KDJ11-B

EEPROM SPAIN LANG LDR
COEEFA0

AH-FF27A-MC
1 OF 1 JUL 1985

digital
MADE IN USA

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                                        .TITLE  COEEFA EEPROM SPAIN LANG LDR


                                                                        .REM &

                                                     IDENTIFICATION
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                                        PRODUCT CODE:  AC FF26A-MC

                                        PRODUCT NAME:  COEEFAO EEPROM SPAIN LANG LDR

                                        PRODUCT DATE:  FEBRUARY, 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
```

4. SPECIAL ENVIRONMENTS

The program is not APT compat ble.

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 follow ng 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.

&

```
                                                .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

             001617                             ROMSZ   =       FLEND-TEXT              ;SIZE IN BYTES OF TEXT TO BE
                                                                                        ;LOADED INTO EEPROM


```

```
    310                                          .SBTTL  CHECK FOR CERTAIN EXCEPTIONS FIRST
    311
    312         001000                   .=1000
    313
    314 001000  005037  177522           START:  CLR     @#PCR           ;SELECT PAGE 0 OF EEPROM
    315 001004  013746  177520                   MOV     @#BCSR,-(SP)    ;SAVE OLD BCSR VALUE
    316 001010  112737  000067  177520           MOVB    #67,@#BCSR      ;WRITE ENABLE THE E2PROM & ENABLE ROM
    317
    318 001016  000007                           MFPT                    ;GET PROCESSOR TYPE
    319 001020  020027  000005                   CMP     R0,#5           ;CHECK TO SEE IF ORION
    320 001024  001404                           BEQ     1$              ;YES - CONTINUE
    321 001026                                   .TYPMSG #FMSG2          ;FIELD-SERVICE MESSAGE
                000001                           .NARG   NARGS
                000027                           .NTYPE  NTYPE,#FMSG2
        001026  012700  002563                     MOV   #FMSG2,R0
        001032  104003                             EMT   3
    322 001034  000443                           BR      99$
    323
    324 001036  012700  165000           1$:     MOV     #E2PROM,R0      ;STARTING ADDRESS TO CHECKSUM
    325 001042  005001                           CLR     R1              ;INITIALIZE CHECKSUM
    326 001044  012703  000151                   MOV     #105.,R3        ;NO. OF BYTES TO CKSUM
    327 001050  012005                   201$:   MOV     (R0)+,R5        ;GET A BYTE
    328 001052  042705  177400                   BIC     #177400,R5      ;NO BUS NOISE, THANK YOU.
    329 001056  060501                           ADD     R5,R1           ;ACCUMULATE CHECKSUM
    330 001060  077305                           SOB     R3,201$         ;CONTINUE TILL DONE
    331 001062  105701                           TSTB    R1              ;IS CKSUM 0?
    332 001064  001007                           BNE     202$            ;NO, ERROR
    333 001066  105737  165022                   TSTB    @#E2PROM+22     ;BYTE TO TEST FOR VALID ROM, SHOULD BE 0
    334 001072  001004                           BNE     202$            ;NO, ERROR
    335 001074  123727  165314  000252           CMPB    @#E2PROM+314,#252       ;BYTE TO TEST FOR VALID ROM
    336 001102  001404                           BEQ     300$            ;GO TO NEXT CHECK IF OK
    337 001104                           202$:   .TYPMSG #FMSG4          ;FIELD SERVICE MESSAGE
                000001                           .NARG   NARGS
                000027                           .NTYPE  NTYPE,#FMSG4
        001104  012700  002737                     MOV   #FMSG4,R0
        001110  104003                             EMT   3
    338 001112  000414                           BR      99$             ;QUIT
    339 001114  005067  001304           300$:   CLR     OLDSIZ          ;SET FLAG THAT ROM EXISTS, CURRENTLY NO LANGUAGE
    340 001120  012737  000016  177522           MOV     #7*2,@#PCR      ;SEL. LAST PAGE OF 2K E2PROM, PG0 OF ROM
    341 001126  023727  173002                   CMP     @#RMVTST,(PC)+  ;SEE IF ROM VER. 7 OR LATER (CAN SUPPORT LANGUAGE AREA)
    342 001132  000250                           CLN
    343 001134  001405                           BEQ     2$              ;YES - CONTINUE
    344 001136                                   .TYPMSG #FMSG3
                000001                           .NARG   NARGS
                000027                           .NTYPE  NTYPE,#FMSG3
        001136  012700  002644                     MOV   #FMSG3,R0
        001142  104003                             EMT   3
    345 001144  000167  000636           99$:    JMP     QUIT1
    346
    347                                          .SBTTL  SAVE OLD LANGUAGE/UFD AREA IN CASE IT MUST BE RESTORED
    348
    349 001150  012700  165776           2$:     MOV     #ENDE2R-2,R0    ;LAST ADDRESS (CKSUM) OF E2PROM
    350 001154  012701  000005                   MOV     #5,R1           ;NO. OF BYTES IN HEADER TO CHECKSUM
    351 001160  010005                           MOV     R0,R5           ;SAVE ADDRESS
    352 001162  005003                           CLR     R3              ;
    353 001164  111004                   4$:     MOVB    (R0),R4         ;GET A BYTE
    354 001166  060403                           ADD     R4,R3           ;ACCUMULATE CHECKSUM
```

```
001170  005740                      TST     -(R0)           ;CORRECT ADDRESS
001172  077104                      SOB     R1,4$           ;LOOP FOR 5 BYTES
001174  105703                      TSTB    R3              ;IF NOT ZERO, NO LANGUAGE LOADED
001176  001131                      BNE     WRLANG          ;NON EXISTANT OR CORRUPTED LANGUAGE   SKIP

001200  014504                      MOV     -(R5),R4        ;HIGH BYTE OF BYTE COUNT
001202  014546                      MOV     -(R5),-(SP)     ;LOW BYTE OF BYTE COUNT
001204  110466  000001              MOVB    R4,1(SP)        ;SET UPPER BYTES OF SIZE
001210  042704  177437              BIC     #177437,R4      ;EXTRACT ID CODE
001214  012601                      MOV     (SP)+,R1        ;GET SIZE BACK
001216  042701  160000              BIC     #160000,R1      ;R1 NOW CONTAINS SIZE OF BLOCK IN BYTES
001222  062701  000005              ADD     #5,R1           ;ADD BYTE COUNT FOR HEADER BLOCK
001226  120427  000040              CMPB    R4,#UFDHDR      ;SEE IF IT IS A UFD BLOCK
001232  001013                      BNE     LANG            ;NO, CHECK FOR A LANGUAGE
001234  010104                      MOV     R1,R4           ;SAVE SIZE
001236  012702  004721              MOV     #BUFF,R2        ;ADDRESS OF SAVE BUFFER
001242  004767  000666              CALL    MOVROM          ;MOVE UFD AREA TO MEMORY
001246  001105                      BNE     WRLANG          ;BAD CKSUM, QUIT
                                                            ;NOTE   R3 CONTAINS CHECKSUM OF BLOCK AND HEADER
                                                            ;HOWEVER THE CHECKSUM OF HEADER IS ALREADY KNOWN
                                                            ;TO BE 0 SO R3 IS A VALID CHECK OF UFD BLOCK
001250  010167  001150              MOV     R1,OLDSIZ       ;SAVE TOTAL SIZE
001254  010167  001146              MOV     R1,UFDSIZ       ;SAVE SIZE OF UFD AREA
001260  000500                      BR      WRLANG

001262  120427  000140      LANG:   CMPB    R4,#LNGHDR      ;IS THIS A LANGUAGE HEADER?
001266  001075                      BNE     WRLANG          ;NO - QUIT
001270  010167  001130              MOV     R1,OLDSIZ       ;SAVE SIZE FOR NOW
001274  062701  000005              ADD     #5,R1           ;ADD SIZE OF (POSSIBLE) UFD HEADER
001300  004767  001036              CALL    ROMADR          ;SET UP PCR AND R0
001304  005003                      CLR     R3              ;INITIALIZE CKSUM
001306  004767  001002              CALL    REAROM          ;GET A BYTE
001312  004767  000776              CALL    REAROM          ;GET A BYTE
001316  004767  000772              CALL    REAROM          ;GET A BYTE
001322  010546                      MOV     R5,-(SP)        ;SAVE LOW BYTE OF SIZE FOR LATER
001324  004767  000764              CALL    REAROM          ;GET A BYTE
001330  110566  000001              MOVB    R5,1(SP)        ;SAVE HIGH BYTE OF SIZE AND ID
001334  004767  000754              CALL    REAROM          ;GET A BYTE
001340  116600  000001              MOVB    1(SP),R0        ;GET I.D.
001344  012601                      MOV     (SP)+,R1        ;GET SIZE
001346  105703                      TSTB    R3              ;SEE IF VALID CKSUM
001350  001025                      BNE     1$              ;NO - WE HAVE LANGUAGE ONLY.

001352  042700  177437              BIC     #177437,R0      ;GET ID ONLY
001356  120027  000040              CMPB    R0,#UFDHDR      ;IS THIS A UFD BLOCK?
001362  001020                      BNE     1$              ;NO, IGNORE IT.

                            ;WE HAVE BOTH A LANGUAGE AREA AND A UFD BLOCK.  SAVE THE UFD BLOCK.

001364  042701  160000              BIC     #160000,R1      ;GET RID OF ID
001370  062701  000005              ADD     #5,R1           ;SIZE OF HEADER
001374  010104                      MOV     R1,R4           ;BYTE COUNT TO MOVE
001376  010167  001024              MOV     R1,UFDSIZ       ;SAVE UFD SIZE
001402  066701  001016              ADD     OLDSIZ,R1       ;ADD SIZE OF LANGUAGE AREA
001406  012702  004721              MOV     #BUFF,R2        ;MEMORY ADDRESS TO SAVE TO
001412  004767  000516              CALL    MOVROM          ;SAVE UFD AREA
001416  001404                      BEQ     2$              ;YES, IT IS VALID, CONTINUE
```

```
    412 001420  005067  001002                  CLR     UFDSIZ          ;NO UFD AREA
    413 001424  012702  004721          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  003102          WRLANG: MOV     #TEXT,R0        ;ADDRESS OF BEGINNING OF TEXT
    425 001466  005001                          CLR     R1              ;INIT CHECKSUM
    426 001470  112002                  25$:    MOVB    (R0)+,R2        ;READ A BYTE
    427 001472  160201                          SUB     R2,R1           ;ACCUMULATE CHECKSUM
    428 001474  020027  004713                  CMP     R0,#CKSUM       ;FINISHED ALL TEXT ?
    429 001500  001373                          BNE     25$             ;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  001617                  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  004721                  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  003102          40$:    MOV     #TEXT,R2        ;ADDRESS OF EEPROM LANGUAGE TEXT
    447 001546  012701  001617                  MOV     #ROMSZ,R1       ;BYTES TO MOVE
    448 001552  112205                  50$:    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
```

```
001636  004767  000320                   CALL    WRBYTE          ;UPDATE E2ROM

001642                          EXIT1:   .FRCTYP #CRLF           ;COMPLETE LINE
        000001                           .NARG   NARGS
        000027                           .NTYPE  NTYPE,#CRLF
001642  012700  002560                     MOV   #CRLF,R0
001646  104044                             EMT   44
001650  142716  000060                   BICB    #60,(SP)        ;BE SURE ROM IS DISABLED
001654  012637  177520                   MOV     (SP)+,@#BCSR    ;RESTORE BCSR
001660  005037  177522                   CLR     @#PCR           ;
001664  000207                           RTS     PC

001666  004767  000270          E2WRIT:  CALL    WRBYTE          ;WRITE THE BYTE TO E2PROM
001672  001431                           BEQ     3$              ;OK THIS TIME
001674  005267  000522                   INC     WERR            ;FLAG BAD BYTE

001700  026727  000516  000004           CMP     WERR,#MAXERR    ;CHECK TO SEE IF PAST THE MAXIMUM ERROR
001706  003036                           BGT     QUIT            ;LIMIT OF BAD BYTES ALLOWED

001710  020227  003177                   CMP     R2,#M001        ;CHECK TO SEE IF ERROR IS IN MESSAGE
001714  101433                           BLOS    QUIT            ;BYTE COUNT (MUST BE CORRECT)

001716  020227  004712                   CMP     R2,#MEND1       ;CHECK TO BE SURE DICTIONARY AND UFD
001722  101030                           BHI     QUIT            ;BLOCKS ARE NOT CORRUPTED

001724  132705  000140                   BITB    #140,R5         ;CHECK TO SEE IF IT SHOULD BE A CONTROL
001730  001425                           BEQ     QUIT            ;CODE (POSSIBLY DICTIONARY ENTRY)

001732  132710  000140                   BITB    #140,(R0)       ;IF CONTROL CODE (DICTIONARY REFERENCE
001736  001422                           BEQ     QUIT            ;PERHAPS) CALL IT QUITS

001740  111004                           MOVB    (R0),R4         ;WE WILL LIVE WITH THIS ERROR, CORRECT
001742  116703  002745                   MOVB    CKSUM,R3        ;THE CHECKSUM TO ACCOUNT FOR NEW VALUE
001746  060503                           ADD     R5,R3           ;CANCEL OUT WHAT WAS SUPPOSED TO BE
001750  160403                           SUB     R4,R3           ;CORRECT FOR ERRONEOUS VALUE
001752  110367  002735                   MOVB    R3,CKSUM        ;PUT BACK CORRECTED VALUE

001756  062700  000002          3$:      ADD     #2,R0           ;INCREMENT LOCATION
001762  020027  166000                   CMP     R0,#ENDE2R      ;FINISHED THIS PAGE ?
001766  001005                           BNE     10$             ;NO-RETURN
001770  012700  165000                   MOV     #E2PROM,R0      ;YES RESET ADDRESS
001774  062737  000002  177522           ADD     #2,@#PCR        ;INCREMENT PCR TO NEXT PAGE
002002  000207                  10$:     RETURN

002004  005726                  QUIT:    TST     (SP)+           ;CORRECT STACK
002006  032737  000100  000052  QUIT1:   BIT     #BIT6,@#52      ;SEE IF UFD QUIET
002014  001403                           BEQ     5$              ;NO
002016                                   .FRCTYP #MSG000         ;MESSAGE FOR USER IN HIS OWN LANGUAGE
        000001                           .NARG   NARGS
        000027                           .NTYPE  N1YPE,#MSG000
002016  012700  003006                     MOV   #MSG000,R0
002022  104044                             EMT   44
002024  016701  000374          5$:      MOV     OLDSIZ,R1
002030  100704                           BMI     EXIT1           ;ERROR WAS NOT ORION OR CKSUM ERROR, DO NOT
                                                                 ;TRY TO CLEAR LANGUAGE BIT
002032  001427                           BEQ     40$             ;IF NO OLD LANGUAGE TO RESTORE
002034  004767  000302                   JSR     PC,ROMADR       ;COMPUTE STARTING ADDRESS OF OLD LANG IN E2PROM
```

```
002040  012702  004721                  MOV     #BUFF,R2          ;STARTING ADDRESS OF OLD LANGUAGE TEXT
002044  112205                  10$:    MOVB    (R2)+,R5          ;GET A BYTE
002046  004767  000110                  CALL    WRBYTE            ;WRITE IT OUT
002052  001017                          BNE     40$               ;IF ERROR, GIVE UP
002054  062700  000002                  ADD     #2,R0             ;INCREMENT LOCATION
002060  020027  166000                  CMP     R0,#ENDE2R        ;FINISHED THIS PAGE ?
002064  001005                          BNE     20$               ;NO-CONTINUE
002066  012700  165000                  MOV     #E2PROM,R0        ;YES-RESET ADDRESS
002072  062737  000002  177522          ADD     #2,@#PCR          ;INCREMENT PCR TO NEXT PAGE
002100  077117                  20$:    SOB     R1,10$            ;LOOP UNTIL DONE
002102  026767  000320  000314          CMP     UFDSIZ,OLDSIZ     ;IF THE SAME THEN NO LANGUAGE
002110  001254                          BNE     EXIT1             ;IF LANGUAGE, LEAVE E2PROM LANG. BIT AS IT WAS
002112  005005                  40$:    CLR     R5                ;TURN OFF LOCAL LANGUAGE BIT IN E2PROM
002114  036737  175760  000052          BIT     BIT6,@#52         ;SEE IF UFD QUIET
002122  001621                          BEQ     EXIT              ;NO
002124                                  .FRCTYP #MSG001
        000001                          .NARG   NARGS
        000027                          .NTYPE  NTYPE,#MSG001
002124  012700  003040                    MOV   #MSG001,R0
002130  104044                            EMT   44
002132  000615                          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

002134  010403                  MOVROM: MOV     R4,R3             ;SAVE R4
002136  004767  000200                  CALL    ROMADR            ;LOAD PCR AND R0 WITH LANGUAGE START AREA
002142  010304                          MOV     R3,R4             ;RESTORE BYTE COUNT
002144  005003                          CLR     R3                ;INIT CHECKSUM
002146  004767  000142          5$:     CALL    REAROM            ;GET A BYTE
002152  110522                          MOVB    R5,(R2)+          ;SAVE IT
002154  077404                          SOB     R4,5$             ;LOOP TILL DONE
002156  105703                          TSTB    R3                ;IS CHECKSUM GOOD?
002160  000207                          RETURN

002162  120510                  WRBYTE: CMPB    R5,(R0)           ;IS THE NEW DATA DIFFERENT ?
002164  001452                          BEQ     10$               ;NO-DO NOT WRITE OVER

002166  012703  000002                  MOV     #RETRY,R3
002172  010510                  1$:     MOV     R5,(R0)           ;WRITE A LOCATION
002174  012704  025370                  MOV     #DELAY,R4         ;11 MS WAIT
002200  077401                          SOB     R4,.              ;WASTE TIME
002202  120510                          CMPB    R5,(R0)           ;SEE IF IT TOOK
002204  001442                          BEQ     10$               ;YES, ALL OKAY
002206  077307                          SOB     R3,1$             ;IF AT FIRST YOU DON'T SUCCEED...
002210  113704  177522                  MOVB    @#PCRLB,R4        ;PCR PAGE OF BAD BYTE
002214  106204                          ASRB    R4                ;CONVERT TO PAGE #
002216  062704  000060                  ADD     #'0,R4            ;CONVERT TO OCTAL
002222  110467  000237                  MOVB    R4,FMSG1A         ;STORE IT FOR PRINTING
```

```
002226  010046                              MOV     R0,-(SP)          ;SAVE ROM ADDRESS
002230                                      .ITOA   ,#FMSG1B          ;CONVERT ROM ADDRESS TO OCTAL
        000002                              .NARG   NARGS
        000027                                .NTYPE        NTYPE,#FMSG1B
002230  012701  002500                        MOV   #FMSG1B,R1
002234  104030                                EMT   30
002236                                      .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
002244  042705  177400                      BIC     #177400,R5        ;MAKE SURE R5 IS POSITIVE AND A BYTE
002250                                      .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
002260                                      .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
002266  013600                              MOV     @(SP)+,R0         ;GET BYTE AT ROM ADDRESS
002270  042700  177400                      BIC     #177400,R0        ;GET RID OF BUS NOISE
002274                                      .ITOA   ,#DUMMY2          ;CONVERT TO OCTAL
        000002                              .NARG   NARGS
        000027                                .NTYPE        NTYPE,#DUMMY2
002274  012701  002551                        MOV   #DUMMY2,R1
002300  104030                                EMT   30
002302                                      .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
```

```

                                        ;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
 002406  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
```

```
    642 002526                              DUMMY1: .BLKB   3               ;3 UPPER BYTES NOT TO BE PRINTED
    643 002531                              FMSG1C: .BLKB   3
    644 002534     054     040     104              .ASCIZ  /. Data read /
        002537     141     164     141
        002542     040     162     145
        002545     141     144     040
        002550     000
    645 002551                              DUMMY2: .BLKB   3               ;3 UPPER BYTES NOT TO BE PRINTED
    646 002554                              FMSG1D: .BLKB   3
    647 002557     056                              .ASCII  /./
    648 002560     015     012     000      CRLF:   .ASCIZ  <CR><LF>
    649 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
    650 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
    651 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
```

```
     002772     164     165     160
     002775     040     141     162
     003000     145     141     056
     003003     015     012     000
                                      .SBTTL  TRANSLATED LOADER ERROR MESSAGES
     003006     015     111     155   MSG000: .ASCIZ  <CR>!Imposible cargar espanol!
     003011     160     157     163
     003014     151     142     154
     003017     145     040     143
     003022     141     162     147
     003025     141     162     040
     003030     145     163     160
     003033     141     156     157
     003036     154     000
     003040     040     055     040   MSG001:  ASCIZ  !   traducido a Ingles Americano.!<CR>
     003043     164     162     141
     003046     144     165     143
     003051     151     144     157
     003054     040     141     040
     003057     111     156     147
     003062     154     145     163
     003065     040     101     155
     003070     145     162     151
     003073     143     141     156
     003076     157     056     015
     003101     000
                                      .SBTTL  START OF AREA TO BE LOADED INTO E2PROM

                                      .SBTTL  espanol LANGUAGE TEXT

     003102     075                   TEXT:     .BYTE   M001-TEXT
     003103     010                             .BYTE   M002-M001
     003104     002                             .BYTE   M003-M002
     003105     006                             .BYTE   M004-M003
     003106     007                             .BYTE   M005-M004
     003107     007                             .BYTE   M006-M005
     003110     002                             .BYTE   M007-M006
     003111     002                             .BYTE   M010-M007
     003112     002                             .BYTE   M011-M010
     003113     000                             .BYTE   M012-M011
     003114     000                             .BYTE   M013-M012
     003115     000                             .BYTE   M014-M013
     003116     000                             .BYTE   M015-M014
     003117     000                             .BYTE   M016-M015
     003120     000                             .BYTE   M017-M016
     003121     000                             .BYTE   M020 M017
     003122     041                             .BYTE   M021-M020
     003123     031                             .BYTE   M022-M021
     003124     034                             .BYTE   M023-M022
     003125     134                             .BYTE   M024-M023
     003126     014                             .BYTE   M025-M024
     003127     001                             .BYTE   M026-M025
     003130     030                             .BYTE   M027-M026
     003131     006                             .BYTE   M030-M027
     003132     013                             .BYTE   M031-M030
     003133     013                             .BYTE   M032 M031
     003134     002                             .BYTE   M033 M032
```

```
    686 003135     051                              .BYTE    M034-M033
    687 003136     000                              .BYTE    M035-M034
    688 003137     001                              .BYTE    M036-M035
    689 003140     000                              .BYTE    M037-M036
    690 003141     002                              .BYTE    M040-M037
    691 003142     022                              .BYTE    M041-M040
    692 003143     000                              .BYTE    M042-M041
    693 003144     014                              .BYTE    M043-M042
    694 003145     023                              .BYTE    M044-M043
    695 003146     023                              .BYTE    M045-M044
    696 003147     014                              .BYTE    M046-M045
    697 003150     014                              .BYTE    M047-M046
    698 003151     023                              .BYTE    M050-M047
    699 003152     023                              .BYTE    M051-M050
    700 003153     034                              .BYTE    M052-M051
    701 003154     026                              .BYTE    M053-M052
    702 003155     027                              .BYTE    M054-M053
    703 003156     022                              .BYTE    M055 M054
    704 003157     013                              .BYTE    M056-M055
    705 003160     075                              .BYTE    M057-M056
    706 003161     012                              .BYTE    M060-M057
    707 003162     000                              .BYTE    M061-M060
    708 003163     010                              .BYTE    M062-M061
    709 003164     002                              .BYTE    M063-M062
    710 003165     013                              .BYTE    M064-M063
    711 003166     035                              .BYTE    M065-M064
    712 003167     003                              .BYTE    M066-M065
    713 003170     024                              .BYTE    M067-M066
    714 003171     052                              .BYTE    M070-M067
    715 003172     012                              .BYTE    M071-M070
    716 003173     003                              .BYTE    M072-M071
    717 003174     070                              .BYTE    M073-M072
    718 003175     003                              .BYTE    M074-M073
    719 003176     034                              .BYTE    MEND1-M074
    720 003177     145     163     160    M001:     .ASCIZ   !espenol!
        003202     141     156     157
        003205     154     000
    721 003207     077     000            M002:     .ASCIZ   !?!
    722 003211     101     131     125    M003:     .ASCIZ   !AYUDA!
        003214     104     101     000
    723 003217     103     101     122    M004:     .ASCIZ   !CARGAR!
        003222     107     101     122
        003225     000
    724 003226     114     111     123    M005:     .ASCIZ   !LISTAR!
        003231     124     101     122
        003234     000
    725 003235     177     000            M006:     .ASCIZ   <177>             ;Setup command
    726 003237     177     000            M007:     .ASCIZ   <177>             ;Map command
    727 003241     177     000            M010:     .ASCIZ   <177>             ;Test command
    728 003243                            M011:
    729 003243                            M012:
    730 003243                            M013:
    731 003243                            M014:
    732 003243                            M015:
    733 003243                            M016:
    734 003243                            M017:
    735 003243     104     151     163    M020:     .ASCII   !Dispositivo Un'dades Descripcion!<CR>
```

```
        003246      160      157      163
        003251      151      164      151
        003254      166      157      040
        003257      125      156      151
        003262      144      141      144
        003265      145      163      040
        003270      104      145      163
        003273      143      162      151
        003276      160      143      151
        003301      157      156      015
    736 003304      114      151      163  M021:    .ASCII  !Lista programas de carga!<CR>
        003307      164      141      040
        003312      160      162      157
        003315      147      162      141
        003320      155      141      163
        003323      040      144      145
        003326      040      143      141
        003331      162      147      141
        003334      015
    737 003335      101      162      162  M022:    .ASCII  !Arrancando el sistema desde !
        003340      141      156      143
        003343      141      156      144
        003346      157      040      145
        003351      154      040      163
        003354      151      163      164
        003357      145      155      141
        003362      040      144      145
        003365      163      144      145
        003370      040
    738 003371      015      103      157  M023:    .ASCII  <CR>!Comando   Descripcion!<CR><CR>!Cargar    Carga y arranca!
        003374      155      141      156
        003377      144      157      040
        003402      040      040      104
        003405      145      163      143
        003410      162      151      160
        003413      143      151      157
        003416      156      015      015
        003421      103      141      162
        003424      147      141      162
        003427      040      040      040
        003432      040      103      141
        003435      162      147      141
        003440      040      171      040
        003443      141      162      162
        003446      141      156      143
        003451      141
    739 003452      040      145      154           .ASCII  ! el sistema desde un dispositivo!<CR>!Listar    !
        003455      040      163      151
        003460      163      164      145
        003463      155      141      040
        003466      144      145      163
        003471      144      145      040
        003474      165      156      040
        003477      144      151      163
        003502      160      157      163
        003505      151      164      151
        003510      166      157      015
        003513     114      151      163
        003516     164      141      162
        003521     040      040      040
        003524     040
    740 003525     015      111      156  M024:    .ASCII  <CR>!Intentando !
        003530     164      145      156
        003533     164      141      156
        003536     144      157      040
    741 003541     057                    M025:    .ASCII  '/'
    742 003542     120      165      154  M026:    .ASCII  !Pulse la tecla RETORNO: !
        003545     163      145      040
        003550     154      141      040
        003553     164      145      143
        003556     154      141      040
        003561     122      105      124
        003564     117      122      116
        003567     117      072      040
    743 003572     105      162      162  M027:    .ASCII  !Error !
        003575     157      162      040
    744 003600     040      144      151  M030:    .ASCII  ! direccıon !
        003603     162      145      143
        003606     143      151      157
        003611     156      040
    745 003613     103      157      155  M031:    .ASCII  !Comprobando!
        003616     160      162      157
        003621     142      141      156
        003624     144      157
    746 003626     060      055            M032:    .ASCII  /0-/
    747 003630     015      124      145  M033:    .ASCII  <CR>!Teclee un comando, luego pulse RETORNO: !
        003633     143      154      145
        003636     145      040      165
        003641     156      040      143
        003644     157      155      141
        003647     156      144      157
        003652     054      040      154
        003655     165      145      147
        003660     157      040      160
        003663     165      154      163
        003666     145      040      122
        003671     105      124      117
        003674     122      116      117
        003677     072      040
    748 003701                            M034:
    749 003701     011                    M035:    .BYTE   TAB
    750 003702                            M036:
    751 003702     015      040           M037:    .BYTE   CR,SPACE
    752 003704     103      141      162  M040:    .ASCII  !Cargando desde ROM!
        003707     147      141      156
        003712     144      157      040
        003715     144      145      163
        003720     144      145      040
        003723     122      117      115
    753 003726                            M041:
    754 003726     015      115      145  M042:    .ASCII  <CR>!Mensaje 06!<CR>
        003731     156      163      141
        003734     152      145      040
        003737     060      066      015
    755 003742      125      156      151  M043:    .ASCII  !Unidad no preparada!
        003745      144      141      144
        003750      040      156      157
        003753      040      160      162
        003756      145      160      141
        003761      162      141      144
        003764      141
    756 003765      123      157      160  M044:    .ASCII  !Soporte no cargable!
        003770      157      162      164
        003773      145      040      156
        003776      157      040      143
        004001      141      162      147
        004004      141      142      154
        004007      145
    757 004010      116      157      040  M045:    .ASCII  !No hay disco!
        004013      150      141      171
        004016      040      144      151
        004021      163      143      157
    758 004024      116      157      040  M046:    .ASCII  !No hay cinta!
        004027      150      141      171
        004032      040      143      151
        004035      156      164      141
    759 004040      116      157      040  M047:    .ASCII  !No hay controlador,!
        004043      150      141      171
        004046      040      143      157
        004051      156      164      162
        004054      157      154      141
        004057      144      157      162
        004062      054
    760 004063      114      141      040  M050:    .ASCII  !La unidad no existe!
        004066      165      156      151
        004071      144      141      144
        004074      040      156      157
        004077      040      145      170
        004102      151      163      164
        004105      145
    761 004106      116      165      155  M051:    .ASCII  !Numero de unidad incorrecto !
        004111      145      162      157
        004114      040      144      145
        004117      040      165      156
        004122      151      144      141
        004125      144      040      151
        004130      156      143      157
        004133      162      162      145
        004136      143      164      157
        004141      040
    762 004142      104      151      163  M052:    .ASCII  !Dispositivo incorrecto!
        004145      160      157      163
        004150      151      164      151
        004153      166      157      040
        004156      151      156      143
        004161      157      162      162
        004164      145      143      164
        004167      157
    763 004170      105      162      162  M053:    .ASCII  !Error en el controlador!
        004173      157      162      040
        004176      145      156      040
        004201      145      154      040
        004204      143      157      156
        004207      164      162      157
        004212      154      141      144
        004215      157      162
    764 004217      105      162      162  M054:    .ASCII  !Error en la unidad!
        004222      157      162      040
        004225      145      156      040
        004230      154      141      040
        004233      165      156      151
        004236      144      141      144
    765 004241      015      015      103  M055:    .ASCII  <CR><CR>!Cargando !
        004244      141      162      147
        004247      141      156      144
        004252      157      040
    766 004254      015      126      145  M056:    .ASCII  <CR>!Vea "localizacion de averias" en el Manual del Propietar!
        004257      141      040      042
        004262      154      157      143
        004265      141      154      151
        004270      172      141      143
        004273      151      157      156
        004276      040      144      145
        004301      040      141      166
        004304      145      162      151
        004307      141      163      042
        004312      040      145      156
        004315      040      145      154
        004320      040      115      141
        004323      156      165      141
        004326      154      040      144
        004331      145      154      040
        004334      120      162      157
        004337      160      151      145
        004342      164      141      162
    767 004345      151      157      015           .ASCII  !io!<CR><CR>
        004350      015
    768 004351      033      133      062  M057:    .ASCII  <ESC>/[2J/       ;Erase screen
        004354      112
    769 004355      033      133      065           .ASCII  <ESC>/[5;0H/     ;Set cursor to line 5 and col 1
        004360      073      060      110
    770 004363                                M060:
    771 004363      115      145      156  M061:    .ASCII  !Mensaje !
        004366      163      141      152
        004371      145      040
    772 004373      015      015           M062:    .BYTE   CR,CR
    773 004375      015      015      113  M063:    .ASCII  <CR><CR>/KDJ11 B >/
        004400      104      112      061
        004403      061      055      102
        004406      040      076
    774 004410      015      105      162  M064:    .ASCII  <CR>!Error de carga desde EEPROM!<CR>
        004413      162      157      162
        004416      040      144      145
        004421      040      143      141
        004424      162      147      141
        004427      040      144      145
        004432      163      144      145
        004435      040      105      105
        004440     120     122     117
        004443     115     015
    775 004445     010     040     010  M065:    .BYTE   BACKSP,SPACE,BACKSP
    776 004450     015     103     157  M066:    .ASCII  <CR>!Comando incorrecto!<CR>
        004453     155     141     156
        004456     144     157     040
        004461     151     156     143
        004464     157     162     162
        004467     145     143     164
        004472     157     015
    777 004474     015     015     114  M067:    .ASCII  <CR><CR>!Los comandos son Ayuda, Cargar y Listar.!
        004477     157     163     040
        004502     143     157     155
        004505     141     156     144
        004510     157     163     040
        004513     163     157     156
        004516     040     101     171
        004521     165     144     141
        004524     054     040     103
        004527     141     162     147
        004532     141     162     040
        004535     171     040     114
        004540     151     163     164
        004543     141     162     056
    778 004546     104     151     162  M070:    .ASCII  !Direccion !
        004551     145     143     143
        004554     151     157     156
        004557     040
    779 004560     040     075     040  M071:    .ASCII  / = /
    780 004563     124     145     143  M072:    .ASCII  !Teclee el dispositivo y la unidad, luego pulse RETORNO: !
        004566     154     145     145
        004571     040     145     154
        004574     040     144     151
        004577     163     160     157
        004602     163     151     164
        004605     151     166     157
        004610     040     171     040
        004613     154     141     040
        004616     165     156     151
        004621     144     141     144
        004624     054     040     154
        004627     165     145     147
        004632     157     040     160
        004635     165     154     163
        004640     145     040     122
        004643     105     124     117
        004646     122     116     117
        004651     072     040
    781 004653     011     040     040  M073:    .ASCII  <TAB>!  !
    782 004656     015     101     143  M074:    .ASCII  <CR>!Activando carga automatica!<CR>
        004661     164     151     166
        004664     141     156     144
        004667     157     040     143
        004672     141     162     147
        004675     141     040     141
        004700     165     164     157
        004703     155     141     164
```

```
 004706      151      143      141
 004711      015
 004712                             MEND1:
                                    .SBTTL  NULL DICTIONARY BLOCK, CHECKSUM AND LANGUAGE HEADER
 004712                             wb:
 004712      001                    ENGWRD: .BYTE   ENDBLK ENGWRD
 004713                             ENDBLK:


 004713                             WEND:

 004713      000                    CKSUM:  .byte   0        ;checksum


 004714                             MEND:                            ;END OF NULL TEXT

 004714                             ME:
 004714                             WE:

                                    ;FOREIGN LANGUAGE HEADER

           000002                   B1      =       WE-WB&377                       ;DICTIONARY BYTE COUNT 7:0
           000000                   B2      =       WE-WB&17400/256.                ;DICTIONARY BYTE COUNT 10:8
           000212                   B3      =       MEND text&377                   ;TEXT BYTE COUNT 7:0
           000143                   B4      =       MEND-text&017400/256.!140       ;TEXT BYTE COUNT 12:8 & ID=011

 004714      002                            .BYTE   B1
 004715      000                            .BYTE   B2
 004716      212                            .BYTE   B3
 004717      143                            .BYTE   B4
 004720      021                            .BYTE    <B1+B2+B3+B4>&377              ;THIS BYTE IS HEADER CHECKSUM

 004721                             FLEND:
 004721                             BUFF:           ;TEMPORARY SAVE AREA FOR OLD AREA
           001000                           .END    START
```

```
Symbol table

BACKSP= 000010      FLEND   004721      M010    003241      M042    003726      M074    004656
BCSR  = 177520      FMSG1   002430      M011    003243      M043    003742      NARGS = 000001
BDR   = 177524      FMSG1A  002465      M012    003243      M044    003765      NTYPE = 000027
BIT6  = 000100      FMSG1B  002500      M013    003243      M045    004010      OLDSIZ  002424
BIT7  = 000200      FMSG1C  002531      M014    003243      M046    004024      PCR   = 177522
BUFF    004721      FMSG1D  002554      M015    003243      M047    004040      PCRLB = 177522
B1    = 000002      FMSG2   002563      M016    003243      M050    004063      QUIT    002004
B2    = 000000      FMSG3   002644      M017    003243      M051    004106      QUIT1   002006
B3    = 000212      FMSG4   002737      M020    003243      M052    004142      REAROM  002314
B4    = 000143      LANG    001262      M021    003304      M053    004170      RETRY = 000002
CKSUM   004713      LF    = 000012      M022    003335      M054    004217      RMVTST= 173002
CR    = 000015      LNGHDR= 000140      M023    003371      M055    004241      ROMADR  002342
CRLF    002560      MAXERR= 000004      M024    003525      M056    004254      ROMSZ = 001617
DELAY = 025370      ME      004714      M025    003541      M057    004351      SPACE = 000040
DUMMY1  002526      MEND    004714      M026    003542      M060    004363      START   001000
DUMMY2  002551      MEND1   004712      M027    003572      M061    004363      TAB   = 000011
ENDBLK  004713      MOVROM  002134      M030    003600      M062    004373      TEXT    003102
ENDE2R= 166000      MSG000  003006      M031    003613      M063    004375      UFDHDR= 000040
ENGWRD  004712      MSG001  003040      M032    003626      M064    004410      UFDSIZ  002426
ESC   = 000033      M001    003177      M033    003630      M065    004445      WB      004712
EXIT    001566      M002    003207      M034    003701      M066    004450      WE      004714
EXIT1   001642      M003    003211      M035    003701      M067    004474      WEND    004713
E2LLB = 165006      M004    003217      M036    003702      M070    004546      WERR    002422
E2PAR = 165316      M005    003226      M037    003702      M071    004560      WRBYTE  002162
E2PROM= 165000      M006    003235      M040    003704      M072    004563      WRLANG  001462
E2WRIT  001666      M007    003237      M041    003726      M073    004653

. ABS.  004721    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: 00:00:25.24
OEEFAO.BIC,COEEFAO/CR/ SP=COEEFAO
```

L2

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COEEFAO    CREATED BY  MACRO  ON 16 FEB-85 AT 13:56      PAGE 1
                                                                                        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       004721         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       = 000212        #6-804     6-809      6-811
B4       = 000143        #6-805     6-810      6-811
CKSUM      004713         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     004713         6-786    #6-787
ENDE2R   = 166000        #5-245     6-349      6-503      6-523      6-596
ENGWRD     004712        #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      004721         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         004714        #6-797
MEND       004714        #6 795     6-804      6-805
MEND1      004712         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     003040         6-533     6-533     #6-654
M001       003177         6-484     6-659      6-660     #6-720
M002       003207         6 660     6-661     #6-721
M003       003211         6-661     6-662     #6-722
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M2

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COEEFAO    CREATED BY  MACRO  ON 16-FEB-85 AT 13:56     PAGE 2
                                                                                    SEQ 0025
SYMBOL CROSS REFERENCE                                    CREF    V02

SYMBOL  VALUE           REFERENCES

M004      003217         6-662       6-663      #6-723
M005      003226         6-663       6-664      #6-724
M006      003235         6-664       6-665      #6-725
M007      003237         6-665       6-666      #6-726
M010      003241         6-666       6-667      #6-727
M011      003243         6-667       6-668      #6-728
M012      003243         6-668       6-669      #6-729
M013      003243         6-669       6-670      #6-730
M014      003243         6-670       6-671      #6-731
M015      003243         6-671       6-672      #6-732
M016      003243         6-672       6-673      #6-733
M017      003243         6-673       6-674      #6-734
M020      003243         6-674       6-675      #6-735
M021      003304         6-675       6-676      #6-736
M022      003335         6-676       6-677      #6-737
M023      003371         6-677       6-678      #6-738
M024      003525         6-678       6-679      #6-740
M025      003541         6-679       6-680      #6-741
M026      003542         6-680       6-681      #6-742
M027      003572         6-681       6-682      #6-743
M030      003600         6-682       6-683      #6-744
M031      003613         6-683       6-684      #6-745
M032      003626         6-684       6-685      #6-746
M033      003630         6-685       6-686      #6-747
M034      003701         6-686       6-687      #6-748
M035      003701         6-687       6-688      #6-749
M036      003702         6-688       6-689      #6-750
M037      003702         6-689       6-690      #6-751
M040      003704         6-690       6-691      #6-752
M041      003726         6-691       6-692      #6-753
M042      003726         6-692       6-693      #6-754
M043      003742         6-693       6-694      #6-755
M044      003765         6-694       6-695      #6-756
M045      004010         6-695       6-696      #6-757
M046      004024         6-696       6-697      #6-758
M047      004040         6-697       6-698      #6-759
M050      004063         6-698       6-699      #6-760
M051      004106         6-699       6-700      #6-761
M052      004142         6-700       6-701      #6-762
M053      004170         6-701       6-702      #6-763
M054      004217         6-702       6-703      #6-764
M055      004241         6-703       6-704      #6-765
M056      004254         6-704       6-705      #6-766
M057      004351         6-705       6 706      #6-768
M060      004363         6-706       6-707      #6-770
M061      004363         6-707       6-708      #6-771
M062      004373         6-708       6-709      #6-772
M063      004375         6-709       6-710      #6-773
M064      004410         6-710       6-711      #6-774
M065      004445         6-711       6-712      #6-775
M066      004450         6-712       6-713      #6-776
M067      004474         6-713       6-714      #6-777
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N2

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COEEFAO    CREATED BY  MACRO  ON 16-FEB-85 AT 13:56     PAGE 3

SYMBOL CROSS REFERENCE                                  CREF    V02                          SEQ 0026

SYMBOL   VALUE          REFERENCES

M070       004546        6-714     6-715    #6-778
M071       004560        6-715     6-716    #6-779
M072       004563        6-716     6-717    #6-780
M073       004653        6-717     6-718    #6-781
M074       004656        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    = 001617       #5-264     6-437     6-447
SPACE    = 000040       #5-261     6-751     6-775
START      001000       #6-314     6-815
TAB      = 000011       #5-259     6-749     6-781
TEXT       003102        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         004712       #6-785     6-802     6-803
WE         004714       #6-798     6-802     6-803
WEND       004713       #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
```

```
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
```