Appendix B
Installation Procedures – PC and Generic

B.1. Introduction

The $\mathcal{AMS}$-TEX software can be used with any full implementation of TEX. Sections B.2–B.5 of this appendix describe the installation of $\mathcal{AMS}$-TEX for DOS implementations of TEX on an IBM PC or compatible machine from a DOS diskette or diskettes provided by the American Mathematical Society. PCTEX (from Personal TEX, Inc.) and emTEX are used as examples. If your operating system is not DOS, or if you obtained $\mathcal{AMS}$-TEX through other channels, you won't be able to use the `install` program that is provided. Instead, follow the generic installation instructions in section B.6. You will have to refer to the documentation for your particular implementation of TEX to work out the details of any necessary variations. Users who encounter difficulties should seek help from the manufacturer of their implementation of TEX, or from the American Mathematical Society's technical support staff.

The TFM files for some of AMSFonts 2.2 (`msam*`, `msbm*`, and `eufm*`) are needed to run $\mathcal{AMS}$-TEX with the AMSPPT documentstyle, even if you don't plan to actually print anything using the AMSFonts. (These fonts are needed to process and print the User's Guide of which this index is a part.) In the diskette distribution TFM files for all AMSFonts are provided in a directory named `\tfm`. They are also available from the AMS Internet archive, `e-math.ams.org`, by anonymous FTP.

B.2. Getting Started

The installation procedure consists of moving files to the proper directories, and creating format files. The first step is to determine the names of the proper directories, which will vary with different implementations of TEX. You need to know the name of your **TEX inputs directory**, your **TEX TFM directory**, and your **TEX formats directory**. Check your directory structure or consult the documentation for your implementation of TEX to see what these names are. If you have any difficulty determining these directories:

(a) Search for the plain TEX input file, `plain.tex`. The directory where it is located will be your TEX inputs directory.
(b) Search for the font file `cmr10.tfm`. The directory where it is found will be your TEX TFM directory.
(c) Search for the plain TEX format file, `plain.fmt`. The directory where it is found will be your TEX formats directory.

For example, for PCTEX the directory names are `\pctex\texinput`, `\pctex\textfms`, and `\pctex\texfmts`.

Note: If you currently have any of the following files from earlier releases of $\mathcal{AMS}$-TEX, backup and delete them before installing the new version. They are either irrelevant or superseded in the new version of $\mathcal{AMS}$-TEX, and it is best to remove them to avoid confusion. All of them except for the last one would be found in your TEX inputs directory; `amsplain.fmt` would be found in your TEX formats directory.

```
amsfil.chg  amsplain.tex  amsppt.sty   amsppt.mor   amstex.tex
amstex.chg  cyracc.def    cyrmemo.def  cyrmemo.tex  amsplain.fmt
```

Users who did not receive AMS-TEX on diskette from the AMS, or those using non-DOS implementations of TEX, should proceed now to section B.6.

B.3. Installing AMS-TEX (DOS/diskette)

The following files are used in the installation process for DOS implementations of TEX, for AMS-TEX 2.1:

`install.exe` `amsinst.bat` `amstex.ini`

For DOS installation, you need to know on which drive to install AMS-TEX. This should be the drive on which you already have installed TEX.

For PCTEX, you will probably want to select the first choice for each of the questions which the installation programs asks you. This will result in placing the AMS-TEX files in the directory `\pctex\texinput` and the TFM files in the directory `\pctex\textfms`.

For other DOS implementations of TEX, you will need to know the names of your TEX inputs directory and TEX TFM directory, as described earlier, so that you can enter them when prompted.

When you have the disk and directory information ready, place the disk labeled "AMS-TEX 2.1" in your floppy disk drive and type the following commands (if the disk is in drive B, substitute "b" for "a" in the first line):

`a:`	⟨*return*⟩
`install`	⟨*return*⟩

This will run the `install` program, which will ask you some questions. Enter the answers which you determined from reading the above paragraphs.

B.4. Running INITEX to Create Format Files (DOS)

To complete the installation procedure, you should create a format file. This will enable you to run TEX with AMS-TEX, or AMS-TEX and the AMSPPT preprint style, preloaded. This preloading will save quite a bit of startup time on slower systems. Note: Each format file takes up 150K–300K of disk space (depending on your implementation of TEX).

Warning: INITEX requires much more memory to run than regular TEX. The first time you try to run INITEX, you may get the message "`Not enough memory to run TeX`" or something similar (with simpler implementations, it may just crash). If this happens, you must remove as many memory-resident programs as possible (such as communications software and memory-resident utilities [TSRs]) and reboot your system to create enough memory to run INITEX. Consult the documentation for your implementation of TEX for more information on running INITEX.

You are now ready to create a format file so that AMS-TEX, or AMS-TEX and the AMSPPT preprint style, can be preloaded when you typeset a document. Before creating your format file, you will want to consider whether you habitually use the AMSPPT documentstyle. If you use other documentstyles rarely or never, then you would benefit from the use of a format file with `amsppt.sty` preloaded. If you are likely to use other documentstyles periodically, then you probably do not want to preload `amsppt.sty`. To make a simple AMS-TEX format file, proceed with the next paragraph. To make a format file with `amsppt.sty` preloaded, edit the file `amstex.ini` and remove the percent sign (comment character) at the beginning of the line `\documentstyle{amsppt}`, just before the `\dump` command. If you intend to use Type-1 outline versions of AMSFonts, read Appendix D before proceeding.

The TEX file named `amstex.ini` should now be installed in your TEX inputs directory. Once you have decided whether to create an AMS-TEX or an AMSPPT format file (see previous paragraph), run INITEX on `amstex.ini`:
For PCTEX, give the command

`tex amstex.ini -i` ⟨*return*⟩

For emtex, give the command

`tex386 -i amstex.ini` ⟨*return*⟩

For other implementations of TEX the form of the INITEX command may be different, e.g., `tex/i amstex.ini`.
This creates an AMS-TEX format file named `amstex.fmt`. If you included AMSPPT, you may wish to rename it `amsppt.fmt`.

Move the format files to the right directory. Some implementations of TEX, including PCTEX, will automatically place the format file in the proper directory. Otherwise you should now move the file manually into your TEX formats directory.

B.5. Using AMS-TEX 2.0+ (DOS)

On the distribution diskettes, or in a distribution obtained by FTP or from a Web site, a DOS batch file `amstex.bat` is provided, to make use of the format file more convenient. If you received the distribution on diskette, `amstex.bat` will have been placed by the installation procedures in the root directory of the drive where TEX is located; otherwise, you should install it there manually. Then, if you are connected to that directory or if it is in your system path, you would run AMS-TEX on a file called `filename.tex` by typing

`amstex filename` ⟨*return*⟩

B.6. Installing AMS-TEX (Generic)

Use these instructions if you didn't receive AMS-TEX on diskettes from the AMS, but obtained it by other methods, or if you have a non-DOS implementation of TEX. You will need to know the names of your TEX inputs directory, TEX TFM directory, and TEX formats directory, as explained in section B.2.

(1) Copy the following files into your TEX inputs directory: `amstex.tex`, `amsppt.sty`, `amssym.tex`, `amstex.ini`, and `amsppt1.tex`.
(2) There are three documentation files: `amsguide.tex`, `joyerr.tex`, and `amsppt.doc`. If you have a documentation directory, or wish to create one, then put these files there; otherwise they can be put in the TEX inputs directory.
(3) Copy the AMSFonts TFM files to your TEX TFM directory. If you don't plan to use any of the AMSFonts, you should still copy `dummy.tfm`, which is needed for AMS-TEX's syntax check option, and `msam*.tfm`, `msbm*.tfm`, and `eufm*.tfm`, which are needed for typesetting the *User's Guide*.
(4) You are now ready to create a format file so that AMS-TEX, or AMS-TEX and the AMSPPT preprint style, can be preloaded when you typeset

a document. Before creating your format file, you will want to consider whether you habitually use the AMSPPT documentstyle. If you use other documentstyles rarely or never, then you would benefit from the use of a format file with `amsppt.sty` preloaded. If you are likely to use other documentstyles periodically, then you probably do not want to preload `amsppt.sty`. To make a simple $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX format file, proceed with the next paragraph. To make a format file with `amsppt.sty` preloaded, edit the file `amstex.ini` and remove the percent sign (comment character) at the beginning of the line `\documentstyle{amsppt}`, just before the `\dump` command. If you intend to use Type-1 outline versions of AMSFonts, read Appendix D before proceeding.

(5) Check the documentation for your implementation of TEX to find out how to run INITEX and create format files. Format files greatly speed up processing when you are using a large macro package such as $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX. If your implementation of TEX doesn't automatically place format files in the TEX formats directory (check your documentation), you will have to either go to the TEX formats directory before running INITEX, or move the format files there after they are created.

If you are a PC user, return to section B.4, read the warning, then proceed to the paragraph beginning "The TEX file named `amstex.ini`".

Run the file `amstex.ini` through INITEX, to create the file `amstex.fmt`, which is a preloaded form of $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX. If you do not have an executable program or symbol `initex`, a typical command to perform this function is

`tex -i amstex.ini` ⟨*return*⟩

You will now have a file `amstex.fmt`. If you included AMSPPT, you may wish to rename it `amsppt.fmt`.

(6) Move the format file that you just created into your TEX formats directory, if you didn't create it there.

For details of how to use format files with your implementation of TEX, see your documentation. Typically, you use a format file by specifying it on the command line preceded by an ampersand, e.g., `tex &amstex filename`.

B.7. Getting a printed copy of the User's Guide

If you did not receive a printed copy of this User's Guide with your distribution, you can use your newly created $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX or AMSPPT format file to typeset the file `amsguide.tex`.

Appendix C
Installation Procedures – Macintosh (*Textures*)

C.1. Introduction

These instructions describe the installation of $\mathcal{AMS}$-TEX for use with *Textures*, on the Macintosh. There is one disk in the distribution. The files `amstex.tex` and `amsppt.sty` are *Textures* documents to be input by *Textures*. The file `amsppt.doc` is technical documentation for the macros defined in `amsppt.sty`. The file `amstex.ini` is used in the installation to create format files. The files `amsguide.tex` and `amstinst.tex` are the *Textures* source for this User's Guide.

The file `joyerr.tex` is a list of errata to the 1986 edition of *The Joy of TEX.* You may typeset it in *Textures* using your new $\mathcal{AMS}$-TEX format file (once it has been created). If you do not have AMSFonts 2.2, the characters in this file which come from the AMS symbol fonts will appear in the default system font. The file `AMSFonts 2.2 metrics` contains the TEX metrics information for AMSFonts 2.2. This file is required to use `amsppt.sty` even if you do not have AMSFonts 2.2. (**Note:** Even if you currently have AMSFonts 2.0, we *strongly* recommend that you obtain version 2.2, as the metrics have changed.)

$\mathcal{AMS}$-TEX Versions 2.0+ can be used with *Textures* without AMSFonts. However, $\mathcal{AMS}$-TEX Versions 2.0+ will not work with releases of AMSFonts previous to Version 2.0. Additionally, if AMSFonts 2.2 are to be used, they require *Textures* version 1.2 or higher. If you have an earlier release of *Textures*, you must upgrade before using these fonts. To upgrade *Textures*, contact the manufacturer: Blue Sky Research (see below, **Getting Help**).

Note: AMSFonts are available in Type-1 outline form from Blue Sky Research. If you are using these fonts, read Appendix D before proceeding.

C.2. If You Have a Previous Version of $\mathcal{AMS}$-TEX

Before installing the new version of $\mathcal{AMS}$-TEX, you should backup and delete from your hard disk any files which are related to previous releases of $\mathcal{AMS}$-TEX. In particular, you should remove the following files from your `Textures` folder (or any folders contained in your `Textures` folder):

```
amsfil.chg  amsplain.tex  amsppt.sty   amsppt.mor   amstex.tex
amstex.chg  cyracc.def    cyrmemo.def  cyrmemo.tex
```

and you should remove any previous $\mathcal{AMS}$-TEX format files from your `TeX formats` folder. These files are either irrelevant or superseded in the new version of $\mathcal{AMS}$-TEX, and it is best to remove them from your hard disk to avoid confusion.

C.3. Installing $\mathcal{AMS}$-TEX

If you do not have a folder named `TeX inputs` inside the `Textures` folder on your hard disk, create a new folder inside your `Textures` folder and name it `TeX inputs`. Also, if you do not have a `TeX formats` folder, create a new folder inside your `Textures` folder and name it `TeX formats`. Likewise, create a `TeX fonts` folder if you do not already have one.

To install the new version of $\mathcal{AMS}$-TEX on your system, copy the following files into the `TeX inputs` folder inside the `Textures` folder on your hard disk:

```
amstex.tex  amssym.tex  amsppt.sty  amsppt1.tex  amstex.ini
```

Then copy the file `amsfonts 2.2 metrics` into the `TeX fonts` folder inside of the `Textures` folder on your hard disk.

You are now ready to create a format file so that $\mathcal{A}\!\mathcal{M}\!\mathcal{S}$-TEX, or $\mathcal{A}\!\mathcal{M}\!\mathcal{S}$-TEX and the AMSPPT preprint style, can be preloaded when you typeset a document. Before creating your format file, you will want to consider whether you habitually use the AMSPPT documentstyle. If you use other documentstyles rarely or never, then you would benefit from the use of a format file with `amsppt.sty` preloaded. If you are likely to use other documentstyles periodically, then you probably do not want to preload `amsppt.sty`. To make a simple $\mathcal{A}\!\mathcal{M}\!\mathcal{S}$-TEX format file, proceed with the next paragraph. To make a format file with `amsppt.sty` preloaded, edit the file `amstex.ini` and remove the percent sign (comment character) at the beginning of the line `\documentstyle{amsppt}`, just before the `\dump` command. If you intend to use Type-1 outline versions of AMSFonts, read Appendix D before proceeding.

Make sure that Flash mode is off. You cannot create a format with Flash mode enabled.

Open the `TeX inputs` folder (inside your `Textures` folder) and double-click on the file `amstex.ini` to start running *Textures*. Make sure that the line `\input plain` is commented out (begins with a percent sign). If there is not a percent sign at the beginning of this line, insert one. Check under the Typeset menu to make sure that the Plain format is selected (there is a check mark next to it). Select "Typeset" from the Typeset menu. When the dialog box appears asking you what to name the format file, go through the folder hierarchy to place yourself inside the `TeX formats` folder inside your `Textures` folder. You may name the file what you wish, but `2.1` is a good idea. If you included `amsppt.sty` in your format file, name the format file `AMS-TeX/AMSPPT` or something similarly descriptive.

For more information about using formats in *Textures*, see the *Textures User's Guide*.

If you did not receive a printed copy of the *$\mathcal{A}\!\mathcal{M}\!\mathcal{S}$-TEX User's Guide* with your distribution, you can use your newly created $\mathcal{A}\!\mathcal{M}\!\mathcal{S}$-TEX or AMSPPT format file to typeset the file `amsguide.tex`.

C.4. Getting Help

Questions concerning *Textures* should be directed to:

Blue Sky Research
317 Southwest Alder, #1200
Portland, OR 97204
Phone: 800-622-8398 or 503-222-9571

Appendix D
Before Installing $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX: Facts About Fonts

D.1. Using AMSFonts in PostScript Type-1 form

The AMSFonts Version 2.2 have been converted to PostScript Type-1 outlines in two forms:

Blue Sky Research and Y&Y have created a collection containing all the typefaces, but only in 5, 7, and 10 point sizes; other sizes must be created by scaling. The $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX preprint style provides a way for authors to indicate that fonts should be loaded under this alternative scaling convention. If you are using the Blue Sky/Y&Y version of AMSFonts, insert the line `\PSAMSFonts` in the preamble of your file, before the `\topmatter` line.

Basil Malyshev has created a collection, called BaKoMa, containing the Computer Modern fonts as well as all sizes of the AMSFonts used in mathematics, but excluding the `wncy*` cyrillic fonts. The BaKoMa fonts can be used with no special action.

D.2. Using AMS Symbol Fonts

The preprint style automatically loads the Fraktur font and both fonts of extra symbols (`msam` and `msbm`), as well as all the symbol names, as described in the sections **Fonts** and **Symbol Names**. If these will not be used, and a version of `amsppt.sty` is desired that requires less memory than the default version, the loading of these resources can be suppressed. If `amsppt.sty` is to be included in your format file, this must be done before the format file is created.

Near the end of `amsppt.sty` in the initialization section, the following two lines appear:

```
\loadeufm \loadmsam \loadmsbm
\message{symbol names}\UseAMSsymbols\message{,}
```

To use `amsppt.sty` without AMSFonts, comment out both lines (place a `%` at the beginning of each line); to disable just the symbol names, comment out the second line. Extra math symbols can be loaded on demand with `\newsymbol` or by including `\UseAMSsymbols` in the preamble of a particular document.

D.3. Using Nine-point Fonts

Although they are not needed for any of the AMS packages, `amsppt.sty` contains code for providing nine-point fonts, commented out. If you intend to use these fonts, the relevant lines can be activated by removing the `%` signs from the beginning of each line; the code begins approximately 140 lines from the beginning of the file.

If `amsppt.sty` is to be included in your format file, this change (if desired) must be done before the format file is created.