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## ***Intel Puerto Rico Inc.***

July 25, 1984

Dear iRMX™ 86 Customer:

You have just received the diskettes and reference manuals for iRMX 86 Release 6, Intel's newest release of the iRMX 86 16-bit Operating System. This letter describes the package contents, support, new release differences, and installation of Release 6.

### PACKAGE CONTENTS

The diskettes in this package are formatted to be compatible with the floppy diskette drive in your system. The media-type used by your system determines the actual items you have received; media E for single-sided, double density 8 inch iRMX 86 format (Used on the SYP 86/330, SYP 86/380, and SYP 286/380 products) and media J for double-sided, double density 5.25 inch, 48 tracks-per-inch iRMX 86 format (Used on SYP 86/310 and SYP 286/310 products). This package contains the following items:

1. Nine Diskettes for Media Types E or J.
  - a. iRMX 86 Nucleus, Terminal Handler and Dynamic Debugger.
  - b. iRMX 86 I/O Systems and Device Drivers.
  - c. iRMX 86 Human Interface, Application Loader, System Debugger, and Bootstrap Loader.
  - d. iRMX 86 Human Interface Commands.
  - e. iRMX 86 Interactive Configuration Utility (Part 1 of 2), Files Utility and Patch Utility.
  - f. iRMX 86 Interactive Configuration Utility (Part 2 of 2), Universal Development Interface and Crash Analyzer.
  - g. iRMX 86 Include Files, Interface Libraries and Interactive Configuration Utility System Definition Files.
  - h. iRMX 86 Installation Diskette for iAPX 86-Based Systems.
  - i. iRMX 86 Installation Diskette for iAPX 286-Based Systems.
2. Seven Binders Containing iRMX™86 Operating System and Language Reference Manuals.
  - a. iRMX 86 Introduction and Operator's Reference Manual.
  - b. iRMX 86 Programmer's Reference Manual, Part I.
  - c. iRMX 86 Programmer's Reference Manual, Part II.
  - d. iRMX 86 Installation and Configuration Guide.
  - e. iRMX 86 Assembler User Manual.
  - f. iRMX 86 Utilities User Manual.
  - g. iRMX 86 Compiler User Manual.

3. A Software Problem Report (SPR) Form.
4. An Intel Software Registration Certificate (this should be completed and returned promptly to ensure eligibility for Intel Software Support Services).

If any of these items are not included in this package, please contact your local Intel sales office immediately.

Before you incorporate Release 6 of the iRMX 86 Operating System into your application, you should read this entire letter. The iRMX 86 Introduction and Operator's Reference Manual and iRMX 86 Installation and Configuration Guide should also be consulted to help you incorporate Release 6 efficiently.

The iRMX 86 Operating System is an Intel licensed software product. Use of this system in any derived product requires the payment of incorporation fees. You must report the number of "derivative works" you produce with your payment schedule for incorporation fees at least semi-annually using an Intel Incorporation Fee Certificate. A "derivative work" is defined in the Intel Master OEM Software License Agreement as a software program developed by you, which incorporates portions of the iRMX 86 Operating System through compilation and/or linking the system with programs developed by you. Contact your local Intel sales office to obtain an incorporation fee certificate.

#### SUPPORT

All purchasers of the iRMX 86 Operating System are eligible for Intel's software support level B if they are within their warranty period. Level B support entitles each iRMX 86 customer to field support, software update service, and Software Problem Report (SPR) service. To ensure that you are eligible for these Intel services, the enclosed Intel Software Registration Certificate must be completed promptly. Indicate the name, title, and correct address for the contact person within your organization who should receive each iRMX 86 technical report, software updates, and other information.

**REMEMBER . . . NO INTEL SUPPORT IS PROVIDED UNLESS THIS REGISTRATION CERTIFICATE IS COMPLETED AND RECEIVED BY INTEL!**

iRMX 86 Operating System users have the opportunity to join an active, growing, international organization of other iRMX 86 users. This organization is called the iRMX 86 Users Group (iRUG\*). It was formed to enable users of iRMX 86 to share programs, information, and ideas. To learn more about iRUG activities, contact an iRUG representative at (212) 860-0300, or write to the following address:

iRUG  
Lifeboat Associates  
1651 Third Avenue  
New York, NY 10028

Intel offers many training workshops related to the iRMX 86 Operating System, the PL/M high-level programming language, and other microcomputer topics. Group rates and on-site workshops are also available. For further information on our workshops, contact your local Intel sales office or contact the Intel Training Center for your area at the number listed below:

Boston, MA: (617) 256-1374  
Chicago, IL: (312) 981-7250  
Dallas, TX: (214) 241-8087  
San Francisco, CA: (415) 940-7800  
Washington, D.C.: (301) 474-2878

Swindon, U.K.: 44-793-488-388  
Munich, WEST GERMANY: 49-89-5389-1  
Paris, FRANCE: 33-1-687-22-21  
Tokyo, JAPAN: 03-437-6611

In addition to programs available through the iRUG organization, several iRMX 86-compatible programs are included in Intel's Insite™ Program Library. To become a member of the Insite group call one of the Intel Training Centers listed above.

#### RELEASE 5 TO RELEASE 6 DIFFERENCES

Release 6 of the iRMX 86 Operating System contains many new features not available in Release 5. Users presently using Release 5 should be able to incorporate Release 6 into their systems easily. The following section highlights most of the new features in Release 6 and the major objectives of the product.

\* iRUG is a trademark of the iRMX 86 Users Group.

#### Release 6 Objectives

The overall objectives of the iRMX 86 Release 6 Operating System are the following:

1. To support Intel's new iAPX 186-based single board computers.
2. To integrate the iRMX 286R Operating System product into iRMX 86 Release 6.
3. To correct most of the problems identified in iRMX 86 Release 5.
4. To integrate iRMX 86 support for the Intel iAPX 86/88/186/188/286 products.

## Major Release 6 Features

The major features of Release 6 are the following:

1. Support of the Intel iAPX 186 and iAPX 286 products.

The iRMX 86 Operating System has been modified to execute on Intel iAPX 186/188-based single board computers, as well as Intel components.

iAPX 186/188 systems are supported using either 80130-compatible support circuits or the on-CPU-chip interrupt controller and interval timers. The iAPX 286 support features that currently exist in the Intel iRMX 286R product have been integrated into iRMX 86 Release 6. A single ICU provides configuration capability for iAPX 86/88/186/188/286-based systems. Device drivers have been added or modified to support the serial and parallel interfaces of the new iAPX 186/188-based single board computers. Serial support for the iSBC™188/48 as a peripheral device (i.e. iSBC™ 544 replacement) is not included in iRMX 86 Release 6.

2. Support of 186/03 SASI/SCSI Interface.

The Intel iSBC™186/03 single board computer has a unique general-purpose SASI/SCSI interface. This interface allows peripherals such as disks to be used without a MULTIBUS or iSBX™ device controller. Support is provided for 5 1/4" and 8" Winchester disk drives.

3. Incorporation of iRMX 86 Release 5 Addendum Manual.

Information in the iRMX 86 Release 5 Addendum Manual has been integrated into the iRMX 86 Release 6 manuals in this package.

4. Addition of iSBX™251 Bubble Memory Driver.

The iSBX™ 251 Bubble Memory Multimodule driver is included in iRMX 86 Release 6. ICU support for this driver is also included in Release 6.

5. Improved Backup Volume Format Support.

A new backup format standard for information on standard media has been implemented in iRMX 86 Release 6. This allows transportability between Intel ISIS, TAPS, and SYSTEM 300 Series microcomputers.

6. New Basic I/O System Exception Codes.

The use of the E\$CONTEXT exception code has been removed from the Basic I/O system. Sixteen new error codes have been added, which make error conditions easier to understand.

## 7. ICU System Definition Files.

System definition files for the iSBC 186/03, iSBC 186/51, and iSBC 188/48 single board computers are also supplied.

### INSTALLATION

There are two start-up systems included on the Installation Diskettes in this package. Each system contains a pre-configured multi-user iRMX 86 Operating System. Application programs executed on either of these systems can access operating system services using the Universal Development Interface (UDI) and other iRMX 86 system calls. The Installation Diskette labeled "Pre-configured System for iAPX 86" is used on SYP 86/310, SYP 86/330, and SYP 86/380 systems. The diskette labeled "Pre-configured System for iAPX 286" is used on the SYP 286/310 and SYP 286/380 systems.

Instructions for installing the iRMX 86 Operating System on your SYP 86/300 or SYP 286/300 Family Microcomputer System are provided in Chapter 10 of the iRMX 86 Installation Guide. PLEASE NOTE THAT THE INSTALLATION PROCESS FORMATS THE HARD DISK ON YOUR SYSTEM. IF YOU HAVE A SYSTEM THAT WAS RUNNING A PREVIOUS VERSION OF iRMX 86, YOU MUST USE THE BACKUP COMMAND TO SAVE ANY DATA YOU HAVE STORED ON THE SYSTEM DISK PRIOR TO BEGINNING THE INSTALLATION PROCESS.

The following provides further information to aid you in the process of installing iRMX on your system.

#### File Names

Intel has adopted a file naming convention for files supplied on Release 6 diskettes which can be read by a development system but are intended for execution under the iRMX 86 Human Interface. This development system can be either the Intellec Development System, or a SYSTEM 300 Series microcomputer, accompanied by correct software development tools. All these files are Human Interface commands and are named with an extension of ".R86". The iRMX 86 Human Interface Commands diskette (as with the other Release 6 diskettes) contains a SUBMIT file (called instal.csd) which you can use to copy Human Interface Commands from the Release 6 diskette to your iRMX 86 System. This submit file will automatically rename the commands to the standard iRMX 86 command names.

#### Device Names

Table 10-1, Start-Up System Device Names of Winchester Drives, in the iRMX 86 Installation Guide should be expanded to include the following two devices:

| <u>Device</u>                                  | <u>Device Name</u> |
|--|--------------------|
| Priam 8" 60 MB Winchester<br>(formatted)       | iwb0, iwbl         |
| Quantum 5 1/4" 36 MB Winchester<br>(formatted) | qma0, qmal         |

Be sure to check the type of drive in your system before installing iRMX 86 Release 6.

### Include Files

Figure E-1 in the iRMX 86 Installation Guide shows the hierarchical directory structure on your hard disk with two exceptions:

1. The iRMX 86 system call interface libraries have been copied into the directory /rmx86/lib which is required to use the Intel-supplied ICU definition files. They have not been copied into the directory /lib/rmx86 as indicated in the figure.
2. The iRMX 86 Exception Code Literal files and the System Call External Declaration files have been copied into the directory /rmx86/inc as is required. They have not been copied into the directory /lib/rmx86 as indicated in the figure.

To copy the interface libraries into the directory indicated in Figure E-1 of the iRMX 86 Installation Guide, type:

```
Super- copy /rmx86/lib/* to /lib/rmx86
```

To copy the exception code literal files and external declaration files into the directory indicated in the figure, type:

```
Super- createdir /inc/rmx86
Super- copy /rmx86/inc/* to /inc/rmx86
```

Note that this will create two copies of these files on your hard disk. If disk space is a concern, you may wish to access these files from the directories into which they were originally installed.

### Version Numbers

The iRMX 86 Installation Guide lists the version numbers for each part of the iRMX 86 Operating System supplied in this package. Intel has also included a special file for each part of the system that identifies the version number supplied on the diskette. For example, on the diskette which contains the iRMX 86 Nucleus, there is a file called "NUCLUS.060" that identifies the Nucleus as Version 6.0. A Human Interface Command VERSION, is provided that will display the version number of a particular object file containing encoded version information. All Human Interface Commands contain this information.

The following caution list applies to the Assembler and Utilities package which is included with the SYR 86 product:

1. ED

- a. Editing files more than 25K lines long or greater than 128K bytes in total length will cause information in the files to be destroyed. Avoid creating files of this size.
- b. The EDIT Reference Manual does not describe how ED responds after an X, W, and E command when the specified file is more than 64K bytes long. If the user edits a file that is longer than 64K bytes, ED responds with:

[filename]:x lines, y + z bytes

where:

y = number of 64K segments  
z = number of last segment in bytes

- c. If ED encounters a non-existent macro it makes no attempt to substitute the macro and does not report that the macro is undefined.
- d. TAB characters are not echoed on the terminal screen when they are entered on the keyboard. However, They are correctly entered into the edit file.

2. LINK86, LOC86, LIB86

- a. Before locating programs, it is necessary to include the INITCODE option on the LINK86 statement during the LINK step. Failure to do so may result in the production of an unreported bad object module by the LOCATE program.

3. All Products in the Assembler/Utilities Package:

- a. Specification of an existing directory as the output file in a PRINT or OBJECT control, following the TO preposition on your command line, will result in an un-named temporary file being created in the specified directory. Upon completion of the job this file will be automatically deleted by the operating system. Do not specify directories as the final component in output pathnames.

4. The following caution list applies to the PL/M-86 Compiler included with the SYR 86 product:

- a. When a word operation is performed, and its result is assigned to an integer (using the SIGNED function), an immediate test of the integer against zero will use the flag setting from the previous operation. This causes the result of the test to be wrong. Example:

```
DECLARE (w1,w2) WORD, i1 INTEGER, P BYTE;
w1=8001H; w2= 7FFEH; P=0;
i1=SIGNED(w1-w2); /* result = 3 */
IF i1 = 0 THEN P=1;
ELSE P = 2; /* P is set to 2 which is wrong */
```

Note that putting a label in front of the integer comparison will result in proper operation.

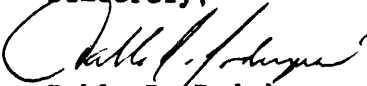
- b. If the user has a program error at compile time such that he/she has a hard coded divide-by-zero, (such as  $X/0$  or  $17/0$ ), the compiler uses the value zero for the expression with no error message being issued. Note that cases such as  $X/0$  have gone undetected since Release 1.0 of the product. Cases of constant divided by zero did produce Error 19 before and now go undetected.
- c. If the data segment size is exceeded, the error message gives a line number at which the overflow occurred, and a symbol on the line at which the overflow occurred. The line number is wrong and points to the end of the module. The symbol, however, is correct.
- d. In an INTEGER DO LOOP with a BY clause, 2 temporaries are used to hold the limit and step values invariant at the two tests at the beginning and end of the loop. If this construct is used in a REENTRANT procedure, the temporaries are not put on the stack.
- e. Filenames of 40 characters should be supported as per UDI standard. Only 14 are supported (inclusive of extension).
- f. Using the "@" operator to get the address of a list that contains a REAL number does not work correctly. The space is not allocated properly, and the location contains invalid information.

Status updates on all reported problems are available in publications from Intel's Customer Service Operation. Please use the Software Problem Report form to report any problems you encounter with the SYR 86 product.



Thank you for selecting the iRMK 86 Operating System. We look forward to a continuing relationship with you through high quality products and services from Intel.

Sincerely,



Pablo R. Rodriguez  
General Manager