ΔV EMA Electro Magnetic Applications, Inc.
7655 West Mississippi Avenue, Suite 300, Lakewood, CO 80226-4332 (303) 980-0070, Fax: (303) 980-0836

# EMA3D

## version 3.3

## Software Installation Guide

## for Windows

## 32-bit (x86) and 64-bit (x86-64)

EMA3D version 3.3.0 01-April-2009

# EMA3D version 3.3 Software Installation Guide for Windows

## C O N T E N T S

## Introduction

This Installation Guide is for the Windows version of EMA3D. Use this Installation Guide to install EMA3D on either 32-bit Windows (x86) or 64-bit Windows (x86_64). For other platforms, see the appropriate Installation Guide for that platform.

## EMA3D Installation Documentation

A copy of this document is also on the EMA3D CD, in the folder "win\installdocs".

## Installing CADfix - Use the "CAE Modeller" Setup Type

EMA3D uses the software product CADfix as a graphical front-end. The installations of EMA3D and CADfix are separate. The two products may be installed in either order.

When installing CADfix, the user is usually presented with a choice of "Setup Type" to install. The choices are usually:

1: CADfix Data Exchange (or sometimes called "DX")
2: CADfix CAE Modeller
3: CADfix license manager only

Use "CADfix CAE Modeller" when installing CADfix for use with EMA3D.

The "Data Exchange" or "DX" setup type is for automated CAD database translation and repair and does not contain certain features necessary for preparing a model for use with EMA3D.

The "CADfix license manager only" option can used to install the CADfix license manager on a machine without installing the full set of CADfix application files.

## Installing CADfix - Special Note for CADfix 7.1

If you are installing CADfix version 7.1, Service Pack 2 MUST be installed in order for the EMA3D CADfix GUI tools to work properly.

Contact your CADfix distributor to obtain CADfix 7.1 Service Pack 2.

## Overall Installation Procedure

The overall procedure for installing EMA3D is:

1) install the software - see section "Installing EMA3D"
2) install a license key - see section "Installing a License Key File"
3) locate the documentation - see section "EMA3D Documentation"
4) Additional Information:

- see section "gnuplot" for more information about gnuplot, a free third-party plotting program included with EMA software.

- see section "Adobe Acrobat Reader" for instructions on obtaining and installing Adobe Acrobat Reader if you do not already have Acrobat Reader on your system.

## Installing EMA3D

Perform the following steps to install EMA3D on Windows:

1) Log on as the Windows Administrator.

2) Load the EMA3D CD into the CD-ROM drive.

3) Using Windows Explorer, go to the "win32\ema3d" or "win64\ema3d" folder on the CD-ROM. Double-click on "Setup.exe" to begin the installation.

The installation program will give you some choices including installation location and setup type.

The default installation location is

C:\Program Files\EMA\EMA3D3.3.0

or

C:\Program Files (x86)\EMA\EMA3D3.3.0

The "Typical" setup type is recommended.

The "Custom" setup type gives you more control over what to install.

If you wish to install just the license server without installing any of the EMA3D application files or accessories, choose the "Custom" setup type and select just the licensing components of the installation. (See the section "License Server Installation and Startup").

NOTE: Even if you will not be running the license server on the machine on which you are installing EMA3D, it is recommended to install the licensing components if you choose a "Custom" installation type. The licensing components include some tools that are useful for working with license key files and querying the license server.

# Runnning EMA3D

## Introduction

EMA3D is a batch-style, non-interactive numerical simulation tool. Unlike most Windows programs, EMA3D is command-line-oriented rather than window-oriented. This means that it is run by entering the name of the program, and the name of an input file, at a Windows command prompt, rather than by clicking on an icon or a program shortcut.

The software program CADfix serves as a graphically-oriented, window-oriented, user-interactive front-end program for building/importing geometrical models and assigning properties for the EMA3D simulation. EMA3D itself, however, is a numerical solver that simply runs non-interactively for some period of time, performing computations based on information created within CADfix and generating output data files suitable for further analysis.

The general idea is to build or import a geometrical model within CADfix, assign properties for the electromagnetic simulation (also within CADfix), then export all this data to an input file for EMA3D. EMA3D reads the input file and runs non-interactively until the computation is finished.

## Running EMA3D

To run EMA3D, type the name of the program, "ema3d", at a Windows Command Prompt:

```
windows prompt> ema3d
```

If nothing happens, or if you get an error message like "The name specified is not recognized...", see "Appendix B: Windows PATH Environment Variable" near the end of this document.

EMA3D will prompt you for the name of an input file. You can give the input filename with or without the ".emin" extension (the file extension for EMA3D input files).

After checking the information in the input file for errors and consistency, EMA3D will proceed with the computation. See the User Manual Set for EMA3D for detailed information about using EMA3D and CADfix.

You can also supply the input file name as a command-line argument:

```
windows prompt> ema3d testmodel.emin
```

## EMA3D version

The exact version of EMA3D that is installed can be determined with the following command:

```
windows prompt> e3dver
```

It is a simple batch script that echoes the EMA3D version and date release.

This information can also be displayed from the following shortcut on the Start Menu:

Start Menu→Programs→EMA→EMA3D v3.3.0→About EMA3D

## Running the EMA3D/CADfix interfaces

Traditionally, EMA3D has been accompanied by two interface programs that enable it to interoperate with CADfix: the program "famtoema3d", which translates geometrical information and EMA3D problem information from the CADfix model database file to the EMA3D input file format; and the program "famfromema3d", which translates simulation result data from the EMA3D output file format to a CADfix result database file.

In the current release of EMA3D, the function of "famtoema3d" is performed by a GUI tool within the CADfix GUI. To find this tool, select the toolbox named "EMA3D_ReviewTool" from the drop-down list of toolboxes in the CADfix GUI, and click the button "EMA3DREV". The "Model Review Tool" will open, displaying summary information about the EMA3D simulation parameters in the CADfix database. The button at the bottom labeled "FTE" performs the "famtoema3d" conversion.

The function of "famfromema3d" is still a separate, command-line program, which is run from a Windows command prompt:

```
windows prompt> famfromema3d
```

famfromema3d will prompt you for the name of an EMA3D output file. You can also supply the output file name as a command-line argument:

```
windows prompt> famfromema3d testmodel.emout
```

NOTE: The EMA3D output file (*.emout file), and the corresponding CADfix database from which the model was built (*.fbm file), must both be in the current working directory when running famfromema3d.

NOTE: CADfix was called "FAM", for "Field Analaysis Modeller", in earlier releases. The name "FAM" or "fam" still persists in some places. The naming convention "famfromanalysis" or "famtoanalysis" is still the standard convention for programs that translate information between CADfix and an analysis program.

## famfromema3d for Different Versions of CADfix

famfromema3d is built using some CADfix executable code, and is therefore somewhat dependent on the version of CADfix being used for correct operation. The version of famfromema3d that is executed when you run "famfromema3d" as shown above, is built for CADfix 7.0.

The EMA3D installation also includes versions of famfromema3d for CADfix 5.1, 6.0, and 7.0. These versions have names that indicate which version of CADfix they are built for, and can be executed as follows:

For CADfix 5.1, use the following:

```
windows prompt> famfromema3d510
```

For CADfix 6.0:

```
windows prompt> famfromema3d600
```

For CADfix 7.0, you can use the following:

```
windows prompt> famfromema3d700
```

Or, for CADfix 7.0 you can just use "famfromema3d" as indicated above. "famfromema3d" and "famfromema3d700" are two copies of the same program with different names.

## EMA3D Documentation

The main EMA3D User Manual set can be accessed from the Start Menu. Look under

Start Menu→Programs→EMA→EMA3D v3.3.0

for the shortcuts to the EMA3D Manuals in Adobe Portable Document Format.

Some documentation does not have a shortcut on the start menu and is accessed by going directly to its location on your computer. Here is a full listing of the user manuals and documentation that are part of the EMA3D software installation:

### Installation Documentation

docs\install_ema3d.pdf
- EMA3D Installation Guide for Windows (this document)

docs\install_ema3d.txt
-text file version of install_ema3d.pdf

### EMA3D User Manual Set

(listed in order):

| | |
|---|---|
| docs\EMA3DGettingStartedManual.pdf | (#1) |
| docs\EMA3DOverviewManual.pdf | (#2) |
| docs\EMA3DTrainingManual.pdf | (#3) |
| docs\EMA3DProjectObjectivesManual.pdf | (#4) |
| docs\EMA3DPreparationManual.pdf | (#5) |
| docs\EMA3DReviewToolManual.pdf | (#6) |
| docs\EMA3DExecutionManual.pdf | (#7) |
| docs\EMA3DPostProcessingManual.pdf | (#8) |

EMA3D tools/utilities documentation

docs/ema3d_utilities_ref.pdf

- EMA3D Utilities Reference manual for the command-line utilities included with EMA3D (PDF format)

docs/ema3d_utilities.README

- list and overview of the command-line utilities

docs/addfiles.README
docs/derivfile.README
docs/fft.README
docs/filter.README
docs/makesource.README
docs/multisource.README
docs/shiftsource.README
docs/source.README
docs/source2.README
docs/sumfile.README
docs/tfunc.README
docs/writenode.README
docs/writeprobe.README
docs/xferNewSource.README

docs/compute_Pavail.README
docs/compute_Pin.README
docs/compute_Pout.README
docs/compute_Prefl.README
docs/compute_Skn.README
docs/compute_Snn.README
docs/compute_TrFn.README
docs/compute_Vin.README
docs/compute_Znn.README
docs/RCS.README
docs/RXS.README

- individual read-me files for each utility (text format) (same information as in the EMA3D Utilities Reference manual)

gnuplot documentation

docs\gnuplot.pdf
- Gnuplot manual
docs\gpcard.pdf
- Gnuplot reference card
docs\tutorial\tutorial.pdf
- Gnuplot tutorial

Documentation for gnuplot is also available in the form of the help system within gnuplot after you start gnuplot.

Rainbow Sentinel LM license manager software

lic\docs\SLM71sys.pdf

- Rainbow Sentinel License Manager System Administrator's Guide (for system administrators or advanced users)

Viewing Documentation

Files with a name like "README", "*.readme", "*.README" or "*.txt" are text files that may be viewed with any text file viewer (such as Notepad or Wordpad on Windows).

Files with extension .pdf are Adobe Portable Document Format (PDF) files. They require Adobe Acrobat Reader to view them. To view these files, first launch Adobe Acrobat Reader, go the the "File" menu, "Open..." command and navigate to the location of the desired document.

If you do not have Adobe Acrobat Reader on your system, see the section "Adobe Acrobat Reader", below, or consult your system administrator.

## EMA3D Utilities

EMA3D Utilities

Several command-line utilities, useful in working with data files produced by and used with EMA3D, are part of the EMA3D distribution. They are located in the "bin" folder of the EMA3D installation. You can run them from a command prompt the same way you run ema3d. For example,

windows prompt> writeprobe

EMA3D Utilities Documentation:

Documentation on the meaning and usage of the EMA3D command-line utilities is installed in the "docs" subdirectory of the EMA3D installation (default installation location shown):

C:\Program Files\EMA\ema3d3.3.0\docs

The file "ema3d_utilities.README" contains a listing and top-level description of all of the utilities. Each utility also has its own README file, and all of them are documented in the EMA3D Utilities Reference Manual. See the section "EMA3D Documentation".

You can also access the EMA3D Utilities Reference Manual from a shortcut on the Windows Start Menu:

Start Menu→Programs→EMA→EMA3D v3.3.0→EMA3D Utilities Reference

## gnuplot

EMA3D result waveforms may be viewed with any available third-party plotting package. The freely-available "gnuplot" is suitable for this purpose, and is included on the EMA3D software CD-ROM. Gnuplot may be installed either by the EMA software installation program along with the rest of the EMA software installation, or separately.

### install gnuplot with EMA software installation

By default, gnuplot is installed automatically by the installation program. If you wish to not have gnuplot installed with the EMA software, choose the "Custom" installation type and un-check the gnuplot component.

The installation program adds the gnuplot "bin" folder to the value of the environment variable PATH, so that gnuplot may be run from a command line. The name of the Windows version of the gnuplot program is "wgnuplot".

example:

windows prompt> wgnuplot

There will also be a shortcut on the Start Menu:

Start Menu→Programs→EMA→EMA3D v3.3.0→gnuplot 4.0.0

### install gnuplot separately

gnuplot may be installed separately from the EMA software at any time. To install gnuplot separately, go the the "win\gnuplot4.0.0" folder of the CDROM, and unzip the file "gp400win32.zip" to some location on your hard drive. The location to which you unzip the .zip file will be the installation location for gnuplot. You can manually create shortcuts to "wgnuplot.exe" on your desktop or start menu if you wish.

### DISLCAIMER

Gnuplot is free, third-party software provided as a convenience to EMA software end-users in accordance with the Gnuplot Copyright. EMA does not provide support for gnuplot; it is included "as-is" on the EMA3D CD and in the EMA software installation.

See "Appendix E: Gnuplot Copyright" for the Gnuplot Copyright statement.

For more information on gnuplot, visit the main gnuplot web site at:

http://www.gnuplot.info

## Adobe Acrobat Reader

Most of the manuals included with the EMA3D distribution are in Adobe Portable Document Format (PDF). Viewing them requires Adobe Acrobat Reader, which is available for free.

### Acrobat Reader from Adobe

Acrobat Reader can be obtained from the Adobe web site at:

http://www.adobe.com

### Acrobat Reader from the EMA3D CD

Acrobat Reader is included on the EMA3D CD for convenience. It is not installed by the installation script, but it can be installed separately if you do not have Adobe Acrobat Reader on your system. Look in the subfolder "win\acrobat" of the the CD-ROM. You will find a file named something like "AdbeRdr....exe" (the middle part of the filename will vary). Double-click on this file to begin the Acrobat Reader installation.

## License Server Installation and Startup – Reprise License Manager

### Overview

The Windows 32-bit and Windows 64-bit versions of EMA3D use the Reprise License Manager (RLM) from Reprise Software.

EMA3D using RLM supports either a standalone license or a floating/network license.

To use a floating/network license key, you will need to install and start the license server. Use the following instructions to install and start the RLM license server on a Windows machine.

If you wish to run the RLM license server on another platform, see the EMA3D Installation Guide for that platform for instructions.

If you are using a standalone license, setting up the license server is not necessary, and is not recommended, as it may confuse things. If you are using a standalone license, skip this section and go to the section "Installing a License Key File".

### License Server Installation

1) Select a machine to be the license server

2) Run the EMA3D setup from the EMA3D CD to install the license server software on this machine.

- The "Typical" installation type will install all of the EMA3D application files plus the license server software.

- To install just the license server software and associated utilities without installing all of the EMA3D application files, select the "Custom" installation type and make sure only the "License Server & Tools" component is checked.

NOTE: If you have already run a "Typical" installation to install EMA3D and also wish to use this same machine as the license server, you do not need to run the installation again.

License Server Setup – Register as a Windows Service

Before being used, the license server must be loaded as a Windows service. To do this:

1) Log on as the Windows Administrator.

2) Using Windows Explorer, go to the license server folder. This should normally be the "lic" folder under the EMA3D software or license server installation location. It will typically be something like:

    C:\Program Files\EMA\EMA3D3.3.0\lic

3) Run the batch file "rlm_winservice_register.bat" in the "lic" folder by double-clicking on it.

The license server is now registered as a Windows service and can be controlled from the Windows Services control application.

NOTE: If you run "rlm_winservice_register.bat" more than once, you will get some sort of error message because it is already registered. If you get some sort of error message, check the Windows Service control application to see if the RLM License Server service has already been registered.

NOTE: The batch file "rlm_winservice_remove.bat" can be used to un-register the RLM License Server as a Windows Service.

License Server Startup

The last step is to configure the startup of the license manager.

1) Find the Services management application for managing Windows services.

NOTE: This can typically be found somewhere like

Control Panel→Services;

but varies slightly for different versions of Windows. Consult your system administrator or Windows documentation, or contact EMA for assistance, if you do not know where to find this.

2) Find "Reprise LM" in the list of services. Double-click on it to display the startup-configuration dialog. Choose "automatic" or "manual" startup type as desired.

- "Automatic" is recommended; this will start the license server service whenever the machine boots.

- If you choose "manual", you will have to manually start the license server service each time you reboot the computer, either from the "Services" control application, or from a command prompt using the Windows "net start" command.

NOTE: You can press "Start" to start the license server now without re-booting the machine.

3) Click "OK" to dismiss the dialog box; then you can close the Services management application.

## License Server Query – command-line tool – rlmutil and rlmstat

You can use the command-line utility "rlmstat", in the license server directory, to query the license server and check its status.

example:

```
windows prompt> cd /d C:\Program Files\EMA\EMA3D3.3.0\lic
windows prompt> .\rlmstat -a
```

The "-a" argument shows all information. Omitting the "-a" will give a shorter status summary with less information.

The above example will query the license server running on the local host. To query an RLM license server running on another machine, you can use the "-c port@host" argument:

```
windows prompt> .\rlmstat -c 2764@server-name -a
```

where "server-name" should be replaced with the name of the machine on which the RLM license server that you wish to query, is running. Port 2764 is the port on which RLM accepts query requests and license requests.

The command "rlmstat" is just one sub-command of the "rlmutil" utility, which can perform several license management functions. Enter "rlmutil" at a Windows Command Prompt to see a summary of the functions and options available.

## Managing the License Server with the Embedded Web Interface

The RLM license server has an embedded web interface which can be used to perform some management functions and check its status.

To use this feature, start a web browser on any machine and go to the following URL:

http://server-name:9000

NOTE: "server-name" should be replaced with the name of the machine on which the license server is running. The RLM embedded web server interface accepts connections on port 9000.

## Installing a License Key File

### Overview

The Windows 32-bit and Windows 64-bit versions of EMA3D use the Reprise License Manager (RLM) from Reprise Software.

EMA3D using RLM supports either a standalone or floating/network license.

### Overall Procedure for Obtaining and Installing a License Key File

1) Generate locking information for the machine(s) on which you are running EMA3D (for a standalone license key), or for the license server machine (for a floating/network license key).

2) Transmit the locking information to EMA. You will receive one or more license key files (usually by e-mail).

3) Install the key file(s) in the correct location(s).

4) For a floating license key, start or re-start the license server to pick up the new key file.

For instructions for installing and starting the license server for a floating license key, see the section "License Server Installation and Startup".

Follow the instructions below for steps 1-4 above:

### Step 1 & 2) Obtain machine locking codes and transmit them to EMA

#### Machine Locking Codes

To generate the machine locking code(s) for Windows, use ONE of the following two methods.

NOTE: If you are using a floating/network license key, do this on the license server machine only. If you are using a standalone license key, do this on each of the machine(s) where you are running EMA3D.

METHOD #1: Shortcut on Start Menu

Click on the following shortcut on the Start Menu:

Start Menu→Programs→EMA→EMA3D v3.3.0→Show Machine ID (for licensing)

If there is no such shortcut on your Start Menu, use METHOD #2 below.

METHOD #2:  Run "hostid.bat" from Windows Explorer

Using Windows Explorer, navigate to the license server and tools folder of the EMA3D or license server installation.  This will typically be something like:

C:\Program Files\EMA\EMA3D3.3.0\lic

Find the batch file "hostid.bat" and double-click on it to run it and display the locking codes:

example output from "hostid.bat":

```
rlmhostid v3.0 Copyright (C) 2006-2007, Reprise Software, Inc. All rights
reserved
Hostid of this machine: 000bdb5c33c6
000bdb5c33c6
ip=104.111.113.24
host=workstation1
Press any key to continue . . .
```

When you have obtained the "Locking Codes" for your machine(s), transmit the information to EMA and EMA will send the appropriate license key file(s).

### Step 3) Install license key file(s)

License Key File Installation – standalone license key

The license key file will usually be named "ema3d.lic" or "ema.lic".

To install a standalone EMA3D license key file, place the key file in the "bin" folder of the EMA3D installation.  This should be the same folder containing the EMA3D executable, "ema3d.exe".  It will typically be something like:

C:\Program Files\EMA\EMA3D3.3.0\bin

Now the application should automatically find the license key file when you run it.

License Key File Installation – floating license key file

A floating license key file will usually be named "ema3d.lic" or "ema.lic".

To install a floating EMA3D license key:

1) Place the key file "ema3d.lic" or "ema.lic" in the license server directory. This should be the directory containing the license server executables "rlm.exe" and "emalm.exe", and other licensing-related tools. It will typically be something like:

"C:\Program Files\EMA\EMA3D3.3.0\lic"

2) If the license server is already running, stop and re-start the license server to pick up the new key file. Otherwise, start the license server (you can start it from the Windows services control application).

NOTE: If the "Reprise License Manager" is not listed as one of the services in the Windows Services control panel application, then it must be registered as a Windows service before you can do this. See the section "License Server Installation and Startup".

NOTE: If the license server is to manage licenses for several EMA products, you can put the the various .lic files for the different products into the license server directory and the license server should find them all.

You can verify that the license server has loaded the license keys by using the "rlmstat" command, or the RLM License Server embedded web interface, as described in "License Server Installation and Startup".

Client Configuration for Floating License

After the license server is installed and started, and a floating license key file has been installed, the client (machine on which EMA3D is running) must be configured to enable it to find the license server machine and check out a license.

To do this, set the environment variable RLM_LICENSE on the client machine to 2764@server-name:

environment variable name: RLM_LICENSE
value: 2764@server-name

NOTE: "server-name" should be replaced with the name of the machine on which the RLM license server is running.

This can be set from the "Environment Variables" dialog box in the Windows "System Properties" application. This can usually be found somewhere like:

Start Menu → Settings → Control Panel → System → Advanced Tab

Then click on "Environment Variables".

NOTE: it is recommended to set this in the "System Variables" section so that it will work for all users. The "User Variables" section only applies to the currently-logged-on user.

You can also set RLM_LICENSE temporarily within a Windows Command Prompt session for testing purposes.

example of setting RLM_LICENSE in a Windows Command Prompt:

```
windows prompt> set RLM_LICENSE=2764@server-name
windows prompt> ema3d testmodel.emin
```

Doing this will only have an effect within the current Command Prompt and will not be permanent.

NOTE: If RLM_LICENSE is already in use for some other purpose (such as a license server or key file for a product from some other vendor using RLM), the environment variable emalm_LICENSE can be used instead:

example (Windows Command Prompt):

```
windows prompt>set emalm_LICENSE=2764@server-name
```

Or emalm_LICENSE can be set in the System Properties Control Panel application as described earlier.

NOTE: emalm_LICENSE must be spelled exactly as shown: "emalm" is lowercase, "LICENSE" is uppercase.

## License System Documentation and Further Information

For more detailed or advanced information about the Reprise License Manager, refer to the "RLM End-User Manual", located in the EMA software installation at:

<install_dir>\lic\doc\RLM_Enduser.html

## Appendix A: EMA3D Environment Variables

EMA3D is tied together with CADfix through several environment variables. These environment variables convey to CADfix, the locations of certain files provided by EMA, which are incorporated by CADfix into the operation of the CADfix GUI.

These variables are set automatically by the installation program, so normally you do not need to worry about them.

If you experience trouble with environment variables, or wish to do something unusual with your installation, the following is a list and description of the required EMA3D environment variables, and their required values.

Symptoms of trouble with EMA3D environment variables may include:

- EMA3D CADfix GUI toolboxes or tools not appearing under the drop-down list of toolboxes in the CADfix GUI

- EMA3D macros not being found when you try to invoke them from CADfix (either from a tool button or by name from the CADfix command-prompt)

- a TCL error to the effect of "unknown command" or "command not found" when you try to launch an EMA3D CADfix GUI tool.

**EMA3D Environment Variables for CADfix**

| Variable | Meaning and required value |
|---|---|
| CADFIXSITECONFIG | Conveys to CADfix the location of the custom site-level CADfix configuration file, named "CADfix", which contains the definitions of the EMA-provided CADfix toolboxes and tool buttons which should appear in the CADfix GUI.<br><br>Typical value:<br><br>C:\Program Files\EMA\EMA3D3.3.0\FAMmacros |
| FAMMACROPATH | Conveys to CADfix the location of the custom EMA macros invokable from within CADfix either by name, or (for some macros) from a tool button inside an EMA toolbox.<br><br>Typical value:<br><br>C:\Program Files\EMA\EMA3D3.3.0\FAMmacros |

EMATCL

Conveys to CADfix the location of TCL source files that implement the functionality of some of the EMA CADfix GUI tools that appear in some of the EMA toolboxes within CADfix.

Typical value:

C:/Program Files/EMA/EMA3D3.3.0/TCLsrc

IMPORTANT NOTE: the value of this particular environment variable must contain forward-slashes, as shown, not backwards-slashes like a typical Windows directory pathname. This is due to the way CADfix reads this particular environment variable. Forward-slashes are necessary for the value of the EMATCL environment variable only; other environment variables can use the typical Windows backwards-slash.

EMABITMAPS

Conveys to some of the EMA CADfix GUI tools, the location of bitmaps which are displayed for illustrative purposes in some of the EMA CADfix GUI tool dialog boxes.

Typical value:

C:\Program Files\EMA\EMA3D3.3.0\TCLsrc

**Additional environment variables not related to CADfix**

| Variable | Meaning and required value |
|---|---|

PATH

Conveys to the system, the locations of directories in which to look for executable programs run from the command line.

Typical values added by installation program:

C:\Program Files\EMA\EMA3D3.3.0\bin
C:\Program Files\EMA\EMA3D3.3.0\gp400win32\gnuplot\bin

**Environment variables used by Reprise License Manager**

Normally the application or license server finds the license key file automatically if it is placed in the correct location, which is the application binary directory for a standalone license, or the license server binary directory for a floating license.

However the following environment variables can help RLM find the license key file, or help the application find the license server, if things are not working.

| Variable | Meaning and required value |
|---|---|
| RLM_LICENSE<br>or<br>emalm_LICENSE | Specifies the location of the license key file or license server.<br><br>typical value:<br><br>C:\Program Files\EMA\EMA3D3.3.0\bin\ema3d.lic<br><br>or<br><br>2764@server-name<br><br>emalm_LICENSE can be used instead of RLM_LICENSE if you are already using RLM_LICENSE for something else (such as products from other vendors using RLM). |

For more information or assistance with environment variables, consult your Windows documentation or system administrator.

## Appendix B: Windows PATH Environment Variable

Unlike most Windows programs, EMA3D is command-line oriented rather than window-oriented. This means that EMA3D and its utilities are used by typing the name of a program at a Windows Command Prompt, rather than opening the program by clicking on an icon on the Windows Start Menu or Desktop.

When you run a program by typing its name at a command prompt, Windows must have a way to find the location of the program in order to run it. This is accomplished through the Windows environment variable called PATH. PATH contains a list of folders, which are the locations of programs that a user might want to run from the command prompt.

When you install EMA3D using the automatic installation program, the installation program adds the full path name of the EMA3D "bin" folder to the PATH environment variable. The "bin" folder is where the EMA3D executable files are located.

If you get an error message saying something like "The name specified is not recognized..." when you try to run EMA3D as instructed in the section "Running EMA3D", this probably means the installation program was not able to add the EMA3D "bin" folder to the value of PATH. (If you get an error message from EMA3D indicating that it cannot obtain a license to run, this is a different error and only means that you must install a license key.) If this happens, you can manually add the EMA3D "bin" folder to the value of PATH.

The typical location of the "bin" folder will be something like:

C:\Program Files\EMA\EMA3D3.3.0\bin

The installation program also adds the gnuplot "bin" folder to PATH. This is typically:

C:\Program Files\EMA\EMA3D3.3.0\gp400win32\gnuplot\bin

NOTE: The procedure for editing environment variables can vary somewhat for different versions of Windows, so instructions are not included here. Consult your Windows documentation or system administrator, or contact EMA for assistance.

IMPORTANT NOTE: DO NOT REPLACE OR DELETE ANY EXISTING VALUE OF PATH!

If you edit the PATH environment variable, it is important to remember that you should only ADD one folder path name to the value of PATH. DO NOT REPLACE OR DELETE ANY EXISTING VALUE OF PATH! If you do you will harm your system configuration. Just ADD one folder path name to the value of PATH, separated from the rest of the list of values by a semicolon (;).

## Appendix C: Platform Compatibility & System Requirements

The following are the system requirements for EMA3D version 3.3 for Windows.

Note that these are the system requirements for EMA3D only. CADfix (a separate software package that serves as a graphical front- and back-end to EMA3D) has its own system requirements that are separate from those listed below for EMA3D. Consult the CADfix Installation Guide for system requirements for CADfix.

### System Requirements (32-bit Windows)

**Hardware Platform**:

| | |
|---|---|
| processor: | Intel x86-family processor or compatible |
| hard disk space (installation): | 175 MB |
| hard disk space (user)*: | 5 GB minimum, 25 GB or more recommended |
| system memory**: | 500MB minimum, 1GB - 4 GB recommended |
| swap file size: | appropriately proportional to system memory (for example, 100% to 150% of system memory size is one commonly used rule of thumb) |
| graphics card/display***: | no graphics card or display requirement |

**Software Platform**:

| | |
|---|---|
| operating system: | Windows XP 32-bit (also runs on Vista 32-bit) |
| graphics system***: | no graphics requirement |

### System Requirements (64-bit Windows)

**Hardware Platform**:

| | |
|---|---|
| processor: | Intel x64-family processor or compatible (also called "x86_64", "Intel64", or "AMD64") |
| hard disk space (installation): | 175 MB |
| hard disk space (user)*: | 5 GB minimum, 25 GB or more recommended |
| system memory**: | 500MB minimum, 1GB - 8 GB recommended |
| swap file size: | appropriately proportional to system memory (for example, 100% to 150% of system memory size is one commonly used rule of thumb) |
| graphics card/display***: | no graphics card or display requirement |

**Software Platform**:

| | |
|---|---|
| operating system: | Windows XP x64 (also runs on Vista x64) |
| graphics system***: | no graphics requirement |

*Disk Space: User disk space requirements vary significantly depending on the amount of input and output data required for a particular EMA3D problem (input/output data file size), and the amount of space required for associated data files that may be produced in the course of pre- or post-simulation analysis. In fact, input and output data file size can vary for the same problem depending on length of simulation, number of output probes and time-spacing of output data points, and other factors. Some EMA3D problems may use only a few megabytes for the various problem files; other problems can generate hundreds of gigabytes of data. Since disk space is rather cheap, a good rule of thumb is "the more, the better".

**Memory: System memory requirements vary significantly depending on what types of problems you want to solve with EMA3D. The memory image size of a particular EMA3D problem is affected by many factors related to the nature of the problem and how you are solving it. EMA3D itself imposes no upper limit on the possible memory image size of an EMA3D computation; on the other hand, some useful EMA3D problems can be solved with only a few kilobytes of memory. The requirements mentioned here are rough guidelines only, and should allow you to solve a variety of useful EMA3D problems.

Note that these are memory requirement suggestions for the EMA3D problem memory image size by itself, and does not include memory required by the operating system or other software. For best performance, additional memory should be allowed for the operating system and/or other applications or system software.

***Graphics: EMA3D is a command-line, non-interactive batch style computational tool and has no particular graphics requirements; it can be run in a non-graphical ASCII terminal session if desired.

On the other hand, CADfix has its own graphical requirements which should be consulted for best results with CADfix. See the Installation Guide for CADfix for graphics and other system requirements for CADfix.

## Appendix D: CADfix Compatibility

EMA3D version 3.3 is designed for use with CADfix versions 6.0, 7.0, and 7.1.

CADfix is a product of Transcendata Europe Ltd.

## Appendix E: Gnuplot Copyright

Gnuplot is distributed with EMA software in accordance with the Gnuplot Copyright, quoted here:

GNUPLOT v4.0.0 COPYRIGHT