Ares Acoustical System

User Manual

Acoustical and Audio Measurement and Design Tools

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Notice

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The user agrees not to distribute the Ares software to any non-licensed third party, attempt to disable the licensing system, or reverse engineer the operation of the program or its hardware components.

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Document Revision History

Version	Date	Comments
1.00	October, 2012	Initial documentation release
1.01	April, 2013	Added Frequency Response Module
1.10	October, 2013	Added Modeler Module
1.11	January, 2014	Added MAE102 flow impedance documentation
1.12	January, 2014	Added rigid element documentation
1.13	April, 2015	Separated module manuals, added SIMA module
1.14	April, 2015	Updated installation files description
1.15	August, 2016	Ares Preference dialog box added

Introduction

Ares is a collection of measurement and design tools for acoustical and audio applications provided by McIntosh Applied Engineering, LLC (MAE). All of the tools are accessed through the Ares GUI program, a Microsoft Windows application. A screen shot of the GUI is shown below.
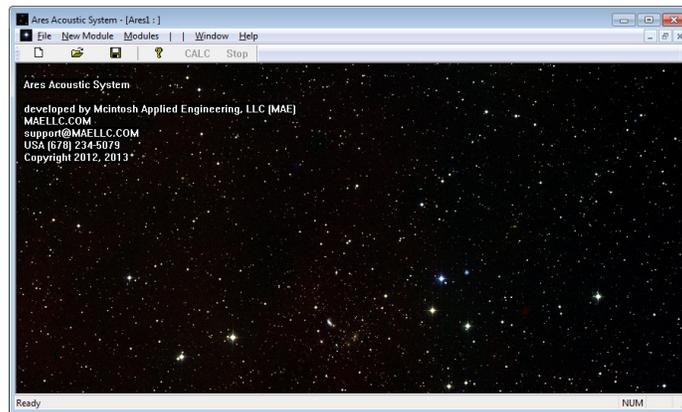
For the latest information about Ares, see the MAE web site at MAE.COM. For information requests or support, use the info@MAELLC.COM and support@MAELLC.COM email addresses. For the fastest possible support response, call the US number (678) 234-5079.

Installation and Licenses

Ares will run on any edition of Windows that is XP or newer. It does not have an installation program.

The Ares installation consists of a single executables, a masks directory and several PDF's, one for each Ares module:

        Ares.EXE   - the main GUI
        Ares.pdf   - Ares overview manual
        masks   - directory with frequency response masks used by the Modeler's Graph element
        Ares Coordinate Mapper Module.pdf
        Ares Flow Impedance Measurement Module.pdf
        Ares Surface Impedance Measurement Module.pdf
        Ares Frequency Response Measurement Module.pdf
        Ares Modeler Module.pdf

The manuals can be opened manually or the Ares *Help* menu can be used to open them.

To obtain the files, contact MAE at support@MAELLC.COM.

The Ares installation is done manually. First, create a directory on your computer, probably called "Ares", and copy these two executables to that directory. To run Ares, launch the Ares.EXE program. It will likely be useful to create a shortcut for the program on your desktop.

Ares requires a license to operate. Once you apply for an Internet License, you cannot move the Ares.EXE program to another directory, or rename the directory or your license will become invalid. The Ares license will ONLY be valid for Ares running out of the original directory that the program ran from when the license request was made.

Obtaining an Internet License

Every time Ares runs, it checks the internet for a valid license associated with your installation. If you do not have internet access, or if Windows blocks this access, Ares will not be able to run.

The first time you run Ares, it will require that you fill out a dialog box with your information. Please clearly identify who you are and your contact information. Then press the "Send License Request" button.
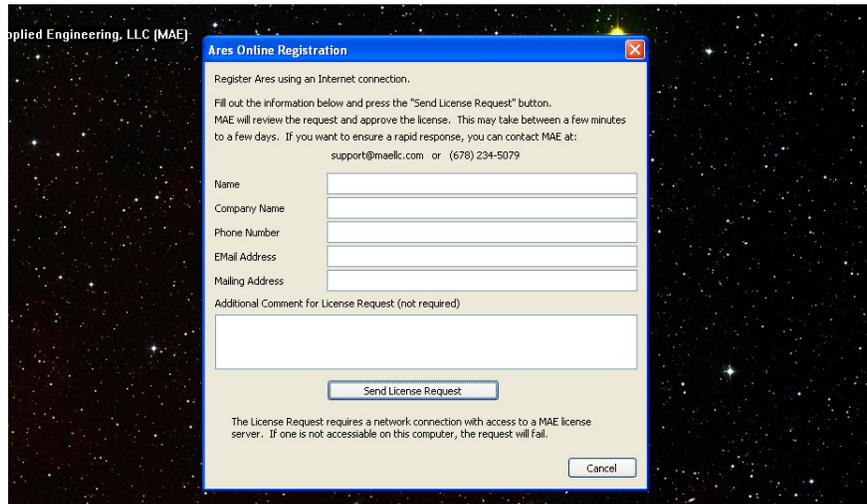
Ares should respond with a dialog box indicating that the request was successfully sent.

If it fails, you'll receive an error message indicating a problem. Usual errors are

- Ares can't contact the license server

To verify that Ares can contact the license server, run the program "MAE Internet Access Test.exe" included with the Ares release files and verify that the MAE web site can connected to. If it can't be, either your internet is down, or your IT services are blocking access to it. Contact your IT people to allow access to MAELLC.com.

- Ares doesn't have write permissions to the installation directory

Ares must create and modify the Ares.ARES_LIC license file which is placed in the same directory as the Ares.exe program file. If it doesn't have write permissions to the Ares directory, it won't be able to create the license file and the registration will fail.

- The Ares directory has unusual characters in it

Make sure that the Ares directory doesn't contain any special characters such as -, &, :, etc.

Once the request is sent, Ares will terminate. You now need to wait for MAE to approve the license request. This process will take between a few minutes to a few days. If you need instant access, you can contact MAE at (678) 234-5079 and request immediate attention.

Once the request is approved, rerun Ares. After you agree to the terms in the Disclaimer, you should see the Ares main screen with the splash screen as shown below. (Note - if the program seems frozen, it may be having problems connecting with the Internet License Server. If this happens, Ares should timeout within 30 seconds.)

Once the license has been enabled by MAE support, you will be able to run Ares which will contact the MAE license server and check out your license. When Ares exits, it will release the license and allow others to make use of it.

Ares has an option that will allow you to check out a license. It is available through the Preferences dialog box which is discussed later in this manual.

Ares Modules

Ares is a collection of measurement and design tools, all accessible from a single Windows GUI program. The list of enabled modules appears in the *New Module* menu as shown below.
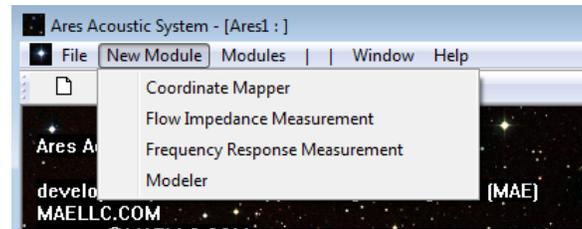
Each of the modules are described in their own sections in this manual, but a brief summary of each one is given below.

Coordinate Mapper

    A useful tool to measure positions from a two dimensional image. The module imports a image such as a bitmap or jpeg and establishes x-y coordinates for the image. The user can then use the mouse and mark positions on the image. The x-y coordinate of those positions are then computed based on the x-y coordinates that were established. Useful for reading coordinates from a graph, or from a photograph of a mechanical part.

Flow Impedance Measurement

    Uses custom measurement hardware provided by MAE to measure the acoustical, complex frequency dependent flow impedance through acoustical items such as cloth, perforated plates, membranes, ports, etc. The impedance can be imported into the Modeler module so exact impedance values can be used to improve the modeling results.

Surface Impedance Measurement

    Uses custom measurement hardware referred to as SIMA (Surface Impedance Measurement Apparatus) which measures the impedance into a surface or structure. An example is the impedance into a rear speaker enclosure, into a horn, a port, or an ear. It extremely useful to see the impedance that the rear of a speaker sees in an actual application instead of trying to discern its effect on the SPL that the speaker produces. The impedance can be imported into the Modeler module so exact impedance values can be used to improve the modeling results.

Frequency Response Measurement

    Uses a two channel PC's sound card to measure complex transfer functions. Allows for input and output calibration, so the results have meaningful calibrated units. Will interface to a B&K NEXUS microphone amplifier to read microphone sensitivities. Multiple telephony tools are included to compute values from the measured responses including: RLR, SRL, TCLw, side tone (STMR), and channel noise. The transfer function data can be imported into the Modeler module so measure and modeled responses can be compared and correlated.

Modeler

A multi-physics modeler that combines electrical, mechanical, acoustical and thermal elements to solve for dynamic linear systems. Extensive graphing features allow for a wide range of values to be displayed including, voltage, current, impedance, force, velocity, pressure, volume velocity, and displacement. Multiple telephony tools are included such as RLR, SLR, P50 shaping, psophometric weighting, and Zwicker loudness metrics.

To create an instance of a module, select the module from the *New Module* menu.
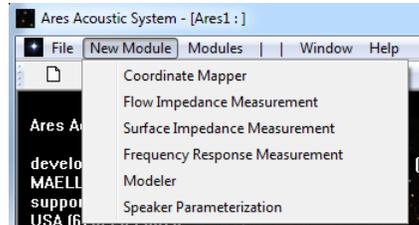
You can create an unlimited number of any module instance as needed. After a module is created, that module will become active and the Ares window will change its display to reflect the interface for that module. For example, when a Coordinate Mapper module is created, the Ares window will appear as shown below.
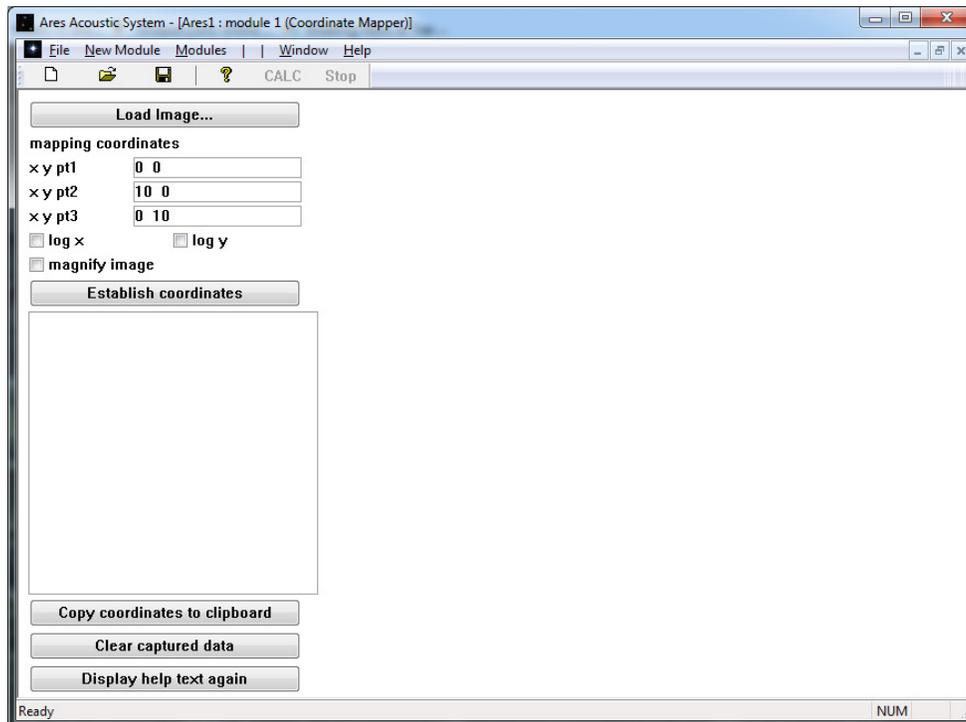
To see a list of the modules that have been created, select the *Modules* menu. As shown below, one Coordinate Mapper module and two Flow Impedance Measurement modules have been created.
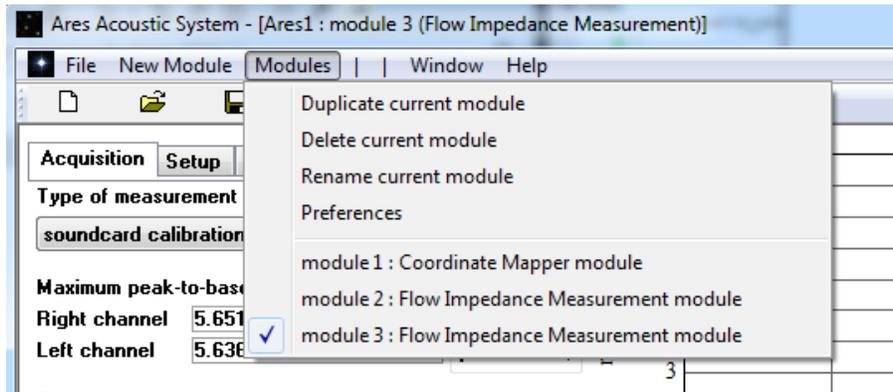

When a file is saved, all of the module instances, and the data they contain, are saved to the same *.ARES file. Having multiple module instances in one Ares file allows for an efficient organization of data and design files.

Renaming, Duplicating, and Deleting Modules

By default, a new module will be given the name "module #", where # is an incremented number. The module name can be changed by using the *Rename current module* command in the *Modules* menu. Renaming a module name is a means to give a module instance a more meaningful name.

The *Module* menu also allows you to delete or duplicate the current module instance. Duplicating a current module is especially useful when using the Modeler module. It allows you to duplicate a model that you can use to try out design modifications without changing the original model. If those changes aren't useful, you can simply delete the model. Or if they are useful, you use the new module instance as your main design.

Each module type can create its own unique menus, but not all of them will. If a module does create its own menus, those menus will appear between the || bars in the main Ares menu. This is shown below for the modeler module.
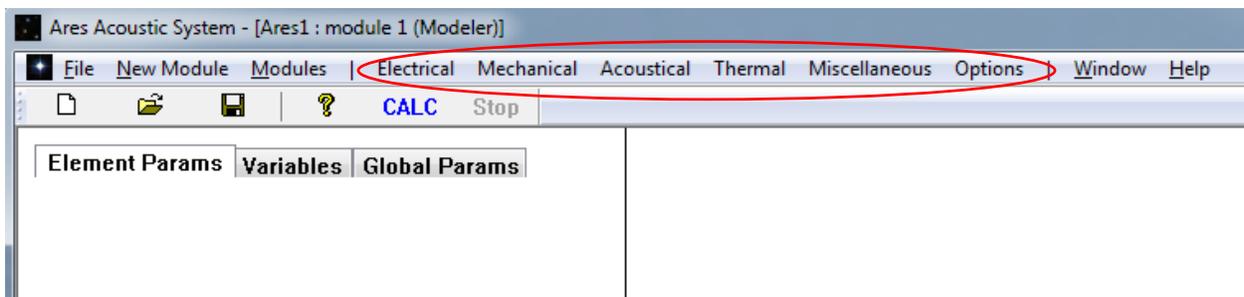
Preferences dialog box

The *Modules* menu contains a *Preference* option that brings up the Ares Preferences dialog box shown below.

This dialog box allows you to set the font for the controls as well as to keep your Ares license checked out.

It is suggested that you try several font sizes and types to see which one works best for you. Typically you'll want to select a relatively small font so all of the control characters fit on the screen and the controls take up as little space on the screen as possible.
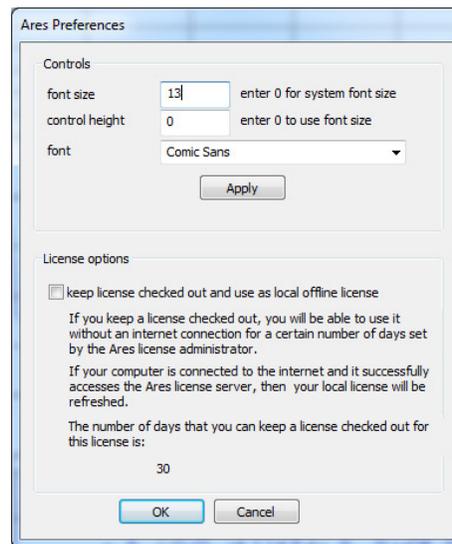
The *keep license check out and use as local offline license* option will cause Ares to NOT release the license when it exits, keeping it available even if your computer isn't connected with the Internet. This feature allows you to keep the license checked out for a limited number of days set by MAE. To use this feature, MAE must enable it with the license server, so you may need to contact MAE and request it to be enabled. Even if you enable this feature, Ares will attempt to contact the license server. If successful, the number of days that your license will be valid is reset back to the maximum set by the license server. To release your license, uncheck the *keep license check out and use as local offline license* option and exit Ares. Now others will be able to make use of this license.

Module User Manuals

The user manuals are separate PDF documents in the directory that the Ares.exe program was placed into. These can either be manually opened with Windows Explorer, or the *Help* menu can be used to open them. Just pull the *Help* menu down and select the manual you want to see.
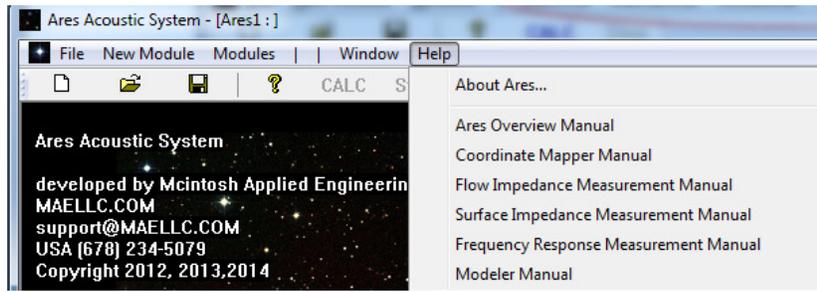
For more information about Ares and acoustical measurement and modeling tools and services, contact MAE at:

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Or see us at MAELLC.COM.