   M037-M036
690 003143  002                         .BYTE   M040-M037
691 003144  027                         .BYTE   M041-M040
692 003145  000                         .BYTE   M042-M041
693 003146  017                         .BYTE   M043-M042
694 003147  015                         .BYTE   M044-M043
695 003150  021                         .BYTE   M045-M044
696 003151  036                         .BYTE   M046-M045
697 003152  024                         .BYTE   M047-M046
698 003153  023                         .BYTE   M050-M047
699 003154  020                         .BYTE   M051-M050
700 003155  026                         .BYTE   M052-M051
701 003156  015                         .BYTE   M053-M052
702 003157  021                         .BYTE   M054-M053
703 003160  027                         .BYTE   M055-M054
704 003161  021                         .BYTE   M056-M055
705 003162  060                         .BYTE   M057-M056
706 003163  012                         .BYTE   M060-M057
707 003164  000                         .BYTE   M061-M060
708 003165  013                         .BYTE   M062-M061
709 003166  002                         .BYTE   M063-M062
710 003167  013                         .BYTE   M064-M063
711 003170  031                         .BYTE   M065-M064
712 003171  003                         .BYTE   M066-M065
713 003172  025                         .BYTE   M067-M066
714 003173  060                         .BYTE   M070-M067
715 003174  007                         .BYTE   M071-M070
716 003175  003                         .BYTE   M072-M071
717 003176  066                         .BYTE   M073-M072
718 003177  001                         .BYTE   M074-M073
719 003200  035                         .BYTE   MEND1-M074
720 003201  123     166     145 M001:   .ASCIZ  !Svenska!
    003204  156     163     153
    003207  141     000
721 003211  077     000         M002:   .ASCIZ  !?!
722 003213  110     112     133 M003:   .ASCIZ  !HJ[LP!
    003216  114     120     000
723 003221  114     101     104 M004:   .ASCIZ  !LADDA!
    003224  104     101     000
724 003227  126     111     123 M005:   .ASCIZ  !VISA!
    003232  101     000
725 003234  177     000         M006:   .ASCIZ  <177>           ;Setup command
726 003236  177     000         M007:   .ASCIZ  <177>           ;Map command
727 003240  177     000         M010:   .ASCIZ  <177>           ;Test command
728 003242                      M011:
729 003242                      M012:
730 003242                      M013:
731 003242                      M014:
732 003242                      M015:
733 003242                      M016:
734 003242                      M017:
735 003242  105     156     150 M020:   .ASCII  !Enhet!<TAB>!Enhetsnummer!<TAB>!Beskrivning!<CR>
    003245  145     164     011
```

Svenska LANGUAGE TEXT

```
        003250      105     156     150
        003253      145     164     163
        003256      156     165     155
        003261      155     145     162
        003264      011     102     145
        003267      163     153     162
        003272      151     166     156
        003275      151     156     147
        003300      015
    736 003301      126     151     163  M021:   .ASCII  !Visa startprogrammen!<CR>
        003304      141     040     163
        003307      164     141     162
        003312      164     160     162
        003315      157     147     162
        003320      141     155     155
        003323      145     156     015
    737 003326      123     164     141  M022:   .ASCII  !Startar systemet frOn !
        003331      162     164     141
        003334      162     040     163
        003337      171     163     164
        003342      145     155     145
        003345      164     040     146
        003350      162     175     156
        0C3353      040
    738 003354      015     113     157  M023:   .ASCII  <CR>!Kommando Beskrivning!<CR><CR>!LADDA!<TAB>! Liser in och !
        003357      155     155     141
        003362      156     144     157
        003365      040     102     145
        003370      163     153     162
        003373      151     166     156
        003376      151     156     147
        003401      015     015     114
        003404      101     104     104
        003407      101     011     040
        003412      114     173     163
        003415      145     162     040
        003420      151     156     040
        003423      157     143     150
        003426      040
    739 003427      163     164     141          .ASCII  !startar systemet frOn enheten!<CR>!VISA!<TAB>! !
        003432      162     164     141
        003435      162     040     163
        003440      171     163     164
        003443      145     155     145
        003446      164     040     146
        003451      162     175     156
        003454      040     145     156
        003457      150     145     164
        003462      145     156     015
        003465      126     111     123
        003470      101     011     040
    740 003473      015     111     156  M024:   .ASCII  <CR>!Inlisning pOgOr !
        003476      154     173     163
        003501      156     151     156
        003504      147     040     160
        003507      175     147     175
        003512      162     040
```

Svenska LANGUAGE TEXT

```
    741 003514  057                     M025:   .ASCII  '/'
    742 003515  124  162  171           M026:   .ASCII  !Tryck p0 <ret>: !
        003520  143  153  040
        003523  160  175  040
        003526  074  162  145
        003531  164  076  072
        003534  040
    743 003535  106  145  154           M027:   .ASCII  !Fel !
        003540  040
    744 003541  040  141  144           M030:   .ASCII  ! adress !
        003544  162  145  163
        003547  163  040
    745 003551  124  145  163           M031:   .ASCII  !Test p0p0r!
        003554  164  040  160
        003557  175  147  175
        003562  162
    746 003563  060  055                M032:   .ASCII  /0-/
    747 003565  015  123  153           M033:   .ASCII  <CR>!Skriv ett kommando och tryck p0 <ret>: !
        003570  162  151  166
        003573  040  145  164
        003576  164  040  153
        003601  157  155  155
        003604  141  156  144
        003607  157  040  157
        003612  143  150  040
        003615  164  162  171
        003620  143  153  040
        003623  160  175  040
        003626  074  162  145
        003631  164  076  072
        003634  040
    748 003635                          M034:
    749 003635  011                     M035:   .BYTE   TAB
    750 003636                          M036:
    751 003636  015  040                M037:   .BYTE   CR,SPACE
    752 003640  123  164  141           M040:   .ASCII  !Startar laddning av ROM!
        003643  162  164  141
        003646  162  040  154
        003651  141  144  144
        003654  156  151  156
        003657  147  040  141
        003662  166  040  122
        003665  117  115
    753 003667                          M041:
    754 003667  015  115  145           M042:   .ASCII  <CR>!Meddelande 06!<CR>
        003672  144  144  145
        003675  154  141  156
        003700  144  145  040
        003703  060  066  015
    755 003706  105  156  150           M043:   .ASCII  !Enhet ej klar!
        003711  145  164  040
        003714  145  152  040
        003717  153  154  141
        003722  162
    756 003723  115  145  144           M044:   .ASCII  !Media ej laddbart!
        003726  151  141  040
        003731  145  152  040
```

Svenska LANGUAGE TEXT

```
        003734  154  141  144
        003737  144  142  141
        003742  162  164
757     003744  111  156  147  M045:   .ASCII  !Inget media i laddningsenheten!
        003747  145  164  040
        003752  155  145  144
        003755  151  141  040
        003760  151  040  154
        003763  141  144  144
        003766  156  151  156
        003771  147  163  145
        003774  156  150  145
        003777  164  145  156
758     004002  111  156  147  M046:   .ASCII  !Inget band i enheten!
        004005  145  164  040
        004010  142  141  156
        004013  144  040  151
        004016  040  145  156
        004021  150  145  164
        004024  145  156
759     004026  123  164  171  M047:   .ASCII  !Styrenhet finns ej,!
        004031  162  145  156
        004034  150  145  164
        004037  040  146  151
        004042  156  156  163
        004045  040  145  152
        004050  054
760     004051  105  156  150  M050:   .ASCII  !Enheten finns ej!
        004054  145  164  145
        004057  156  040  146
        004062  151  156  156
        004065  163  040  145
        004070  152
761     004071  117  147  151  M051:   .ASCII  !Ogiltigt enhetsnummer !
        004074  154  164  151
        004077  147  164  040
        004102  145  156  150
        004105  145  164  163
        004110  156  165  155
        004113  155  145  162
        004116  040
762     004117  117  147  151  M052:   .ASCII  !Ogiltig enhet!
        004122  154  164  151
        004125  147  040  145
        004130  156  150  145
        004133  164
763     004134  106  145  154  M053:   .ASCII  !Fel i styrenheten!
        004137  040  151  040
        004142  163  164  171
        004145  162  145  156
        004150  150  145  164
        004153  145  156
764     004155  106  145  154  M054:   .ASCII  !Fel pO laddningsenheten!
        004160  040  160  175
        004163  040  154  141
        004166  144  144  156
        004171  151  156  147
```

```
                004174  163     145     156
                004177  150     145     164
                004202  145     156
        765     004204  015     015     114     M055:   .ASCII  <CR><CR>!Laddning p0g0r !
                004207  141     144     144
                004212  156     151     156
                004215  147     040     160
                004220  175     147     175
                004223  162     040
        766     004225  015     123     145     M056:   .ASCII  <CR>!Se avsnitt fels)kning i Handledning f)r hjlp!
                004230  040     141     166
                004233  163     156     151
                004236  164     164     040
                004241  146     145     154
                004244  163     174     153
                004247  156     151     156
                004252  147     040     151
                004255  040     110     141
                004260  156     144     154
                004263  145     144     156
                004266  151     156     147
                004271  040     146     174
                004274  162     040     150
                004277  152     173     154
                004302  160
        767     004303  015     015             .ASCII  <CR><CR>
        768     004305  033     133     062     M057:   .ASCII  <ESC>/[2J/       ;Erase screen
                004310  112
        769     004311  033     133     065             .ASCII  <ESC>/[5;0H/     ;Set cursor to line 5 and col 1
                004314  073     060     110
        770     004317                          M060:
        771     004317  115     145     144     M061:   .ASCII  !Meddelande !
                004322  144     145     154
                004325  141     156     144
                004330  145     040
        772     004332  015     015             M062:   .BYTE   CR,CR
        773     004334  015     015     113     M063:   .ASCII  <CR><CR>/KDJ11-B >/
                004337  104     112     061
                004342  061     055     102
                004345  040     076
        774     004347  015     106     145     M064:   .ASCII  <CR>!Fel vid EEPROM laddning!<CR>
                004352  154     040     166
                004355  151     144     040
                004360  105     105     120
                004363  122     117     115
                004366  040     154     141
                004371  144     144     156
                004374  151     156     147
                004377  015
        775     004400  010     040     010     M065:   .BYTE   BACKSP,SPACE,BACKSP
        776     004403  015     106     145     M066:   .ASCII  <CR>!Felaktigt kommando.!<CR>
                004406  154     141     153
                004411  164     151     147
                004414  164     040     153
                004417  157     155     155
                004422  141     156     144
                004425  157     056     015
```

```
                004430  015  015  124  M067:   .ASCII  <CR><CR>!Tillgingliga kommandon: Hjilp, Ladda och Visa.!
                004433  151  154  154
                004436  147  173  156
                004441  147  154  151
                004444  147  141  040
                004447  153  157  155
                004452  155  141  156
                004455  144  157  156
                004460  072  040  110
                004463  152  173  154
                004466  160  054  040
                004471  114  141  144
                004474  144  141  040
                004477  157  143  150
                004502  040  126  151
                004505  163  141  056
                004510  101  144  162  M070:   .ASCII  !Adress !
                004513  145  163  163
                004516  040
                004517  040  075  040  M071:   .ASCII  / = /
                004522  123  153  162  M072:   .ASCII  !Skriv enhet och enhetsnummer tryck dlrefter p0 <ret>: !
                004525  151  166  040
                004530  145  156  150
                004533  145  164  040
                004536  157  143  150
                004541  040  145  156
                004544  150  145  164
                004547  163  156  165
                004552  155  155  145
                004555  162  040  164
                004560  162  171  143
                004563  153  040  144
                004566  173  162  145
                004571  146  164  145
                004574  162  040  160
                004577  175  040  074
                004602  162  145  164
                004605  076  072  040
                004610  011                M073:   .BYTE   TAB
                004611  015  123  164  M074:   .ASCII  <CR>!Starter automatisk laddning!<CR>
                004614  141  162  164
                004617  141  162  040
                004622  141  165  164
                004625  157  155  141
                004630  164  151  163
                004633  153  040  154
                004636  141  144  144
                004641  156  151  156
                004644  147  015
                004646                MEND1:
                                      .SBTTL  NULL DICTIONARY BLOCK, CHECKSUM AND LANGUAGE HEADER
                004646                wb:
                004646  001           ENGWRD: .BYTE   ENDBLK-ENGWRD
                004647                ENDBLK:


                004647                WEND:
```

NULL DICTIONARY BLOCK, CHECKSUM AND LANGUAGE HEADER  SEQ 0022

```
                                CKSUM:  .byte   0       ;checksum
                                MEND:                           ;END OF NULL TEXT
                                ME:
                                WE:
                                ;FOREIGN LANGUAGE HEADER
                                B1      =       WE-WB&377                       ;DICTIONARY BYTE COUNT 7:0
                                B2      =       WE-WB&17400/256.                ;DICTIONARY BYTE COUNT 10:8
                                B3      =       MEND-text&377                   ;TEXT BYTE COUNT 7:0
                                B4      =       MEND-text&017400/256.!140       ;TEXT BYTE COUNT 12:8 & ID=011
                                        .BYTE   B1
                                        .BYTE   B2
                                        .BYTE   B3
                                        .BYTE   B4
                                        .BYTE   -<B1+B2+B3+B4>&377              ;THIS BYTE IS HEADER CHECKSUM
                                FLEND:
                                BUFF:           ;TEMPORARY SAVE AREA FOR OLD AREA
                                        .END    START
```

Symbol table

```
BACKSP= 000010        FLEND   004655        M010    003240        M042    003667        M074    004611
BCSR  = 177520        FMSG1   002430        M011    003242        M043    003706        NARGS = 000001
BDR   = 177524        FMSG1A  002465        M012    003242        M044    003723        NTYPE = 000027
BIT6  = 000100        FMSG1B  002500        M013    003242        M045    003744        OLDSIZ  002424
BIT7  = 000200        FMSG1C  002531        M014    003242        M046    004002        PCR   = 177522
BUFF    004655        FMSG1D  002554        M015    003242        M047    004026        PCRLB = 177522
B1    = 000002        FMSG2   002563        M016    003242        M050    004051        QUIT    002004
B2    = 000000        FMSG3   002644        M017    003242        M051    004071        QUIT1   002006
B3    = 000144        FMSG4   002737        M020    003242        M052    004117        REAROM  002314
B4    = 000143        LANG    001262        M021    003301        M053    004134        RETRY = 000002
CKSUM   004647        LF    = 000012        M022    003326        M054    004155        RMVTST= 173002
CR    = 000015        LNGHDR= 000140        M023    003354        M055    004204        ROMADR  002342
CRLF    002560        MAXERR= 000004        M024    003473        M056    004225        ROMSZ = 001551
DELAY = 025370        ME      004650        M025    003514        M057    004305        SPACE = 000040
DUMMY1  002526        MEND    004650        M026    003515        M060    004317        START   001000
DUMMY2  002551        MEND1   004646        M027    003535        M061    004317        TAB   = 000011
ENDBLK  004647        MOVROM  002134        M030    003541        M062    004332        TEXT    003104
ENDE2R= 166000        MSG000  003006        M031    003551        M063    004334        UFDHDR= 000040
ENGWRD  004646        MSG001  003045        M032    003563        M064    004347        UFDSIZ  002426
ESC   = 000033        M001    003201        M033    003565        M065    004400        WB      004646
EXIT    001566        M002    003211        M034    003635        M066    004403        WE      004650
EXIT1   001642        M003    003213        M035    003635        M067    004430        WEND    004647
E2LLB = 165006        M004    003221        M036    003636        M070    004510        WERR    002422
E2PAR = 165316        M005    003227        M037    003636        M071    004517        WRBYTE  002162
E2PROM= 165000        M006    003234        M040    003640        M072    004522        WRLANG  001462
E2WRIT  001666        M007    003236        M041    003667        M073    004610

. ABS.  004655    000   (RW,I,GBL,ABS,OVR)
        000000    001   (RW,I,LCL,REL,CON)
Errors detected:  0

*** Assembler statistics


Work  file  reads: 0
Work  file writes: 0
Size of work file: 8553 Words  ( 34 Pages)
Size of core pool: 19402 Words  ( 74 Pages)
Operating  system: RSX-11M/PLUS (Under VAX/VMS)

Elapsed time: 00:00:16.26
OEEGB0.BIC,COEEGB0/CR/-SP=COEEGB0
```

SEQ 0024

SYMBOL CROSS REFERENCE  CREF V02

| SYMBOL | VALUE | REFERENCES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| BACKSP | = 000010 | #5-260 | 6-775 | 6-775 | | | | | | |
| BCSR | = 177520 | #5-239 | 6-315 | *6-316 | *6-473 | | | | | |
| BDR | = 177524 | #5-254 | | | | | | | | |
| BIT6 | = 000100 | #5-258 | 6-510 | 6-531 | | | | | | |
| BIT7 | = 000200 | #5-257 | 6-452 | 6-458 | 6-461 | | | | | |
| BUFF | 004655 | 6-370 | 6-409 | 6-413 | 6-441 | 6-518 | #6-814 | | | |
| B1 | = 000002 | #6-802 | 6-807 | 6-811 | | | | | | |
| B2 | = 000000 | #6-803 | 6-808 | 6-811 | | | | | | |
| B3 | = 000144 | #6-804 | 6-809 | 6-811 | | | | | | |
| B4 | = 000143 | #6-805 | 6-810 | 6-811 | | | | | | |
| CKSUM | 004647 | 6-428 | 6-497 | *6-500 | #6-792 | | | | | |
| CR | = 000015 | #5-255 | 6-641 | 6-648 | 6-649 | 6-650 | 6-651 | 6-653 | 6-654 | 6-735 |
| | | 6-736 | 6-738 | 6-738 | 6-738 | 6-739 | 6-740 | 6-747 | 6-751 | 6-754 |
| | | 6-754 | 6-765 | 6-765 | 6-766 | 6-767 | 6-767 | 6-772 | 6-772 | 6-773 |
| | | 6-773 | 6-774 | 6-774 | 6-776 | 6-776 | 6-777 | 6-777 | 6-782 | 6-782 |
| CRLF | 002560 | 6-471 | 6-471 | #6-648 | | | | | | |
| DELAY | = 025370 | #5-247 | 6-562 | | | | | | | |
| DUMMY1 | 002526 | 6-575 | 6-575 | #6-642 | | | | | | |
| DUMMY2 | 002551 | 6-579 | 6-579 | #6-645 | | | | | | |
| ENDBLK | 004647 | 6-786 | #6-787 | | | | | | | |
| ENDE2R | = 166000 | #5-245 | 6-349 | 6-503 | 6-523 | 6-596 | | | | |
| ENGWRD | 004646 | #6-786 | 6-786 | | | | | | | |
| ESC | = 000033 | #5-262 | 6-768 | 6-769 | | | | | | |
| EXIT | 001566 | #6-455 | 6-532 | 6-534 | | | | | | |
| EXIT1 | 001642 | 6-460 | 6-465 | #6-471 | 6-514 | 6-529 | | | | |
| E2LLB | = 165006 | #5-244 | 6-456 | | | | | | | |
| E2PAR | = 165316 | #5-243 | 6-466 | | | | | | | |
| E2PROM | = 165000 | #5-242 | 5-243 | 5-244 | 5-245 | 6-324 | 6-333 | 6-335 | 6-505 | 6-525 |
| | | 6-598 | 6-618 | 6-623 | | | | | | |
| E2WRIT | 001666 | 6-443 | 6-449 | #6-477 | | | | | | |
| FLEND | 004655 | 5-264 | #6-813 | | | | | | | |
| FMSG1 | 002430 | 6-573 | 6-573 | #6-638 | | | | | | |
| FMSG1A | 002465 | *6-570 | #6-639 | | | | | | | |
| FMSG1B | 002500 | 6-572 | 6-572 | #6-640 | | | | | | |
| FMSG1C | 002531 | 6-576 | 6-576 | #6-643 | | | | | | |
| FMSG1D | 002554 | 6-580 | 6-580 | #6-646 | | | | | | |
| FMSG2 | 002563 | 6-321 | 6-321 | #6-649 | | | | | | |
| FMSG3 | 002644 | 6-344 | 6-344 | #6-650 | | | | | | |
| FMSG4 | 002737 | 6-337 | 6-337 | #6-651 | | | | | | |
| LANG | 001262 | 6-368 | #6-380 | | | | | | | |
| LF | = 000012 | #5-256 | 6-641 | 6-648 | 6-649 | 6-650 | 6-651 | | | |
| LNGHDR | = 000140 | #5-248 | 6-380 | | | | | | | |
| MAXERR | = 000004 | #5-252 | 6-481 | | | | | | | |
| ME | 004650 | #6-797 | | | | | | | | |
| MEND | 004650 | #6-795 | 6-804 | 6-805 | | | | | | |
| MEND1 | 004646 | 6-487 | 6-719 | #6-783 | | | | | | |
| MOVROM | 002134 | 6-371 | 6-410 | 6-417 | #6-547 | | | | | |
| MSG000 | 003006 | 6-512 | 6-512 | #6-653 | | | | | | |
| MSG001 | 003045 | 6-533 | 6-533 | #6-654 | | | | | | |
| M001 | 003201 | 6-484 | 6-659 | 6-660 | #6-720 | | | | | |
| M002 | 003211 | 6-660 | 6-661 | #6-721 | | | | | | |
| M003 | 003213 | 6-661 | 6-662 | #6-722 | | | | | | |

SYMBOL CROSS REFERENCE  CREF V02  SEQ 0025

| SYMBOL | VALUE | REFERENCES | | |
|---|---|---|---|---|
| M004 | 003221 | 6-662 | 6-663 | #6-723 |
| M005 | 003227 | 6-663 | 6-664 | #6-724 |
| M006 | 003234 | 6-664 | 6-665 | #6-725 |
| M007 | 003236 | 6-665 | 6-666 | #6-726 |
| M010 | 003240 | 6-666 | 6-667 | #6-727 |
| M011 | 003242 | 6-667 | 6-668 | #6-728 |
| M012 | 003242 | 6-668 | 6-669 | #6-729 |
| M013 | 003242 | 6-669 | 6-670 | #6-730 |
| M014 | 003242 | 6-670 | 6-671 | #6-731 |
| M015 | 003242 | 6-671 | 6-672 | #6-732 |
| M016 | 003242 | 6-672 | 6-673 | #6-733 |
| M017 | 003242 | 6-673 | 6-674 | #6-734 |
| M020 | 003242 | 6-674 | 6-675 | #6-735 |
| M021 | 003301 | 6-675 | 6-676 | #6-736 |
| M022 | 003326 | 6-676 | 6-677 | #6-737 |
| M023 | 003354 | 6-677 | 6-678 | #6-738 |
| M024 | 003473 | 6-678 | 6-679 | #6-740 |
| M025 | 003514 | 6-679 | 6-680 | #6-741 |
| M026 | 003515 | 6-680 | 6-681 | #6-742 |
| M027 | 003535 | 6-681 | 6-682 | #6-743 |
| M030 | 003541 | 6-682 | 6-683 | #6-744 |
| M031 | 003551 | 6-683 | 6-684 | #6-745 |
| M032 | 003563 | 6-684 | 6-685 | #6-746 |
| M033 | 003565 | 6-685 | 6-686 | #6-747 |
| M034 | 003635 | 6-686 | 6-687 | #6-748 |
| M035 | 003635 | 6-687 | 6-688 | #6-749 |
| M036 | 003636 | 6-688 | 6-689 | #6-750 |
| M037 | 003636 | 6-689 | 6-690 | #6-751 |
| M040 | 003640 | 6-690 | 6-691 | #6-752 |
| M041 | 003667 | 6-691 | 6-692 | #6-753 |
| M042 | 003667 | 6-692 | 6-693 | #6-754 |
| M043 | 003706 | 6-693 | 6-694 | #6-755 |
| M044 | 003723 | 6-694 | 6-695 | #6-756 |
| M045 | 003744 | 6-695 | 6-696 | #6-757 |
| M046 | 004002 | 6-696 | 6-697 | #6-758 |
| M047 | 004026 | 6-697 | 6-698 | #6-759 |
| M050 | 004051 | 6-698 | 6-699 | #6-760 |
| M051 | 004071 | 6-699 | 6-700 | #6-761 |
| M052 | 004117 | 6-700 | 6-701 | #6-762 |
| M053 | 004134 | 6-701 | 6-702 | #6-763 |
| M054 | 004155 | 6-702 | 6-703 | #6-764 |
| M055 | 004204 | 6-703 | 6-704 | #6-765 |
| M056 | 004225 | 6-704 | 6-705 | #6-766 |
| M057 | 004305 | 6-705 | 6-706 | #6-768 |
| M060 | 004317 | 6-706 | 6-707 | #6-770 |
| M061 | 004317 | 6-707 | 6-708 | #6-771 |
| M062 | 004332 | 6-708 | 6-709 | #6-772 |
| M063 | 004334 | 6-709 | 6-710 | #6-773 |
| M064 | 004347 | 6-710 | 6-711 | #6-774 |
| M065 | 004400 | 6-711 | 6-712 | #6-775 |
| M066 | 004403 | 6-712 | 6-713 | #6-776 |
| M067 | 004430 | 6-713 | 6-714 | #6-777 |

SYMBOL CROSS REFERENCE  CREF V02

| SYMBOL | VALUE | REFERENCES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| M070 | 004510 | 6-714 | 6-715 | #6-778 | | | | | | |
| M071 | 004517 | 6-715 | 6-716 | #6-779 | | | | | | |
| M072 | 004522 | 6-716 | 6-717 | #6-780 | | | | | | |
| M073 | 004610 | 6-717 | 6-718 | #6-781 | | | | | | |
| M074 | 004611 | 6-718 | 6-719 | #6-782 | | | | | | |
| NARGS | = 000001 | #6-321 | 6-321 | #6-337 | 6-337 | #6-344 | 6-344 | #6-471 | 6-471 | #6-512 |
| | | 6-512 | #6-533 | 6-533 | #6-572 | 6-572 | 6-572 | #6-573 | 6-573 | #6-575 |
| | | 6-575 | 6-575 | #6-576 | 6-576 | #6-579 | 6-579 | 6-579 | #6-580 | 6-580 |
| NTYPE | = 000027 | #6-321 | 6-321 | #6-337 | 6-337 | #6-344 | 6-344 | #6-471 | 6-471 | #6-512 |
| | | 6-512 | #6-533 | 6-533 | #6-572 | 6-572 | #6-573 | 6-573 | #6-575 | 6-575 |
| | | #6-575 | 6-575 | #6-576 | 6-576 | #6-579 | 6-579 | #6-580 | 6-580 | |
| OLDSIZ | 002424 | *6-339 | *6-376 | *6-382 | 6-408 | 6-414 | *6-416 | *6-419 | 6-513 | 6-528 |
| | | #6-631 | | | | | | | | |
| PCR | = 177522 | #5-240 | *6-314 | *6-340 | *6-474 | *6-506 | *6-526 | *6-599 | | |
| PCRLB | = 177522 | #5-241 | *6-455 | 6-567 | *6-627 | | | | | |
| QUIT | 002004 | 6-482 | 6-485 | 6-488 | 6-491 | 6-494 | #6-509 | | | |
| QUIT1 | 002006 | 6-345 | #6-510 | | | | | | | |
| REAROM | 002314 | 6-386 | 6-387 | 6-388 | 6-390 | 6-392 | 6-551 | #6-594 | | |
| RETRY | = 000002 | #5-250 | 6-560 | | | | | | | |
| RMVTST | = 173002 | #5-246 | 6-341 | | | | | | | |
| ROMADR | 002342 | 6-384 | 6-438 | 6-517 | 6-548 | #6-609 | | | | |
| ROMSZ | = 001551 | #5-264 | 6-437 | 6-447 | | | | | | |
| SPACE | = 000040 | #5-261 | 6-751 | 6-775 | | | | | | |
| START | 001000 | #6-314 | 6-815 | | | | | | | |
| TAB | = 000011 | #5-259 | 6-735 | 6-735 | 6-738 | 6-739 | 6-749 | 6-781 | | |
| TEXT | 003104 | 5-264 | 6-424 | 6-446 | #6-659 | 6-659 | 6-804 | 6-805 | | |
| UFDHDR | = 000040 | #5-249 | 6-367 | 6-399 | | | | | | |
| UFDSIZ | 002426 | *6-377 | *6-407 | *6-412 | 6-416 | *6-420 | 6-436 | 6-439 | 6-528 | #6-633 |
| WB | 004646 | #6-785 | 6-802 | 6-803 | | | | | | |
| WE | 004650 | #6-798 | 6-802 | 6-803 | | | | | | |
| WEND | 004647 | #6-790 | | | | | | | | |
| WERR | 002422 | *6-479 | 6-481 | #6-630 | | | | | | |
| WRBYTE | 002162 | 6-464 | 6-469 | 6-477 | 6-520 | #6-557 | | | | |
| WRLANG | 001462 | 6-358 | 6-372 | 6-378 | 6-381 | 6-418 | #6-424 | | | |

SEQ 0027

MACRO CROSS REFERENCE  CREF  V02

| MACRO NAME | REFERENCES | | | | | | |
|---|---|---|---|---|---|---|---|
| .FRCTY | #5-299 | 6-471 | 6-512 | 6-533 | | | |
| .ITOA | #5-278 | 6-572 | 6-575 | 6-579 | | | |
| .TYPMS | #5-267 | 6-321 | 6-337 | 6-344 | 6-573 | 6-576 | 6-580 |