Works 2013

Construction noise

Version 6.0.0

USER GUIDE

TECHNO logismiki
Advanced Technical Software

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Construction noise

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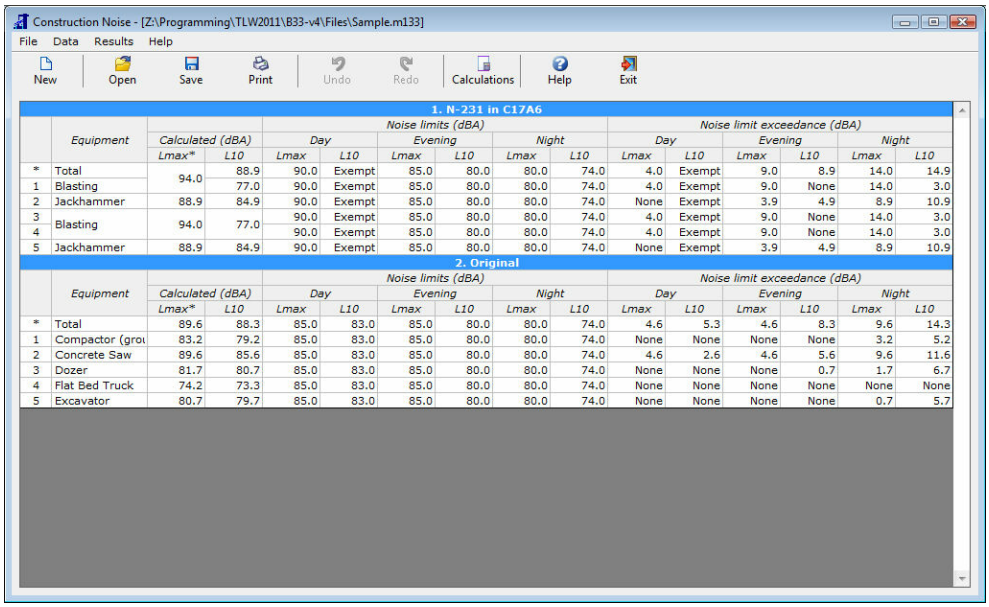
1 About the program

1.1 What does the program do?

This program is based on the well-known Federal Highway Administration (FHWA) Roadway Construction Noise Model v1.1. It is used to assist in the prediction of construction noise. Due to the fact that construction is often conducted in close proximity to residences and businesses, construction noise must be controlled and monitored to avoid impacts on surrounding communities. In addition to community issues, excessive noise can threaten a construction project's progress. Each project needs to balance the community's need for peace and quiet with the contractor's need to progress the work.

The Central Artery/Tunnel (CA/T) project in Boston, Massachusetts, which began in the early 1990s, is the largest urban construction project ever conducted in the United States. Its noise control program developed the Construction Noise Control Specification 721.560, the most comprehensive noise specification ever developed in the United States. As part of the CA/T project noise control program, a construction noise prediction spreadsheet was developed. This program is based on the noise prediction calculations and the equipment database used in the CA/T prediction spreadsheet. It provides a construction noise screening tool to easily predict construction noise levels and to determine compliance with noise limits for a variety of construction noise projects of varying complexity.



The CA/T predictions originated from Environmental Protection Agency (EPA) noise level work and an Empire State Electric Energy Research Corp. Guide which utilizes an "acoustical usage factor" to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. The noise levels used in the program represent the A-weighted maximum sound level (Lmax), measured at a distance of 50 feet (15.2 meters) from the construction equipment.

1.2 Minimum requirements

The minimum requirements for the usage of the programs are the following:

- Windows 2000/ XP/ 2003/ Vista/ 7 (for each case, the latest service packs, updates & patches must be installed)
- Pentium III 800 MHz
- 800x600 with 256 color palette
- 700 MB free disk space
- CD-Rom

If your system does not meet one or more of the above requirements, it is highly recommended that you upgrade it before installing the programs. The recommended system configuration is the following:

- Windows 2000/ XP/ 2003/ Vista/ 7 (for each case, the latest service packs, updates & patches must be installed)
- Pentium IV 2.0 GHz
- 1280x768 with 16-bit color palette
- 1.2 GB free disk space
- CD-Rom
- Internet connection

1.3 Technical support

Support through the Internet

TechnoLogismiki offers technical support 24 hours per day, 365 days per year, through the web site where you can get information on the latest programs and services.

Support by e-mail

Please use the dedicated e-mail addresses for better customer service:

- for questions regarding sales: sales@technologismiki.com
- for questions regarding the usage of programs: support@technologismiki.com
- for any other question or comment: info@technologismiki.com

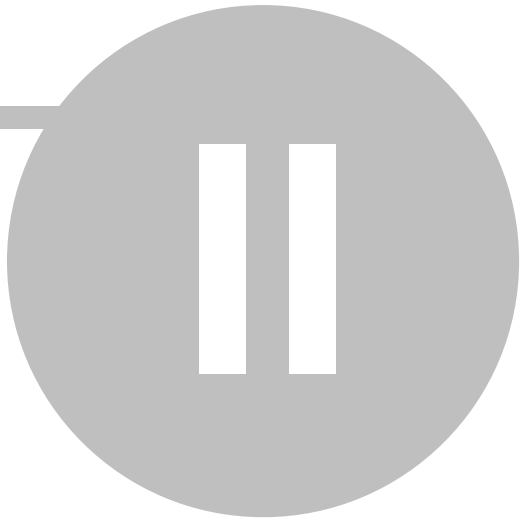
The normal response time is within two business days. If your inquiry cannot be answered by e-mail, a customer service representative will contact you by telephone.

Interactive Support

Business days, 09:00 - 17:00 Eastern European Time:

- Telephone [3 lines]: ++30-210-656-4147
- Fax: ++30-210-654-8461
- Address: 5, Imittou street, Cholargos, 15561, Athens, Greece.

Chapter



2 File

2.1 File menu

With this menu, you can perform file operations and print reports. In the **File** menu you can select one of the following options:

- New project
- Open project
- Save project
- Save project as
- Import
  - Import RCNM1 source file
- Print setup
- Print
- Print to
  - Print to file
  - Print to Word
  - Print to Word (Formatted)
  - Print to Excel
- Exit

2.2 New project

With this option, a new project is started. All data, results, graphs, titles etc. of the previous project are erased.

To create a new project:

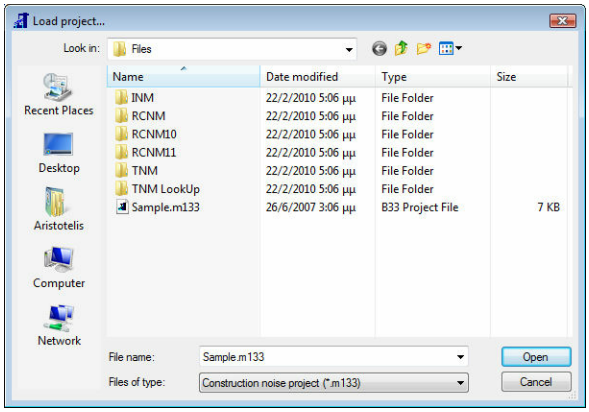
1. Select **New project** from the **File** menu.
2. If a project is already loaded and changes have been made, a warning message will appear that asks the user whether to save the changes or not.
3. The current project is erased and a new project is started.

2.3 Open project

With this option, an existing project is loaded. The project may be located locally, in a network or in an external media device such as a CD-Rom. If a project is already loaded and changes have been made, a warning message will appear that asks whether to save the changes or not. When a project is loaded, all data of the previous project are lost.

To open an existing project:

1. Select **Open project** from the **File** menu.
2. Select the path of the file.
3. Select the file type from the **Files of type** drop-down list. The default option is "Construction noise project" with the extension .m33.
4. Select the file by clicking on it.
5. Select **Open** to open the selected file. Select **Cancel** to cancel the operation.



NOTE: You can find sample projects in the installation folder of the program:
C:\Program Files\TechnoLogismiki\TLW2013\Samples\ConstructionNoise

Supported file types

- **M33** (Construction noise project): Files created by Construction Noise version 2012 and 2013.
- **M133** (Construction noise project): Files created by Construction Noise version 2011, 2010, 2009 or 2008.
- **BCK** (Backup files): If you have selected from program options the creation of backup copy when a file is loaded, then the file can be loaded by selecting Backup files (*.bck) from the Files of type drop-down list.
- ***.*** (All files): Displays all files in the current folder.

NOTE: If a message "Could not load project. File may be corrupt or saved by an unknown or incompatible version of the program" then either you are trying to load a project that does not belong to this program or the file is used (and locked) by another process in your computer.

2.4 Save project

With this option, you can save all data of a project into a file. The file may be saved locally, in a network location or in an external media device such as a disk.

The filename and path will be asked only the first time you are saving a project. When the filename and path are set, all subsequent saves will be made to the same file.

When you want to rename a file or save it in a new location, use Save project as... from the **File** menu.

To save the current project:

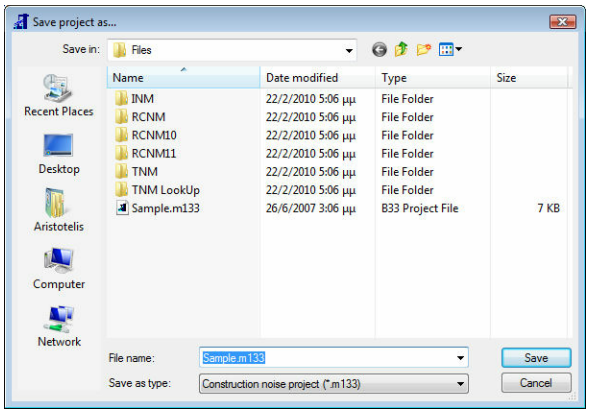
1. Select **Save project** from the **File** menu.
2. If the location of the file is already set, the project is saved to this file without any messages. If the filename is not set, a dialog box will appear that allows the selection of the filename and path.

2.5 Save project as

With this option, the current project is saved just as in the case of Save project, but with the difference that the name and/or location of the file can be changed. In this way, you can create backup files or move a project to another media device.

To save a project with another name and/or to another location:

1. Select **Save project as** from the **File** menu.
2. Select the path of the file.
3. Type the filename in the **File name** text box.
4. Select **Save** to save the project with the selected filename and path. Select **Cancel** to cancel the operation.



NOTE: If a file with the same name and in the same path already exists, a warning message will appear that asks whether to overwrite the file or not. If you answer Yes, then the existing file is erased and the new file takes its place. If you answer No, the existing file remains intact but NO changes of the current project are saved.

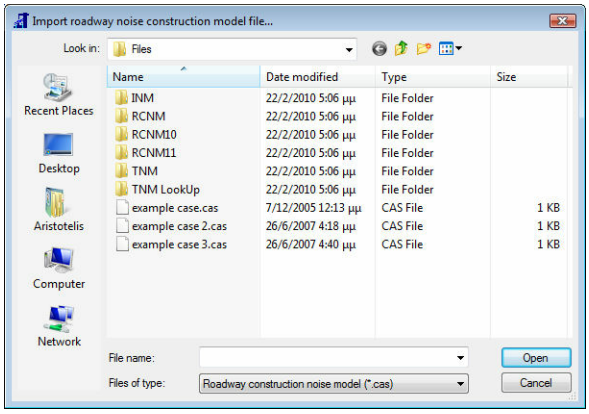
2.6 Import

2.6.1 Import RCNM1 source file

With this option, you can import data from a .cas file created by RCNM v1.0/v1.1. Any existing data will be overwritten.

To import data from a .cas file created by FHWA's Roadway Construction Noise Model v1.0/v1.1:

1. Select **Import** from the **File** menu.
2. Select **Import RCNM1 source file** from the **Import** menu.
3. Select the path of the file.
4. Select the file type from the **Files of type** drop-down list. The default option is "Roadway construction noise model" with the extension .cas.
5. Select the file by clicking on it.
6. Select **Open** to open and analyze the file.



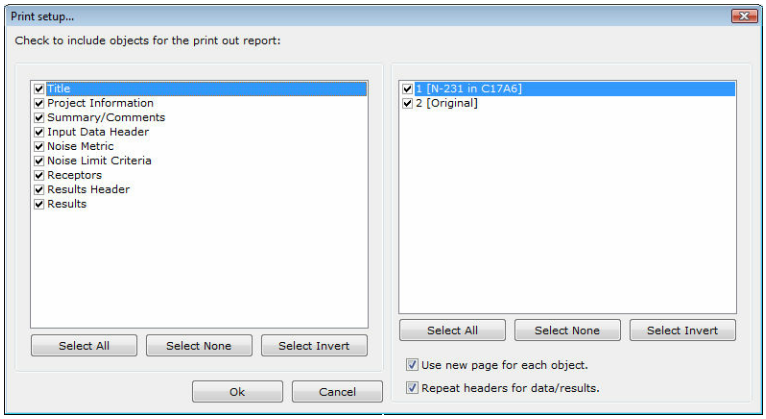
The 2009 version of the construction noise program is 100% compatible with RCNM v1.0/v1.1. However backwards compatibility is not possible since the construction noise program has several features that are not present in RCNM v1.0/v1.1. Therefore only an import function is available.

2.7 Print setup

With this option, you can select which parts of the project will be included in the printouts. When a new project is created, a full report is selected by default.

To modify the print setup:

1. Select **Print setup** from the **File** menu.
2. Select the **sections** (Title, Project information etc) that will be printed for each solution, from the list on the left.
3. Select the **receptors** that will be included in the report from the list on the right.
4. Check **Use new page for each object** if you want to use a new page for each solution in the report.
5. Check **Repeat headers for data/results** if you want to repeat the headers when large tables span multiple pages.
6. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.



The quick keys (**Select all, Select None, Select Invert**) can be used to quickly select all objects, deselect all objects and invert the current selection of a list.

NOTE: The changes are saved with the project. The above preferences are used to all printouts, either to the printer or to other formats such as Word file, Excel file etc.

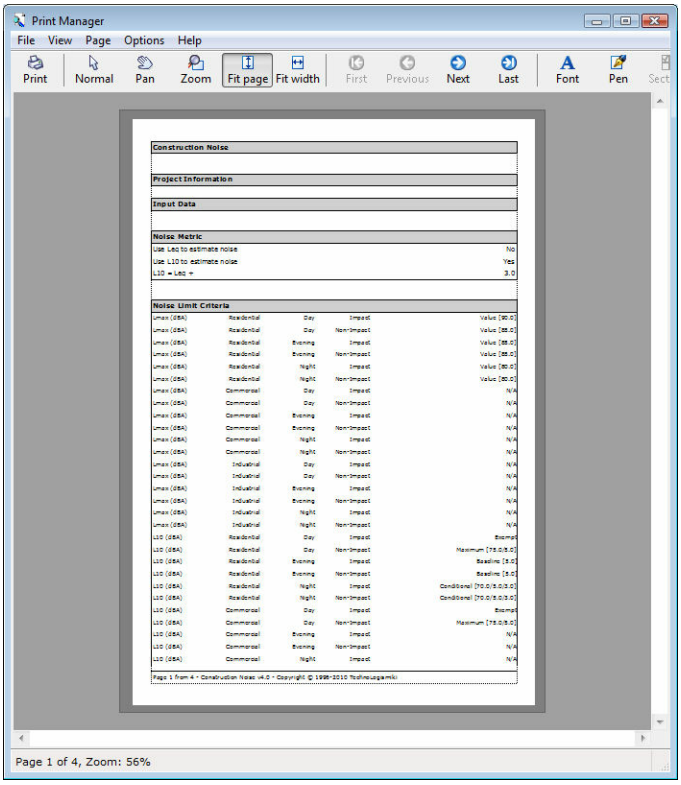
2.8 Print

With this option, you can prepare a report to be printed to a local, network or virtual printer such as Adobe PDF Writer. The parts of the project that will be included in the report are determined from print setup.

By selecting **Print**, the report is not printed directly; instead, a document is prepared and a preview of the printout is created by the **Print manager.** You can print the report by clicking the **Print** button of the toolbar of **Print manager.**

To create a report:

1. Select **Print** from the **File** menu.
2. A report is prepared and sent to **Print manager.** A preview of the document appears.
3. You can print the report by clicking the **Print** button of the toolbar.



NOTE: A complete user manual on the capabilities of **Print manager** can be found in the corresponding help file.

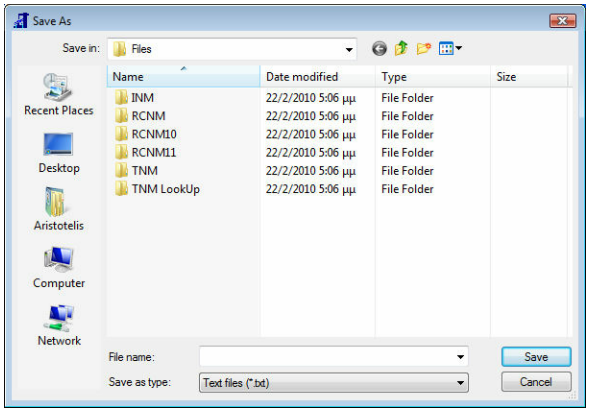
2.9 Print to

2.9.1 Print to File

With this option, you can create a simple text file containing a report of the project. This file is recognized and can be further modified by word processors such as Microsoft Word, OpenOffice Writer etc.

To print to a text file:

1. Select **Print to** from the **File** menu.
2. Select **Print to file** from the **Print to** menu.
3. Select the path of the file.
4. Type the filename in the **File name** text box.
5. Select **Save** to create the file.



The parts of the project that will be included in the report are determined from print setup.

NOTE: If a file with the same name and in the same path already exists, a warning message will appear that asks whether to overwrite the file or not. If you answer Yes, then the existing file is erased and the new file takes its place. If you answer No, the existing file remains intact but the report is NOT printed.

2.9.2 Print to Word

If Microsoft Word (version 97, 2000, XP, 2003 or later) has been installed in the system, then a Microsoft Word file containing the report can be created. Note that Microsoft Word is a separate program and it is not included in TechnoLogismiki's products. Moreover, no technical support is offered regarding the usage of Microsoft Word.

To print the report to a Microsoft Word file:

1. Select **Print to** from the **File** menu.
2. Select **Print to Word** from the **Print to** menu.

The parts of the project that will be included in the report are determined from print setup.

2.9.3 Print to Word (Formatted)

If Microsoft Word (version 97, 2000, XP, 2003 or later) has been installed in the system, then a Microsoft Word file containing the report can be created. Note that Microsoft Word is a separate program and it is not included in TechnoLogismiki's products. Moreover, no technical support is offered regarding the usage of Microsoft Word.

To print the report to a formatted Microsoft Word file:

1. Select **Print to** from the **File** menu.
2. Select **Print to Word (Formatted)** from the **Print to** menu.

The parts of the project that will be included in the report are determined from print setup. This operation is much slower than the regular print to word function. However, the final output requires minimal user intervention as it comes fully formatted with tables, alignment, font styles, etc.

NOTE: Do not use Copy (CTRL+C) on any of the programs running during this operation. If you do so, it will most likely affect the communication between Microsoft Word and the clipboard and as a result the final document will be corrupt.

2.9.4 Print to Excel

If Microsoft Excel (version 97, 2000, XP, 2003 or later) has been installed in the system, then a Microsoft Excel file containing the report can be created. Note that Microsoft Excel is a separate program and it is not included in TechnoLogismiki's products. Moreover, no technical support is offered regarding the usage of Microsoft Excel.

To print the report to a Microsoft Excel file:

1. Select **Print to** from the **File** menu.
2. Select **Print to Excel** from the **Print to** menu.

The parts of the project that will be included in the report are determined from print setup.

2.10 Exit

With this option, you can exit the program. If there are changes in the current project that have not been saved then the program will:

- either ask the user to save the changes
- or save the changes
- or ignore the changes

depending on what you have selected in General preferences.

To exit the program:

1. Select **Exit** from **File** menu.
2. If you are asked whether to save the changes or not, you can save changes or

ignore them.
3. The program is terminated.

Chapter

3 Data

3.1 Data menu

With this menu, you can add and modify data. In the **Data** menu you can select one of the following options:

- Project info
- Undo
- Redo
- Receptors
  - Receptors
  - Add new receptor
  - Remove existing receptor
  - Edit existing receptor
  - Copy existing receptor
- Noise metric
- Noise limit criteria
  - Noise limit criteria
  - Changing criteria
  - Clearing criteria
  - Import criteria
  - Export criteria
  - Default values
- Equipment
  - Equipment
  - Add new equipment
  - Remove existing equipment
  - Edit existing equipment
  - Import equipment
  - Export equipment
  - Default values
- Units
  - Metric
  - English
- Options
  - General preferences
  - Grid editing
  - Customize toolbar

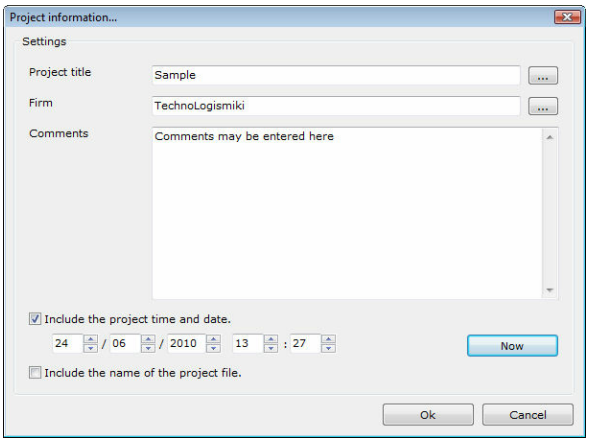
3.2 Project info

With this option, you can add project information that include, optionally, title, author and comments. If you want, this information can be included in the reports. The empty fields are ignored.

To add or modify the project information:

1. Select **Project info** from the **Data** menu.
2. Type the project title, author and comments.

3. Check **Include project time and date** if you want to include the time and date in the project.
3.1. Type the day, month, year, hours and minutes in the corresponding text boxes. Alternatively, you may click on the up/down arrows to increase or decrease the respective value in the text box.
3.2. If you click on **Now** then all text boxes are filled with the current values automatically.
4. Check **Include the name of the project file** if you want the full path and filename of the project to be included in the report.
5. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.



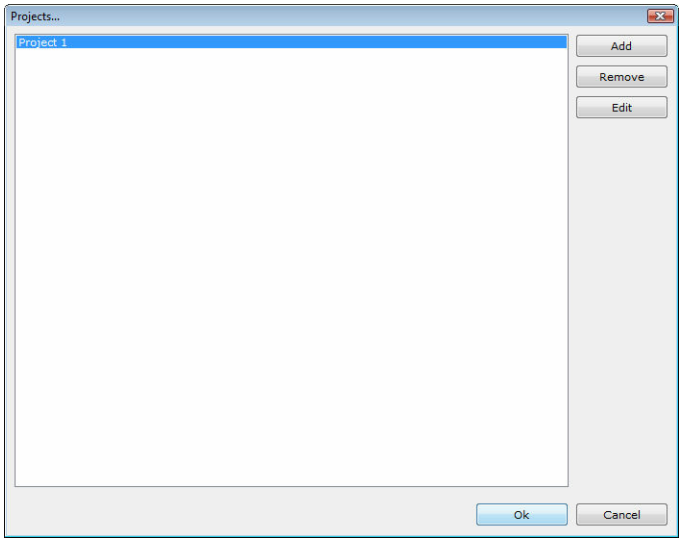
By selecting the buttons with the ellipses (...) next to the project title and author, you can access the corresponding databases.

Project title database

For the completion of a project, more than one programs may be needed. For convenience, you can add the project title to the database and retrieve it from all programs.

To use the project title database:

1. Select the button with the ellipses (...) next to the project title text box. The project title database appears.
2. Select **Add** to add a new title to the database.
3. Select **Remove** to remove the selected entry from the database. You will be asked for confirmation only if you have selected to confirm deletions in the General preferences tab.
4. Select **Edit** to modify the selected entry.
5. Select **Ok** to use the currently selected project title and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

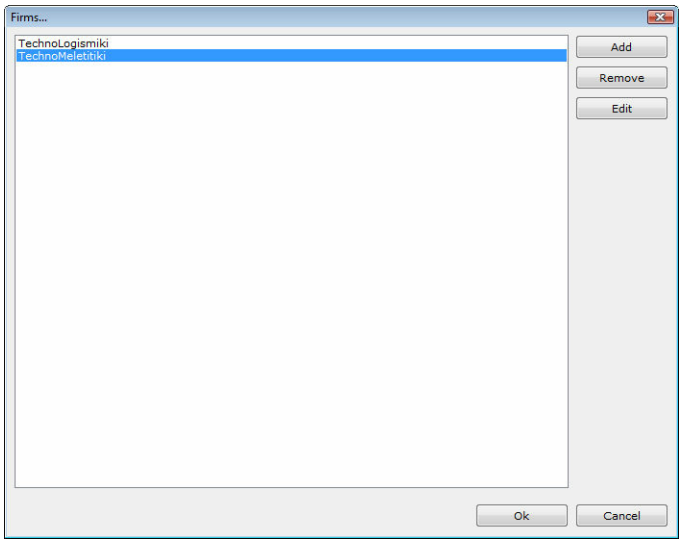


Author database

An engineer may be involved in multiple projects. For convenience, you can add the author name to the database and retrieve it from all programs.

To use the author database:

1. Select the button with the ellipses (...) next to the author text box. The author database appears.
2. Select **Add** to add a new author to the database.
3. Select **Remove** to remove the selected entry from the database. You will be asked for confirmation only if you have selected to confirm deletions in the General preferences tab.
4. Select **Edit** to modify the selected entry.
5. Select **Ok** to use the currently selected author and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.



3.3 Undo

Undo cancels the last committed change in the project.

To cancel the last committed change:

1. Select **Undo** from the **Data** menu.
2. The last committed change is canceled.

To cancel an undo command, you may use the redo function which is described below. Redo becomes available once undo is used.

It is possible to undo more than one recent changes and to redo them, by following the step described above. The number of actions that are kept in memory and may be undone or redone is 20 by default. This means that the program is able to keep track of up to 20 successive changes and undo them. This number may change for all programs, using the option in the main menu. For more information, please consult main menu user guide.

NOTE: Some changes cannot be undone like the new project or the save project functions.

3.4 Redo

Redo cancels the latest undo command.

To redo the latest change that was undone:

1. Select **Redo** from the **Data** menu.
2. The latest undone change is redone.

To undo a redo, you may use the undo command.

It is possible to redo more than one changes that were previously undone by following the steps described above. The number of actions that are kept in memory and may be undone or redone is 20 by default. This means that the program is able to keep track of up to 20 successive changes that are undone and redo them. This number may change for all programs, using the option in the main menu. For more information, please consult main menu user guide.

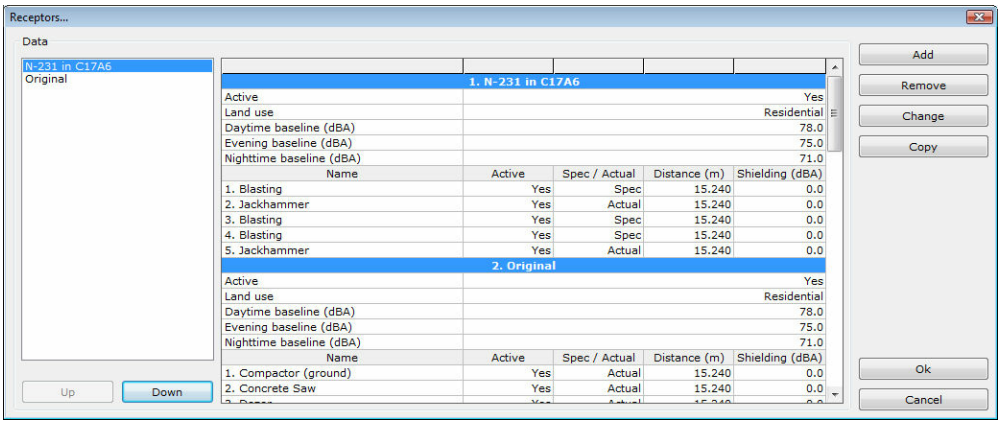
3.5 Receptors

3.5.1 Receptors

From the receptors menu, the user can add, edit, remove or copy receptors. A project must have at least one (active) receptor. Each active receptor in turn, muse have at least one (active) equipment.

To edit the receptors:

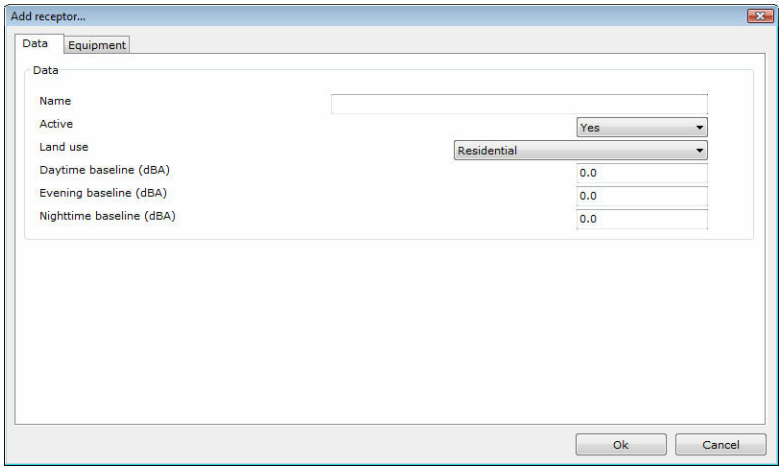
1. From the **Data** menu, select **Receptors**.
2. The user can add, remove, edit or copy existing entries.
3. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.



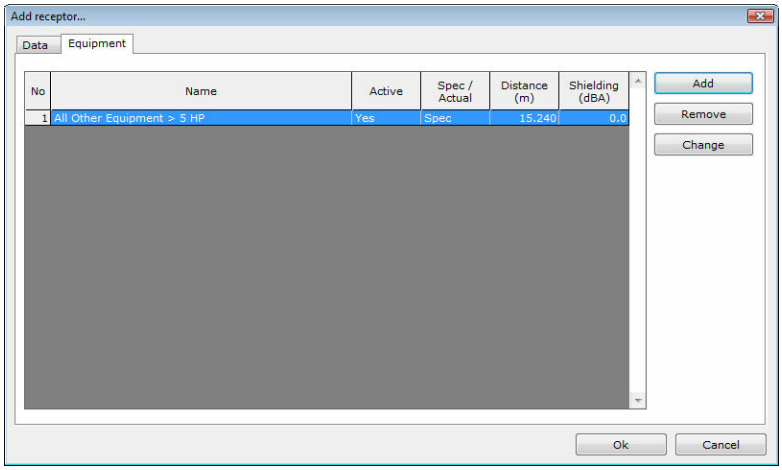
3.5.2 Add new receptor

To add a new receptor:

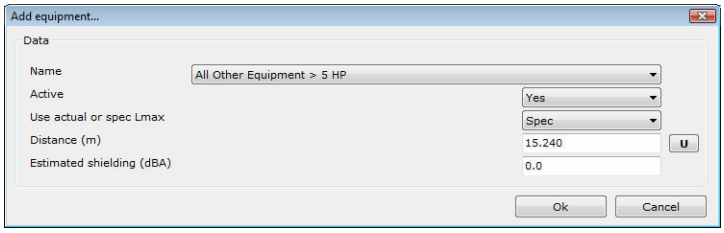
1. Click the **Add** button.
2. Enter the **name** for the new receptor. The name cannot be blank and must be unique.
3. Select whether the receptor will be **active** (used in calculations) or not. A project must have at least one active receptor.
4. Select the **type** of land use: residential, industrial or commercial.
5. Enter the **daytime baseline** in dBA. Daytime starts at 07:00 and ends at 18:00.
6. Enter the **evening baseline** in dBA. Evening starts at 18:00 and ends at 22:00.
7. Enter the **night-time baseline** in dBA. Night time starts at 22:00 and ends at 07:00.



8. Click on the **equipment** tab to add one or more equipment. At least one active equipment is required per receptor.



9. To Add a new equipment:
9.1. Click **Add** to add a new equipment.
9.2. The add new equipment form show up.
9.3. Select an **equipment** from then drop-down list.
9.4. Select if the equipment is active (will be used in calculations) or not.
9.5. Specify whether its **actual** maximum noise level will be used or its maximum noise level given in its **specifications** will be used instead.
9.6. Enter the **distance** between the equipment and the receptor. If the equipment is not stationary, use the minimum distance.
9.7. Enter the **Estimated Shielding** (in dBA) associated with each type of equipment (can leave the default value of 0.0 when not considering shielding).
9.8. Press **Ok** to add the equipment or **Cancel** to ignore all changes.



NOTE: A Best Practices document is presented in Appendix A showing how to determine Estimated Shielding using several Rules of Thumb developed from experience at the CA/T project.

10. To remove an existing equipment:
10.1. Select the equipment from the list to highlight it.
10.2. Click the **Remove** button. The program will ask for confirmation if the removal confirmation option has been set in the general preferences.
10.3. The equipment is removed.

11. To edit an existing equipment:
11.1. Select the equipment from the list to highlight it.
11.2. Click the **Change** button. A form will show up, containing the selected equipment's values.
11.3. Follow steps **9.3** through **9.7**.
11.4. Press **Ok** to edit the equipment or **Cancel** to ignore all changes.

3.5.3 Remove existing receptor

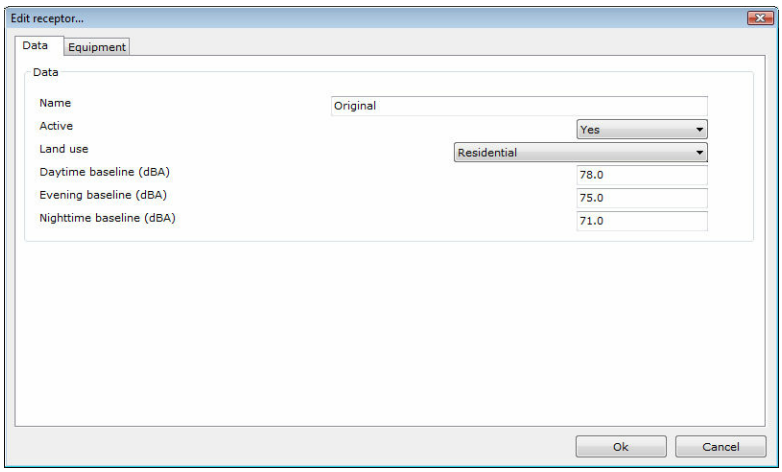
To remove an existing receptor:

1. Highlight the receptor in the list.
2. Click on **Remove**. The program will ask for confirmation if the removal confirmation option has been set in the general preferences.
3. The receptor is removed from the list.

3.5.4 Edit existing receptor

To edit an existing receptor:

1. Highlight the receptor in the list.
2. Click on **Change**.
3. Make all necessary changes. For details, please review the add new receptor paragraph.
4. Press **Ok** to save changes or **Cancel** to discard all changes.

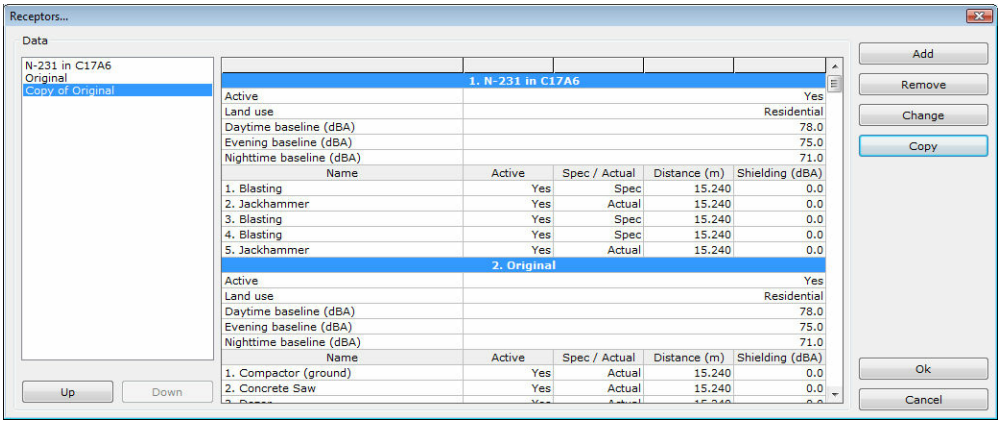


3.5.5 Copy existing receptor

Copying is a particularly useful procedure while adding multiple similar objects. It recreates an exact replica of the selected object, changing only its name so that the user can distinguish the cloned entry.

To copy an existing receptor:

1. Select the original (source) receptor.
2. Click the **Copy** button.
3. A new receptor identical to the original receptor is created and displayed automatically at the bottom of the list. Its name starts with "Copy Of" and continues by using the original receptor's name.

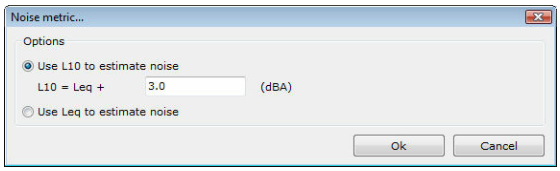


3.6 Noise metric

Configures the sound level used in calculations.

To configure the noise metric:

1. From the **Data** menu select **Noise Metric**.
2. Choose either **L10** or **Leq**.
3. If L10 is chosen, enter the amount that will be added to Leq in order to obtain the L10. By default this amount is equal to 3 dBA.
4. Click **Ok** to save changes or **Cancel** to discard all changes.



NOTE: ***L10*** is the sound pressure level that is exceeded for 10% of the time for which the given sound is measured while ***Leq*** is the equivalent sound pressure level - the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.

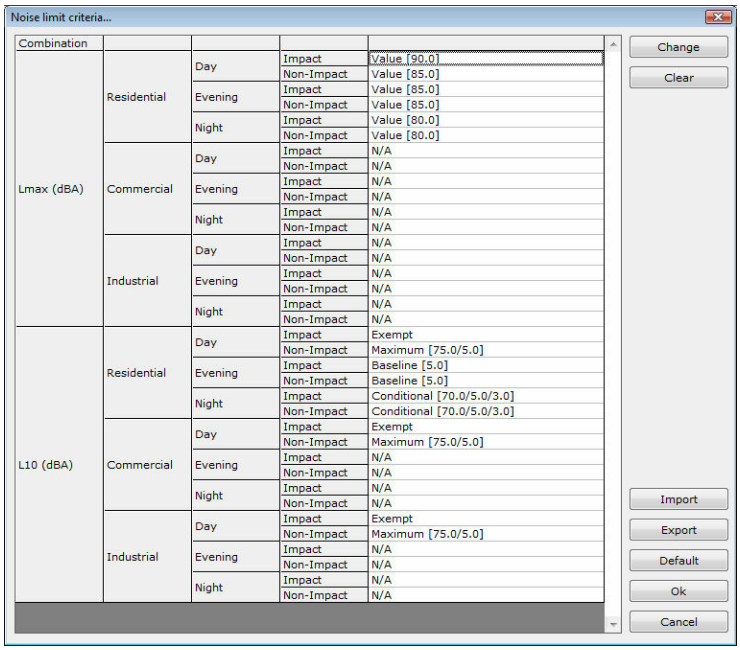
3.7 Noise limit criteria

3.7.1 Noise limit criteria

With this option, the user can configure the noise limit criteria conditions that will be used in the calculations.

To manage the noise limit criteria:

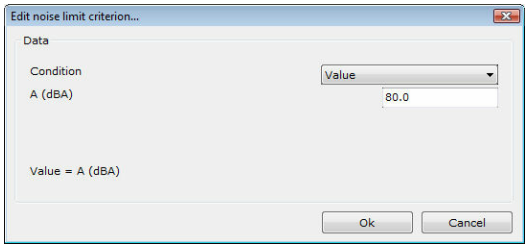
1. Select **Noise Limit Criteria** from the **Data** menu.
2. The noise limit criteria form shows up.
3. Make all appropriate changes.
4. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.



3.7.2 Changing criteria

Changes the selected noise limit criterion. To change a noise limit criterion:

1. Highlight the entry you would like to change.
2. Click the **Change** button.
3. The change noise limit criterion for shows up.
4. Select a **condition** from the following:
4.1. Exempt: In this case no additional data are required. Exempt means that no noise limit exceedance will be calculated.
4.2. N/A: In this case no additional data are required. N/A means that no noise limit exceedance will be calculated not because the equipment is exempt but because there are no data available for the calculations.
4.3. Value: A single value in dBA is required to calculate the noise limit.
4.4. Maximum: Two values in dBA are required in order to calculate two parameters. The first parameter is equal to the first value while the second parameter is equal to the sum of the second value and the baseline value. The maximum of the two aforementioned parameters yields the noise limit.
4.5. Baseline: A value is added to the baseline value thus yielding the noise limit.
4.6. Conditional: Three values are required. If the baseline value is lower than the first given value then the noise limit is equal to the baseline value plus the second given value else the noise limit is equal to the baseline value plus the third given value.
5. Press **Ok** to save changes and close the form or **Cancel** to discard all changes and close the form.

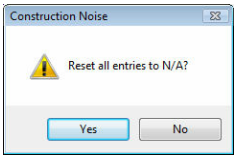


3.7.3 Clearing criteria

Resets all noise limit criteria to N/A.

To reset all noise limit criteria and set them equal to N/A:

1. Click on **Clear**.
2. Answer **Yes** to the confirmation warning message.
3. All noise limit criteria are set to N/A.

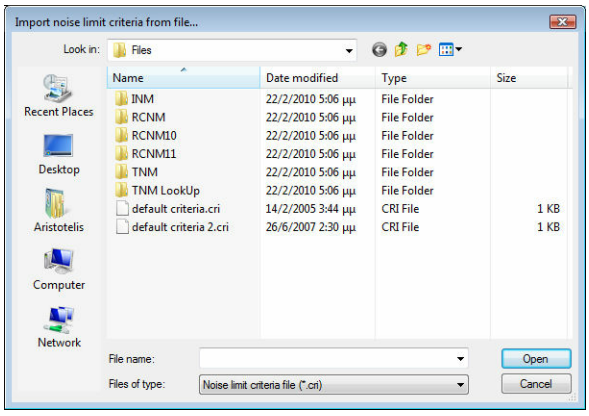


3.7.4 Import criteria

With this option, you can import noise limit criteria from a .cri file exported by the Construction Noise program or created by RCNM v1.0/v1.1. Any existing data will be overwritten.

To import data from a .cri file:

1. Click on the **Import** button.
2. Select the path of the file.
3. Select the file type from the **Files of type** drop-down list. The default option is "Noise limit criteria file" with the extension .cri.
4. Select the file by clicking on it.
5. Select **Open** to open and import the data from the file.

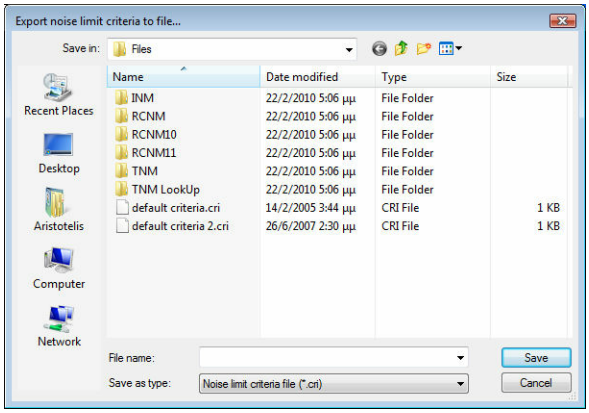


3.7.5 Export criteria

With this option, you can export noise limit criteria to a .cri file which can be later imported by the Construction Noise program or by RCNM v1.0/v1.1.

To export data to a .cri file:

1. Click on the **Export** button.
2. Select the path of the file.
3. Type the filename in the **File name** text box.
4. Select **Save** to export noise limit criteria with the selected filename and path. Select **Cancel** to cancel the operation.

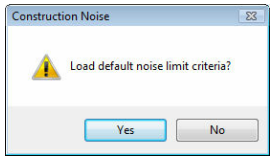


3.7.6 Default values

Resets all noise limit criteria to their default values.

To reset all noise limit criteria to their default values:

1. Click on **Default**.
2. Answer **Yes** to the confirmation warning message.
3. All noise limit criteria are set to their default values.



3.8 Equipment

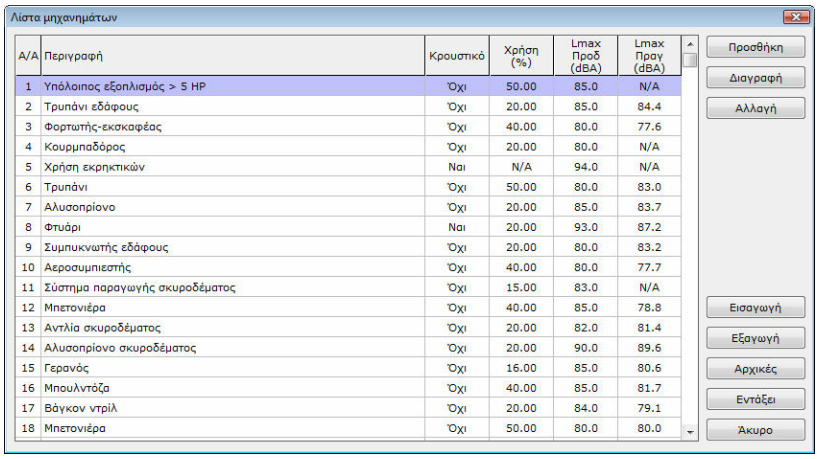
3.8.1 Equipment

From the equipment menu, the user can add, edit, remove, import, export or set all equipment to the default values. Each active receptor must have at least one (active) equipment.

To edit the equipment list:

1. From the **Data** menu, select **Equipment**.
2. The user can add, remove, edit, import, export or set all entries to the default

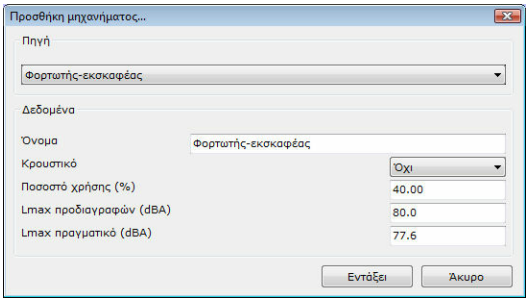
values.
3. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.



3.8.2 Add new equipment

To add a new equipment:

1. Click the **Add** button.
2. Optionally select a **source** from the drop-down list to pre-load all data fields with the values of an existing equipment.
3. Enter the **name** for the new equipment. The name cannot be blank and must be unique.
4. Select whether the equipment is an **impact device** or not.
5. Select the **usage factor** (between 0 and 100%), the percent, during the total construction time, that this equipment will be used.
6. Enter the **specifications Lmax** in dBA. Leave it blank if it is not available.
7. Enter the **actual Lmax** in dBA. Leave it blank if it is not available.
8. Press **Ok** to add the equipment or **Cancel** to ignore all changes.



NOTE: Either the specifications or the actual Lmax must be present.

3.8.3 Remove existing equipment

To remove an existing equipment:

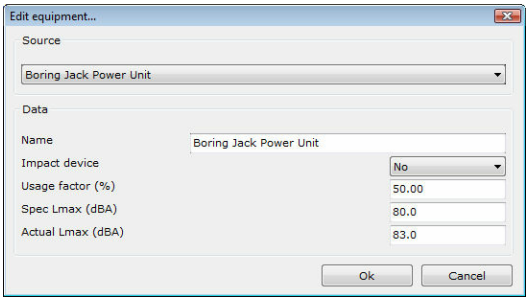
1. Highlight the equipment in the list.
2. Click on **Remove**. The program will ask for confirmation if the removal confirmation option has been set in the general preferences.
3. The equipment is removed from the list.

NOTE: If the equipment is also present in one or more receptors, it will be removed from the receptors as well.

3.8.4 Edit existing equipment

To edit an existing equipment:

1. Highlight the equipment in the list.
2. Click on **Change**.
3. Make all necessary changes. For details, please review the add new equipment paragraph.
4. Press **Ok** to save changes or **Cancel** to discard all changes.

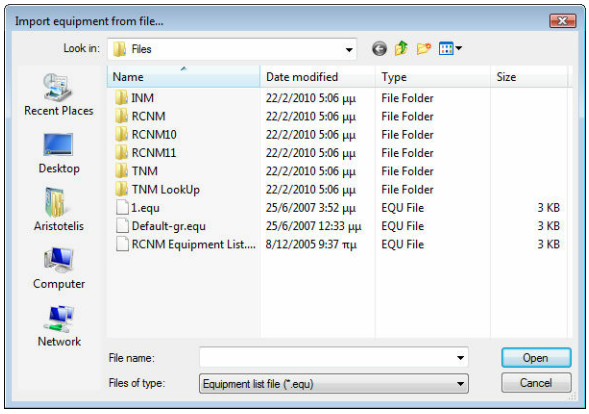


3.8.5 Import equipment

With this option, you can import an equipment list from a .equ file exported by the Construction Noise program or created by RCNM v1.0/v1.1. Any existing data will be overwritten.

To import data from a .equ file:

1. Click on the **Import** button.
2. Select the path of the file.
3. Select the file type from the **Files of type** drop-down list. The default option is "Equipment file list" with the extension .equ.
4. Select the file by clicking on it.
5. Select **Open** to open and import the data from the file.

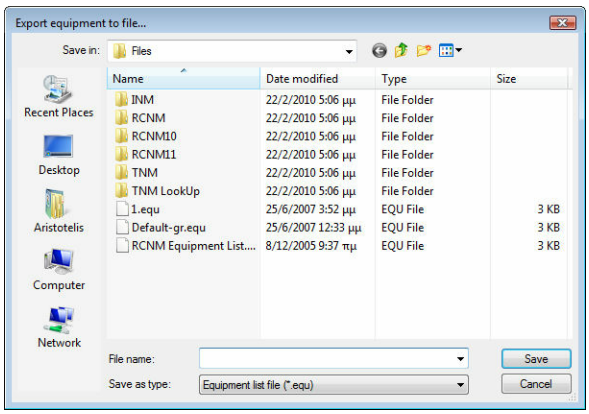


3.8.6 Export equipment

With this option, you can export noise limit criteria to a .cri file which can be later imported by the Construction Noise program or by RCNM v1.0/v1.1.

To export data to a .cri file:

1. Click on the **Export** button.
2. Select the path of the file.
3. Type the filename in the **File name** text box.
4. Select **Save** to export the equipment list with the selected filename and path. Select **Cancel** to cancel the operation.

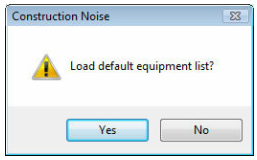


3.8.7 Default values

Resets the equipment list to its default value.

To reset the equipment list to its default value:

1. Click on **Default**.
2. Answer **Yes** to the confirmation warning message.
3. The equipment list is set to its default value.



3.9 Units

3.9.1 Metric

With this option, the metric unit system is used for both the input data and the results.

To use the metric unit system:

1. Select **Units** from the **Data** menu.
2. Select **Metric System** from the **Units** menu. The metric unit system is used.

3.9.2 English

With this option, the English unit system is used for both the input data and the results.

To use the English unit system:

1. Select **Units** from the **Data** menu.
2. Select **English** from the **Units** menu. The English unit system is used..

3.10 Options

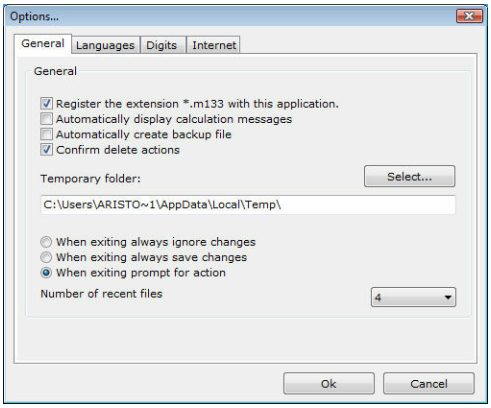
3.10.1 General preferences

With this option, you can modify the general preferences of the program.

To modify the general preferences:

1. Select **Options** from the **Data** menu.
2. Select **General preferences** from the **Options** menu.
3. The general preferences dialog box appears. The preferences are grouped into four tabs. You can select a tab by clicking on its name.

General Tab



This tab contains general preferences regarding the usage of the program.

Check **Register the extension *.m33 with this application** to associate the extension .m33 with this program. This extension is used by the program when saving a project. In this way, you will be able to run the program and load a project by double-clicking on the project filename in Windows Explorer.

Check **Automatically display calculation messages** if you want report details to be automatically displayed when you calculate the results.

Check **Automatically create backup file** if you want a backup file (with the extension .bck) to be created every time a project is loaded. By default, this file is created in the temporary folder of Windows.

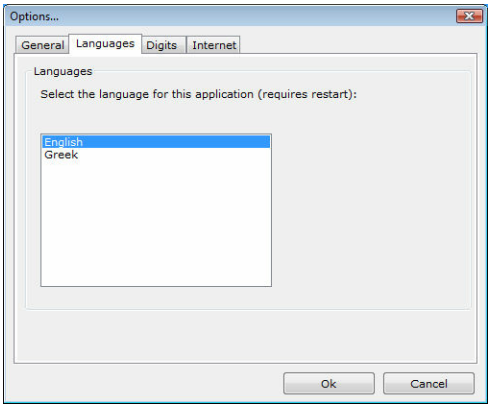
Check **Confirm delete actions** if you want to be asked for confirmation each time an object is about to be deleted.

You can also modify the temporary folder that will be used for the creation of backup files. By default, this folder is the temporary folder of Windows.

Finally, there are three options regarding the termination of the program:

- **When exiting always ignore changes** - All changes since the last save of the project are ignored.
- **When exiting always save changes** - All changes in the current project are automatically saved. If the filename of the project is not set, a dialog box will appear that allows the selection of the filename, as when selecting Save project as from the **File** menu.
- **When exiting prompt for action** - If there are changes in the current project, then a dialog box will appear. You can choose to save or ignore the changes. If the filename of the project is not set, a dialog box will appear that allows the selection of the filename, as when selecting Save project as from the **File** menu.

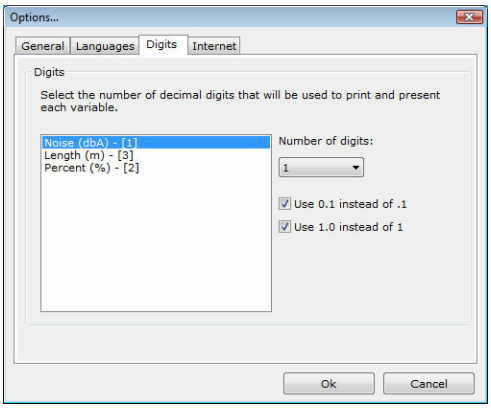
Languages Tab



If more than one language packs have been installed, then you can choose the language of the program. In the above case, there are two language packs; English (that are already selected) and Greek. If you change the language, all forms, menus, messages, help files will reflect the chosen language.

In order for the changes to take effect, you must restart the program.

Digits Tab



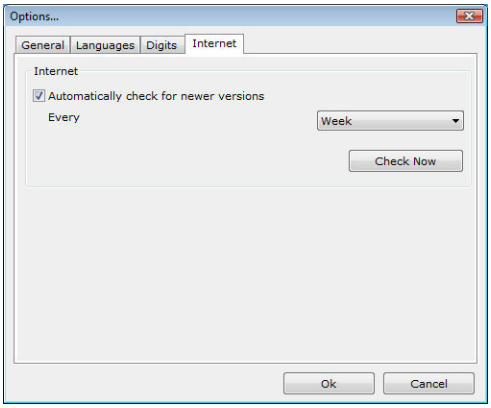
With this tab, you can modify the way the results are presented. All values used in the program are displayed in the list on the left.

For each value, you can select the number of decimal digits using the **Number of digits** drop-down list.

Check **Use 0.1 instead of .1** to use a preceding zero when displaying numbers between -1 and 1, for example -0.08 instead of -.08 and 0.98 instead of .98.

Check **Use 1.0 instead of 1** to use trailing zeros (when necessary) in order to display a number with the decimal digits selected in the **Number of digits** drop-down list, for example 1.1600 instead of 1.16 (when the number of digits is set to 4).

Internet Tab



The program can automatically check for newer versions over the Internet. Check **Automatically check for newer versions** to enable this feature. The check is automatically performed at an interval specified in the **Every** drop-down list. Select **Check now** to manually check for newer versions.

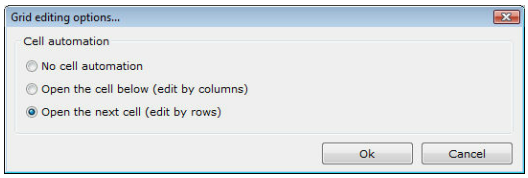
When a newer version is found, you will be prompted to download and install the latest version.

NOTE: TechnoLogismiki protects your privacy. During the check for newer versions, no data is transferred from your computer to the Internet.

Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

3.10.2 Grid editing

With this option, you can modify the behavior of grids.



The behaviour of all editable grids is controlled by the preferences in this dialog box.

Select **No cell automation** if you want the active cell to remain the same when hitting ENTER.

Select **Open the cell below (edit by columns)** if you want to activate the cell below when hitting ENTER. This is particularly useful when editing tables by columns.

Select **Open the next cell (edit by rows)** if you want to activate the next cell on the right when hitting ENTER. This is particularly useful when editing tables by rows.

In some cases, the program may automatically fill some missing values (for example, when performing linear interpolation). In this case, you can select a distinctive color in order to recognize these values. You can choose the color by clicking on the button in the **Auto-complete settings** frame.

NOTE: These preferences affect all projects, old and new.

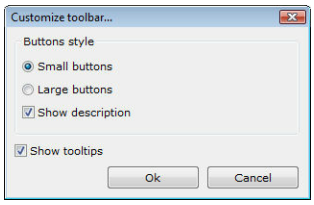
Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

3.10.3 Customize toolbar

With this option, you can customize the toolbar of the main form.

To customize the toolbar of the main form:

1. Select **Options** from the **Data** menu.
2. Select **Customize toolbar** from the **Options** menu.
3. Make the appropriate changes.
4. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.



The toolbar may contain small or large buttons.

Check **Show description** if you want a small description to be displayed under the buttons.

Check **Show tooltips** if you want tooltips to be displayed when the mouse pointer hovers over a button for 2-3 seconds.

NOTE: These preferences affect all projects, old and new.

Chapter IV

4 Results

4.1 Results menu

With this menu, you can perform calculations and view the results. In the **Results** menu you can select one of the following options:

- Perform calculations

4.2 Perform calculations

With this option, you can perform calculations. The results are displayed in the main form.

To perform calculations:

1. Select **Perform calculations** from the **Results** menu.
2. The calculations are performed and if successful, the results table appear on the main form.

Chapter

5 Help

5.1 Help menu

In the **Help** menu you can select one of the following options:

- Contents
- User guide
- Tutorials
- Tip of the day
- Unit conversion
- TechnoLogismiki website
- Buy products
- TechnoLogismiki NOMOS
- TechnoLogismiki Live!
- About the program

5.2 Contents

With this option, you can access the online help which contains detailed information regarding the usage of the program.

To view the online help:

1. Click **Contents** from the **Help** menu.
2. The online help appears.

NOTE: If an error message appears then the online help has not been installed. You can install the online help from the installation CD or the Internet.

5.3 User guide

With this option, you can access the user guide which contains detailed information regarding the usage of the program.

To view the user guide:

1. Click **User Guide** from the **Help** menu.
2. The user guide appears.

NOTE: If an error message appears then the online help has not been installed. You can install the online help from the installation CD or the Internet.

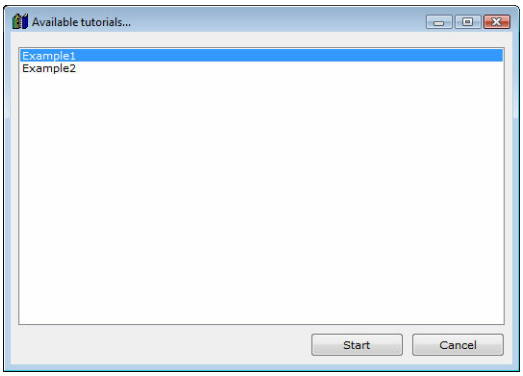
NOTE: Adobe Acrobat Reader or a similar program that can display pdf files is required in order to view or print the user guide.

5.4 Tutorials

With this option, you can access the tutorials of the program. The tutorials are step-by-step examples that allow you to decrease the learning cycle of the programs dramatically.

To access the tutorials:

1. Click **Tutorials** from the **Help** menu.
2. The tutorial selection dialog box appears.
2. Select the appropriate tutorial and click **Start** to proceed. Click **Cancel** to close the dialog box.



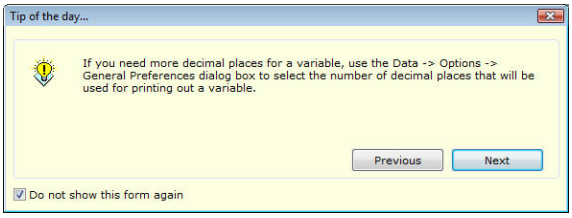
NOTE: The number and content of the tutorials is changed frequently. Use the live update system of TechnoLogismiki's products to download the latest tutorials.

5.5 Tip of the day

With this option, you can access the tip database of the program. The tips are short guidelines regarding the usage of the programs which may be of great help to the user.

To access the tips:

1. Click **Tip of the day** from the **Help** menu.
2. The tip of the day form appears.
3. Check **Do not show this form again** to prevent the program from showing the tip of the day when starting. Press the **Previous/Next** buttons to browse all available tips.
4. Press **Esc** to close the form.



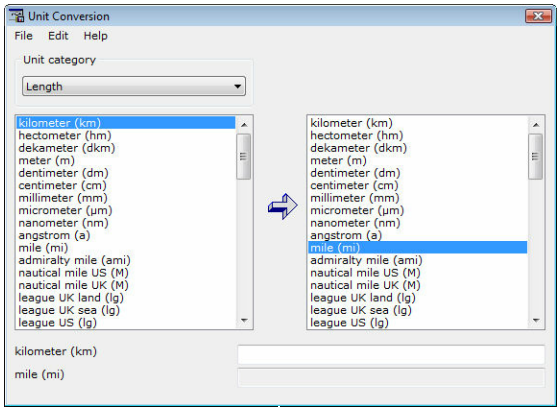
NOTE: The number and content of the tips is changed frequently. Use the live update system of TechnoLogismiki's products to download the latest tips.

5.6 Unit conversion

With this option, you can access the unit conversion tool. You can find more information about its usage in its help system.

To launch the unit conversion tool:

1. Click **Unit conversion** from the **Help** menu.
2. The unit conversion tool is launched.



NOTE: If an error message appears then the unit conversion tool has not been installed. You can install the unit conversion tool from the installation CD or the Internet.

5.7 TechnoLogismiki website

With this option, you can load on your Internet browser the website of TechnoLogismiki's.

5.8 Buy products

With this option, you can load on your Internet browser the main product page of TechnoLogismiki's website.

5.9 TechnoLogismiki NOMOS

With this option, you can load on your Internet browser the **NOMOS** service of Technologismiki.

5.10 TechnoLogismiki Live!

With this option, you can load on your Internet browser the **Live!** service of Technologismiki.

5.11 About the program

With this option, a form containing the name, version and licence information of the program appears.

To show this form:

1. From the **Help** menu, select **About the program**.
2. The form appears.
3. Click anywhere on the form or hit ESC to close the form.

Chapter VI

6 Appendix A

6.1 Estimated shielding

Best Practices for Calculating Estimated Shielding for Use in the Construction Noise

This Appendix presents some simplified shielding factors for use in the RCNM. These suggestions are "rules of thumb" based on experience gathered by CA/T construction noise experts working in the field.

1. If a noise barrier or other obstruction (like a dirt mound) just barely breaks the line-of-sight between the noise source and the receptor, use 3 dBA.

2. If the noise source is completely enclosed OR completely shielded with a solid barrier located close to the source, use 8 dBA. If the enclosure and / or barrier has some gaps in it, reduce the effectiveness to 5 dBA.

3. If the noise source is completely enclosed AND completely shielded with a solid barrier located close to the source, use 10 dBA.

4. If a building stands between the noise source and receptor and completely shields the noise source, use 15 dBA.

5. If a noise source is enclosed or shielded with heavy vinyl noise curtain material (e. g., SoundSeal BBC-13-2" or equivalent), use 5 dBA.

6. If dilapidated windows are replaced with new acoustical windows, or quality internal or exterior storm sashes, use an incremental improvement of 10 dBA for an overall Outside-to-Inside Noise Reduction (OINR) of 35 dBA.

7. If work is occurring deep inside a tunnel using the "top-down" construction method (i.e. cover the tunnel work with concrete roadway decks to allow surface traffic and then excavate underneath the roof deck), use 12 dBA.

Keyword index

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- B -

- C -

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- I -

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- O -

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