

Operation Manual of the Sound Module

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Read before Operating

Important Note:

The sound module is not suitable for children under the age of 14.

The module must not be connected to the supply voltage under any circumstances.

We strongly recommend not to solder the wiring to the socket board directly.

Any warranty will become ineffective. Contacts should only be plugged in. A bipolar socket terminal strip is included to connect the speakers.



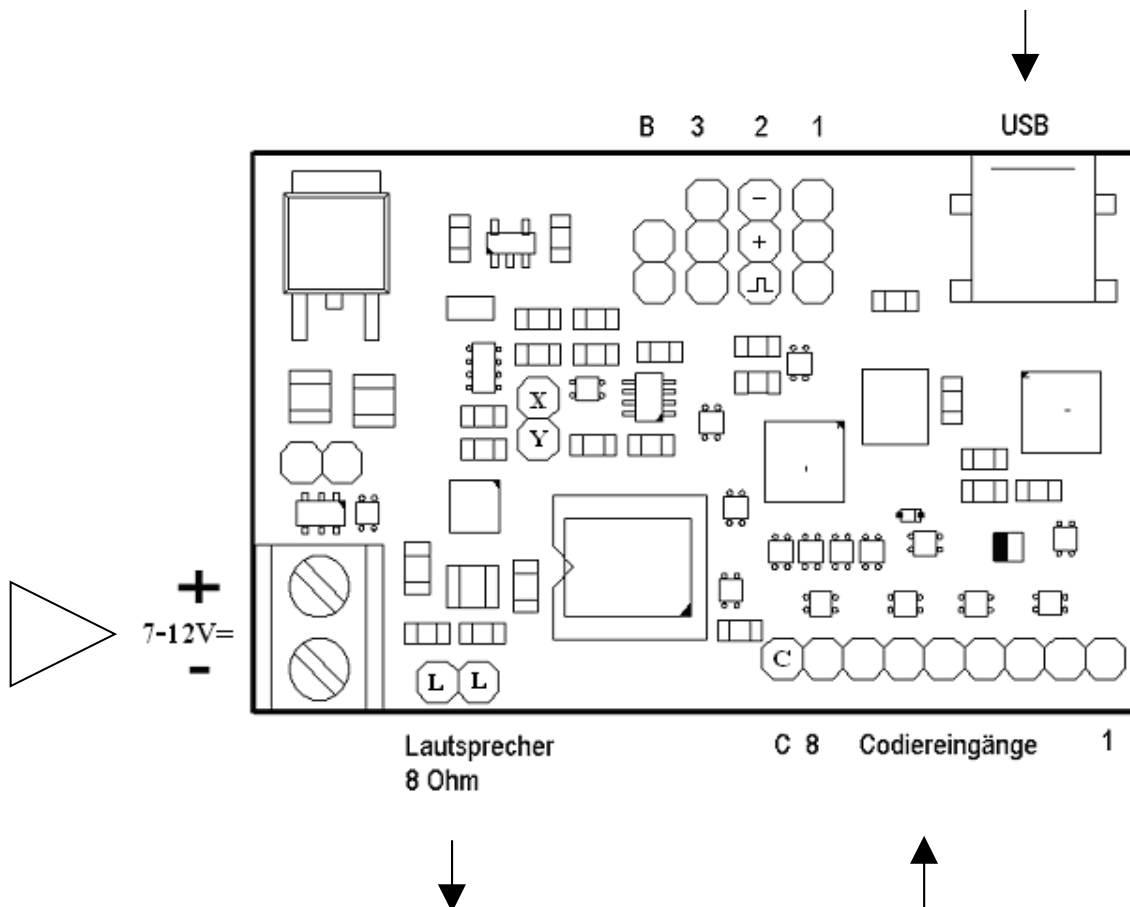
ad 1) System Description

This sound module was developed in order to provide the model and its surroundings with original and individual sound effects. Many sound modules are already available – what makes this device special is the option of creating individual sound effects and to modify these. Therefore, a USB cable is provided for connection with a PC, which enables uploading to the hardware via the software. Through intuitive operation of the PC software, new files can be developed and uploaded into the system within a matter of minutes. Up to 64 sounds with a total size of 4MB can be uploaded. Files can be played as loops or individually. The system offers 2 separate channels, which makes it possible to play 2 sounds at the same time. 2 sample rates are supported: 11025 and 22050 kHz. The basic file has to be available in a 8 bit mono unsigned wave format.

Technical Data:

Supply: 7-12V DC voltage
Memory: 4MB
This equals approx. 3`15 `` at 22050 Hz or approx. 6`30`` at 11025 Hz
Audio Output : 1,4 Watts
Speakers: 8 Ohm, **a 4 Ohm speaker or a short-circuit will destroy the power amplifier**

ad 2) Connection Diagram



Legend:

- B = Pins for activating the boot loaders (activating the software updates)
- 1 = Port for activating sounds via remote control
- 2 = Port of the motor adjustment signal of the receiver
- 3 = Port (input/output) for future use, currently not activated.

Note: starting with the version sound_11_01_08 SyncBeta, Pin 1 provides sound activation, Pin 2 is the port for the rotation impulses. All previous versions used Pin 2 for sound activation.

- X = Channel 0 connection of external amplifier.
 - Y = Channel 1 connection of external amplifier.
- Use a 1µF capacitor each for decoupling.


In order to be able to activate the sounds via the socket boards, the respective pins have to be set to ground (= minus pole = Pin C) according to the code chart. **If a ready-made switch-channel decoder is used, beware that the max. output current is 5V, otherwise, the sound module may be destroyed.**

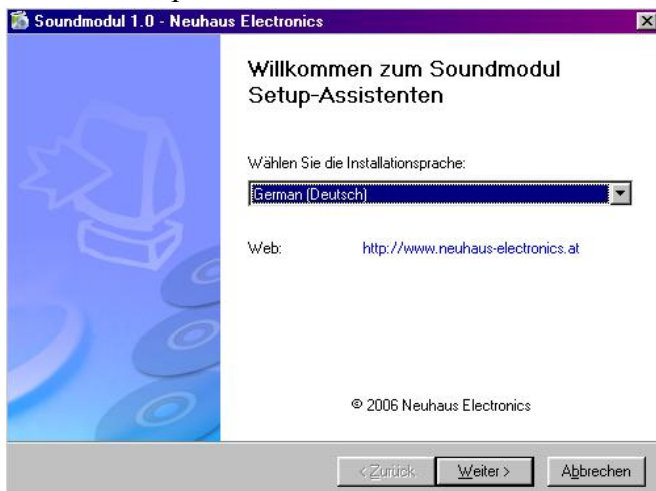
ad 3) **Installing Software to the PC**

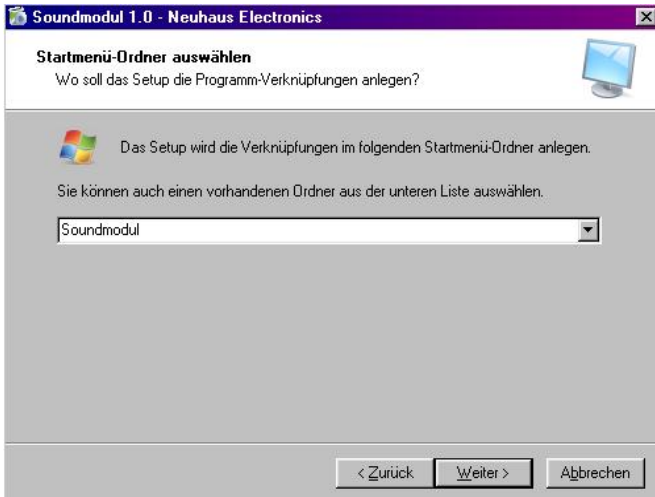
**Precisely follow steps 1-4!!!!!!!
Do not attach the module to the USB until Point 3 has been reached.**

The CD ROM included in the package provides the entire software, including all drivers required.

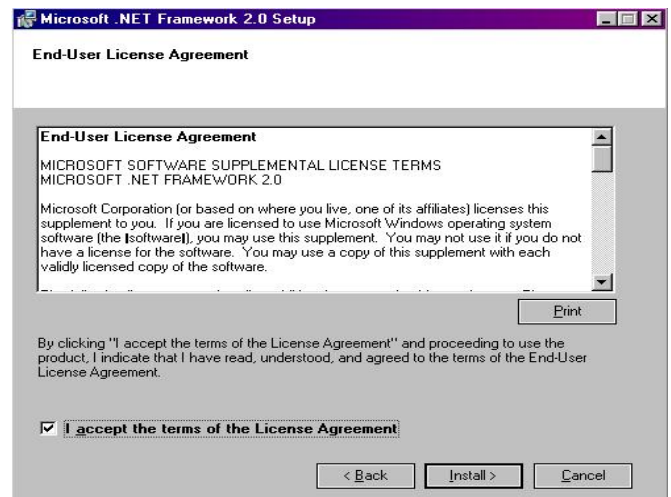
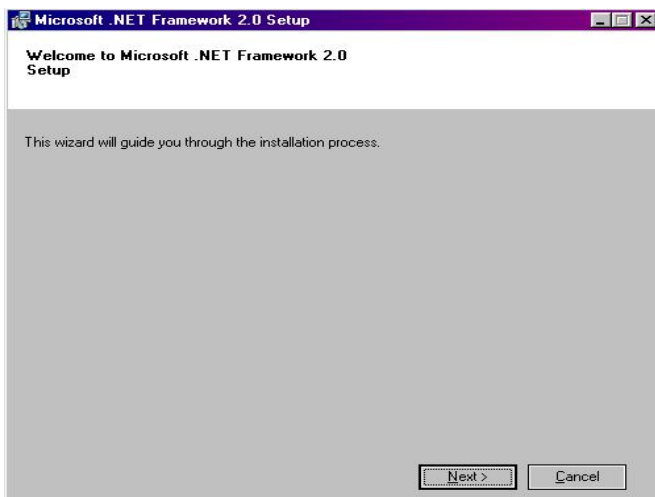
Install the software via the Installer in order to ensure trouble-free operating. Suitable for Windows XP/2000, limited use on Win98, however the essential functions are available.

- 1) **Insert CD** and click the  Setup file.
- 2) The software of the sound module requires the Microsoft .NET framework. Should this not be available on your system, it will be installed automatically in one of the next steps.

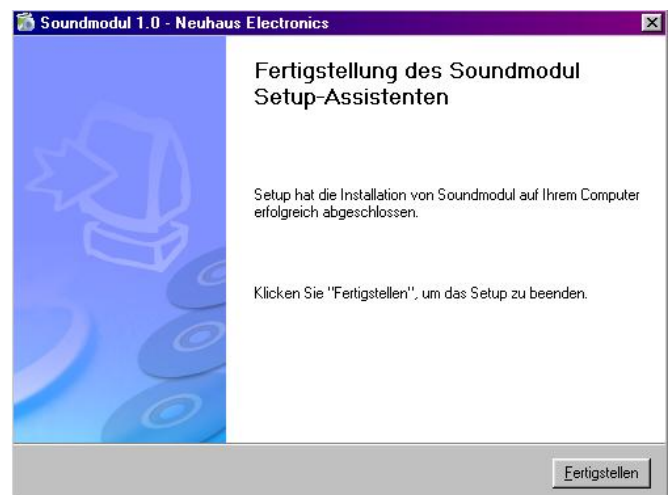
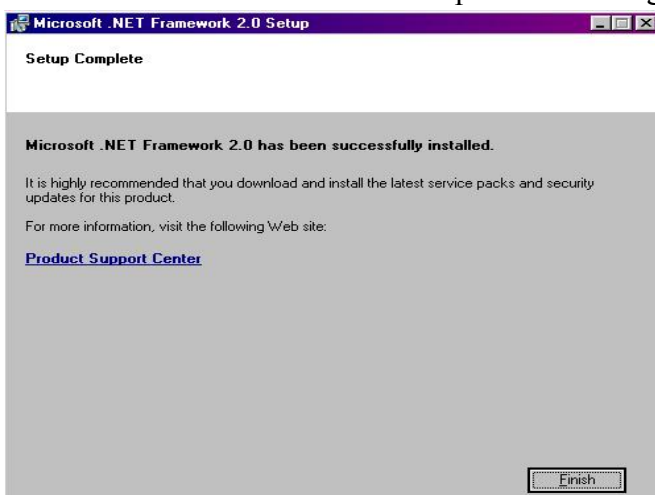




.NET Installing:



Click on Next Check to accept the license agreement and click on the “Install“ button.



If the .NET framework is not installed automatically for some reason, start the process manually by opening the “dotNET“ file on the CD ROM and clicking on dotnetfx. If an error message appears, e.g. install “Microsoft Windows Installer 3.0“, the operating system needs to be updated. Microsoft offers free updates via its download homepage.

- 3) Attach the **module** to the **USB port**
The new hardware is recognized and the drivers are installed; you will be asked where to find the driver: first set the point to “search for best driver for device“ and click OK; click on the “CD ROM“ icon in the next window. This procedure will be repeated 2 times. Then click “Continue“. As soon as the PC recognizes the module, **the red diode lights up** on the hardware. When using Windows XP, a warning will appear indicating that the driver is not Windows-compatible; however, simply continue with the installation process.
- 4) After installation of the drivers is completed, **supply the module with power** and **start the “Sound Module“ program**, which can be accessed via the start symbol (bottom lefthand corner) in the “Program“ menu. A link to the desktop can also be established for easier access by highlighting “Sound Module“ and clicking on “Send to“ after pressing the right mouse button. Select “Desktop“.

If the hardware is not connected to any power supply, an error message will appear indicating that the module has to receive power before the program can start. The result of this message is that the proper virtual COM port will not be selected automatically. Either close the application, provide the module with power and restart, or look up which COM number the USB port has been assigned (CP2101 USB to UART bridge controller) and select it manually under the sound module software via “Files“ and “Preferences“.

ad 4) Activation

4.1) Activating the Hardware

In order for the hardware to function properly, supply power of at least 7V up to a maximum of 12V DC voltage is required (when using the additional plug-in amplifier, a maximum of 14V are possible). This should also be able to supply a sufficient peak current. We recommend one rechargeable battery with at least 1 Ampere of peak current.

Beware of the poles when plugging in the rechargeable battery. If the device is connected the wrong way, nothing will happen as there is a polarity guard, but the device will not work. Do not supply the speaker ports with the operating current.

The polarity of the speakers does not matter.

As it is a new device, 2 sounds are provided which can be played independent from one another – simultaneously.

Check the connection by pressing the “PING“ button once the hardware is connected to the power supply and attached to the PC via USB.

The module should appear under its name, current version, and memory option.

If this is not the case, check the port configurations under the “File“, “Preferences“ and “Port“ menus. The available COM ports can be selected.

If the right one is not clearly indicated, check the Finder under Settings and System.

4.2) Configuring Sound Files

The quality of the available sounds inherently depends on the quality of the saved files. We recommend processing the sound files first. This is especially true for muted sounds.

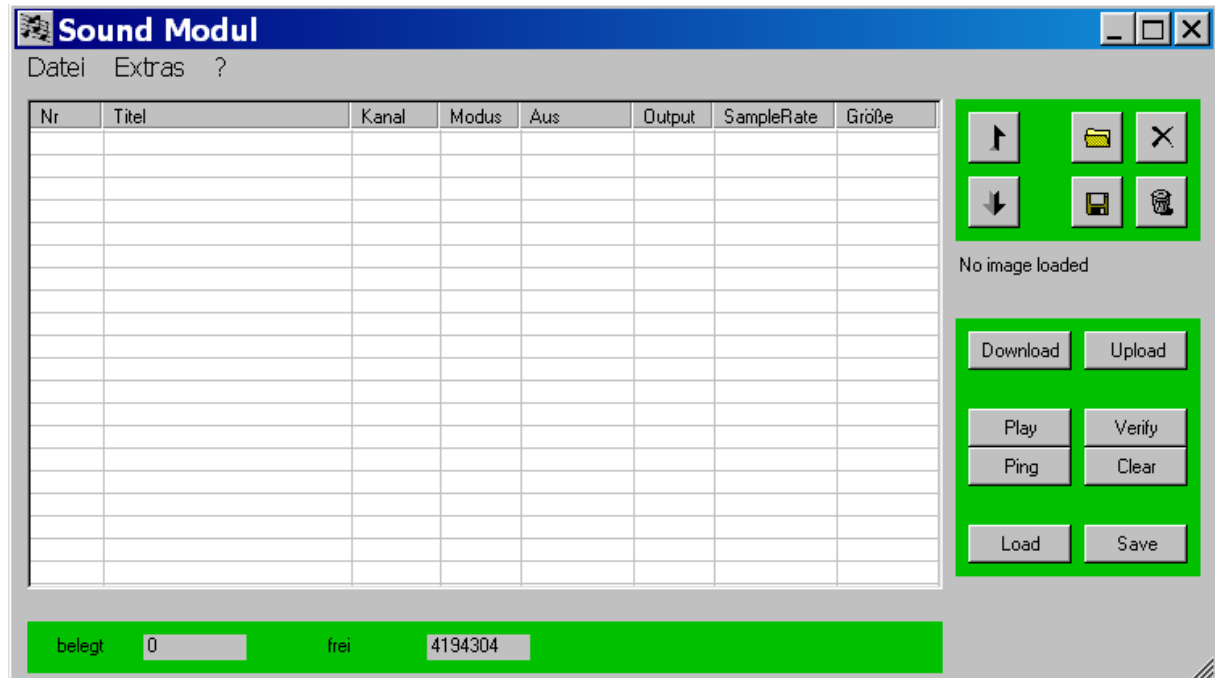
The volume also has to be set via the editing software (e.g. audacity-> freeware, Goldwave,...). **Furthermore, the larger the speakers are, the louder and more surround the sound will be.**

In order to load the desired sounds onto the module, a master file has to be generated first. All desired sound files will be compiled in one file featuring additional information for the hardware via the "Sound module software". Follow the description below in order to create such a master file:

Open software:



After creating a link on the desktop, click on this symbol; otherwise, the program has to be started via the "Program" menu bar.



Select files:



Click all the way until reaching the file that features the edited and prepared sound files.

Edited means: 8 bit mono unsigned, non-compressed wave file

Delete individual files:



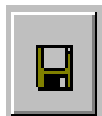
When deleting one file from the list, highlight it with the left mouse button and click on this symbol.

Delete all files:



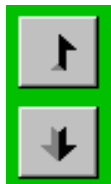
When deleting the complete list, simply click on the trash, files do not have to be highlighted individually.

Saving highlighted files:



This function enables extracting individual files from a master file and saving these separately. E.g.: this can be used for saving some sounds from a master file provided by a different user.

Moving files up and down:



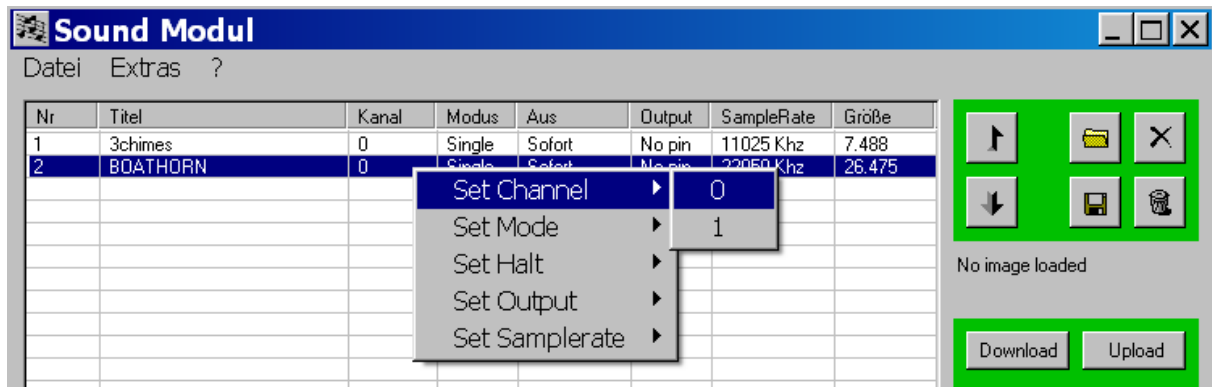
When moving a sound to a different location on the list, highlight it with the left mouse button. Click the arrow pointing up to move it up. Click the arrow down to move it down. For files depending on rotations that have been compiled to chains, one file not belonging to the chain (and therefore not featuring a grey background) cannot be moved into the space of a chain. First, the file has to be moved to the bottom edge of the chain and defined as part of the chain. Thereafter, it can be moved to any desired position within the chain.

This is what 2 files in a list look like:

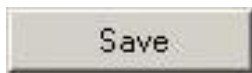
Nr	Titel	Kanal	Modus	Aus	Output	SampleRate	Größe
1	3chimes	0	Single	Sofort	No pin	11025 Khz	7.488
2	BOATHORN	0	Single	Sofort	No pin	22050 Khz	26.475

Settings:

The channel (0 or 1), the mode (loop, single or chain), the Stop mode (immediately or after playing all), the original designation (**Beware of differences between the RC and train versions!!**), and the sample rate (11025 or 22050 kHz) can be modified in the list. In order to change a setting, click on the respective line with the right mouse button. The settings can be changed with a left mouse click in the menu available.



Once the personal sound module has been configured, the master file can be uploaded to the module immediately or saved to the PC by clicking



Then, the respective file and a sensible name can be selected. The master file is saved with an “img“ extension, which stands for image. In order to perform the next steps, the hardware has to be connected to the PC via USB. The file is saved to the hardware by clicking the



button. The status bar shows how far the upload has proceeded. It will take a while if the entire 4MB are being used.

The hardware is ready to operate once the status bar has disappeared.

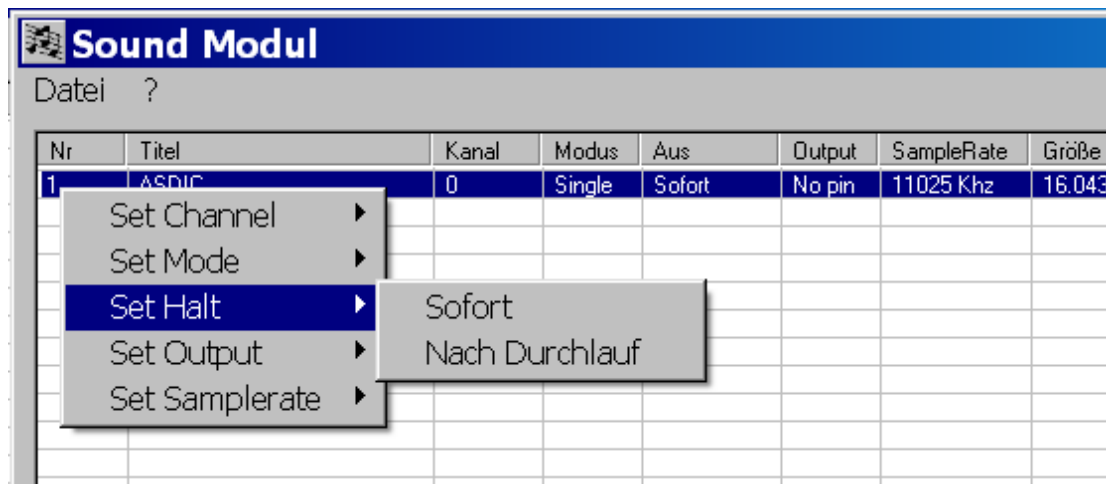
In order to test the sounds it makes sense to recall them via the PC. Up to 2 sounds can be highlighted, of course these need to be run on separate channels. Then press



and the highlighted sounds will be played back.

“Off“ (=“Aus“)Column:

This defines if a sound will stop immediately or after completed playback, once a new sound has been selected.



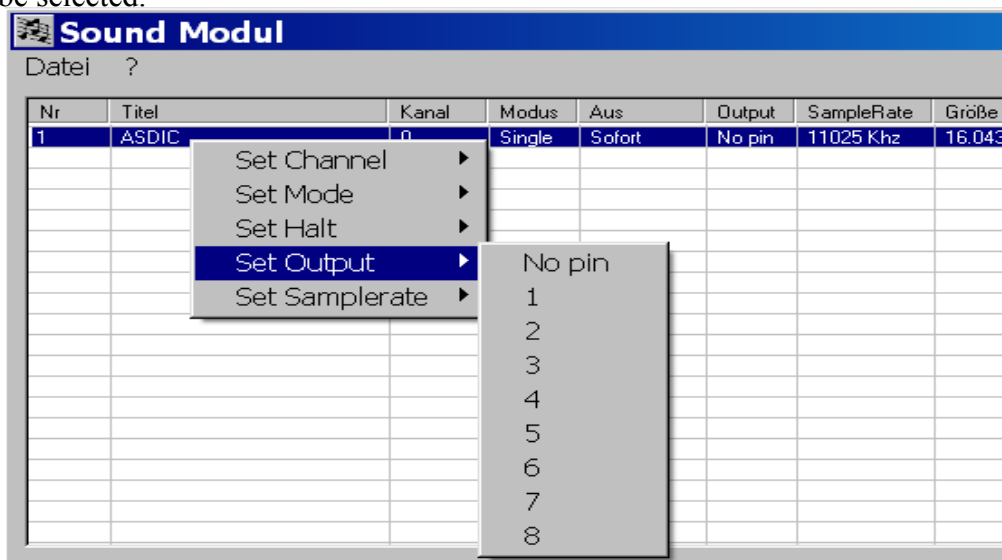
“Output“ Column:

In order to complement functionality, there are 2 different versions (RC and train) available in which the 9-pole socket board can be used to load a program or as output for control lamps, relays, small motors, ... in a synchronous sound manner. This feature enables designating one sound to an output pin from 1-8. If the sound emulates, the respective output is activated. The output only provides approx. 2mA, sufficient for a “low current LED“. If larger currents shall be applied, a transistor level has to be integrated.

The idea behind this is, e.g., to operate a crane on a model ship with the respective sound without requiring an additional channel-switch decoder. With the help of an additional snap-on switch, up to 3 engines with clockwise and counterclockwise rotation, as well as 2 additional loads can be switched.

Refer to “Additional Engine Control Switch“ (Conrad 205541) for more details. Also refer to Appendix D.

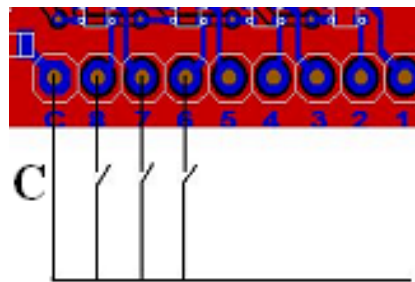
If the RC version has been uploaded, every sound can be designated to a pin of the socket board. For the train version, the socket board serves as input, therefore the function “No pin“ should be selected.



Activate sounds via hardware (only for train version):

Note: Functions via the top socket boards 1 and 2 for RC operation will no longer be available.

The sound module features a 9-pole socket board for the activation of sounds. When there are only 8 uploaded sounds, every pin represents one sound. In order to activate a sound, the respective pin has to be connected to the negative pole (= Pin C).



If the same pin is contacted again while the sound is still being played back, the sound is switched off, should the “Off Mode“ be set to “Immediate(=“sofort“). Contact can take place via simple switches or via transistors.

If more than 8 sounds are uploaded, Pin 8-5 is used for coding. Therefore, a maximum of 64 sounds can be contacted.

Coding takes place in a binary manner:

Stift	1	2	3	4	5	6	7	8	Kodierung
8	1	2	3	4	5	6	7	8	0
14	1	2	3	4	5	6	7	0	0
	8	9	10	11	12	13	14	1	1
24	1	2	3	4	5	6	0	0	0
	7	8	9	10	11	12	0	1	1
	13	14	15	16	17	18	1	0	2
	19	20	21	22	23	24	1	1	3
40	1	2	3	4	5	0	0	0	0
	6	7	8	9	10	0	0	1	1
	11	12	13	14	15	0	1	0	2
	16	17	18	19	20	0	1	1	3
	21	22	23	24	25	1	0	0	4
	26	27	28	29	30	1	0	1	5
	31	32	33	34	35	1	1	0	6
	36	37	38	39	40	1	1	1	7
64	1	2	3	4	0	0	0	0	0
	5	6	7	8	0	0	0	1	1
	9	10	11	12	0	0	1	0	2

13	14	15	16	0	0	1	1	3
17	18	19	20	0	1	0	0	4
21	22	23	24	0	1	0	1	5
25	26	27	28	0	1	1	0	6
29	30	31	32	0	1	1	1	7
33	34	35	36	1	0	0	0	8
37	38	39	40	1	0	0	1	9
41	42	43	44	1	0	1	0	10 / A
45	46	47	48	1	0	1	1	11 / B
49	50	51	52	1	1	0	0	12 / C
53	54	55	56	1	1	0	1	13 / D
57	58	59	60	1	1	1	0	14 / E
61	62	63	64	1	1	1	1	15 / F

Up to 16 sounds can be activated via the remote control with 1 proportional channel (only for RC Version)

Operation is simple: either via the control stick or better yet via a flip switch with 3 positions, with the switch flipping back to the original position automatically after release. If the stick or the switch is moved in one direction quickly (e.g. 3 times) and then released, Sound 3 of that side is activated. If the stick is moved 7 times, Sound 7 is switched on or off. This function corresponds to the memory function. If the stick is not released after the desired amount of quick movements but held in the final position, the respective sound remains activated until the stick is released. This function is designed for files defined as “loops“, e.g. in order to playback the sound of a crane as long as required. In combination with the motor adjustment board, the respective motor can be moved synchronous to sound.

The same type of operation is valid for the “other“ side. Every side features 8 designated sounds.

In order to download a master file from the hardware, click on



The list displays the names, sizes and settings in regard to channel, mode, and sample rate of all files. E.g.: if a designated channel for a sound shall be changed, proceed as indicated in the above and then upload the file to the hardware again.



In order to check and see if the file transfer to the hardware was conducted properly the hardware data can be compared to the data on the computer by clicking “Verify“. This function is not supported by Win98 and an error message will appear.

If a master file from a PC shall be uploaded again, click on



and choose the respective file. In this case, the individual sounds are also displayed in the list and can be modified when required.

Compiling Files Synchronously to Rotation:

In order to simulate the sound of the engine, several files for various rotations are necessary apart from the starting and stopping sounds – depending on personal demand and resolution.

Important: the following points must be considered:

- any synchronous rotation playback of files has to run via Channel 0
- all files that belong together have to be listed in the following order:

File No. 1: Starting sound
No. 2: Stopping sound
No. 3: up to no.64 max.: rotation files

The 62 rotation files max. will be divided up in a linear manner over the entire stick motion of the remote control.

Example:

We have provided a complete file with only 3 rotations as an example.

Position 1 features the start file (engine is started), Position 2 is the stop file. For this example we have assumed the center of the stick to represent neutral.

Every position of the stick features a designated file. If the stick is at the top end stop, “Rotation 2000“ will be played back, “Neutral“ resounds in the center position, “Rotation 1000“ is inbetween and the bottom end stop once again features “Rotation 2000“.

If the module is used in an airplane, neutral will probably be in the bottom end position, which is why the file for neutral has to be located at the end of the list.



As in the previous version, select the files via the

symbol.

Nr	Titel	Kanal	Modus	Aus	Output	SampleRate	Größe
	Start	0	Single	Sofort	No pin	22050 Khz	344.842
	Abstellen	0	Single	Sofort	No pin	22050 Khz	62.674
	Drehzahl 2000	0	Single	Sofort	No pin	22050 Khz	14.170
	Drehzahl 1000	0	Single	Sofort	No pin	22050 Khz	15.312
	Leerlauf	0	Single	Sofort	No pin	22050 Khz	11.898
	Drehzahl 1000	0	Single	Sofort	No pin	22050 Khz	15.312
	Drehzahl 2000	0	Single	Sofort	No pin	22050 Khz	14.170

In order to compile all files into a chain, highlight the respective files via the left mouse button, click the right mouse button while the cursor is over the highlighted area and select “Chain“. The chain will then feature a grey background. When adding an additional file, move it to the bottom of the chain files, then it can be included in the chain.

Sound Modul							
Datei ?							
Nr	Titel	Kanal	Modus	Aus	Output	SampleRate	Größe
1	Start	0	Single	Sofort	No pin	22050 Khz	344.842
2	Abstellen	0	Single	Sofort	No pin	22050 Khz	62.674
3	Drehzahl 2000	0	Single	Sofort	No pin	22050 Khz	14.170
4	Drehzahl 1000	0	Single	Sofort	No pin	22050 Khz	15.312
5	Leerlauf	0	Single	Sofort	No pin	22050 Khz	11.898
6	Drehzahl 1000	0	Single	Sofort	No pin	22050 Khz	15.312
7	Drehzahl 2000	0	Single	Sofort	No pin	22050 Khz	14.170

Sound Modul							
Datei ?							
Nr	Titel	Kanal	Modus	Aus	Output	SampleRate	Größe
1	Start	0	Single	Sofort	No pin	22050 Khz	344.842
2	Abstellen	0	Single	Sofort	No pin	22050 Khz	62.674
3	Drehzahl 2000	0	Single	Sofort	No pin	22050 Khz	14.170
4	Drehzahl 1000	0	Single	Sofort	No pin	22050 Khz	15.312
5	Leerlauf	0	Single	Sofort	No pin	22050 Khz	11.898
6	Drehzahl 1000	0	Single	Sofort	No pin	22050 Khz	15.312
7	Drehzahl 2000	0	Single	Sofort	No pin	22050 Khz	14.170

- Set Channel ▶
- Set Mode ▶
- Set Halt ▶
- Set Output ▶
- Set Samplerate ▶

- Loop
- Single
- Chain

Sound Modul							
Datei ?							
Nr	Titel	Kanal	Modus	Aus	Output	SampleRate	Größe
1	Start	0	Chain	Sofort	No pin	22050 Khz	344.842
2	Abstellen	0	Chain	Sofort	No pin	22050 Khz	62.674
3	Drehzahl 2000	0	Chain	Sofort	No pin	22050 Khz	14.170
4	Drehzahl 1000	0	Chain	Sofort	No pin	22050 Khz	15.312
5	Leerlauf	0	Chain	Sofort	No pin	22050 Khz	11.898
6	Drehzahl 1000	0	Chain	Sofort	No pin	22050 Khz	15.312
7	Drehzahl 2000	0	Chain	Sofort	No pin	22050 Khz	14.170

Important final notice: the start file always has to be set to “After Run“(=Nach Durchlauf“). The user can choose to set the other files to “After Run“ as well. We recommend the “**After Run**“ setting, as the transitions are smooth, if the files have been sampled properly. The shorter the individual rotation files, the quicker the sound will react to the movement of the stick.

Sound Modul							
Datei ?							
Nr	Titel	Kanal	Modus	Aus	Output	SampleRate	Größe
1	Start	0	Chain	Nach Dur...	No pin	22050 Khz	344.842
2	Abstellen	0	Chain	Sofort	No pin	22050 Khz	62.674
3	Drehzahl 2000	0	Chain	Sofort	No pin	22050 Khz	14.170
4	Drehzahl 1000	0	Chain	Sofort	No pin	22050 Khz	15.312
5	Leerlauf	0	Chain	Sofort	No pin	22050 Khz	11.898
6	Drehzahl 1000	0	Chain	Sofort	No pin	22050 Khz	15.312
7	Drehzahl 2000	0	Chain	Sofort	No pin	22050 Khz	14.170

The functions “Copy“ and “Rename“ exist in order to facilitate the creation of chain files:

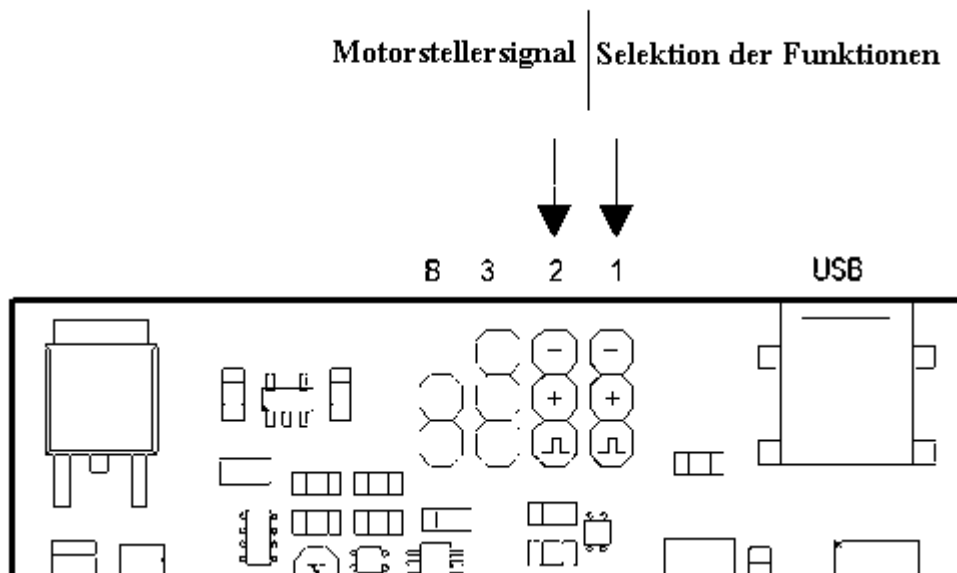


Click “Rename“(=“Umbenennen“) in order to give the selected line a new name.

The line is duplicated and added to the end of the list via the “Copy“ function

Activating a chain via the remote control:

Connection of the receiver:



The information regarding which rotation file shall be played back is not provided by the current on the engine but directly via the engine adjustment signal on the receiver.

Socket Board 1: as many as 16 channels can be controlled via the control stick.

Contrary to the versions preceding 11_01_08, selection is not conducted via Socket Board 2 but via Socket Board 1.

The first sound is always the chain, if one has been defined. No matter how many files are included in the chain, when the second sound is activated, the one after the chain is called up. i.e. the individual rotation files cannot be accessed directly (except for testing purposes via the PC).

Socket Board 2: The impulse for the motor adjuster is connected to Pin 2. In order to connect the sound module and the motor positioner at the same time and parallel to the receiver, a Y-cable is required.

Activate the first sound after the module has been uploaded. By swiftly moving the stick into the final position and letting it go immediately, the motor is started. If the stick of the motor adjuster is in neutral, the sound for neutral will be played. If the file selection stick is not immediately released into the middle position the sound will only be played until the stick is released. This function exists to operate turrets or cranes, etc. As long as the stick is pressed, the crane or the turret will move accompanied by the respective sound; the function will stop once the stick is released. (on/off and memory function)

Example: assign Sound 2 (the one after the chain) to the respective sound (define as loop) for the crane and designate Output 1, e.g. If this function is activated, the sound will be emitted and Output 1 will become active – a respectively connected motor will rotate in one direction with additional hardware. Also assign Function 10 with a sound for the crane and designate Output 2; now you have the crane sound again at Position 2, but this time the motor will rotate in the other direction.

Position 2 “down“ is reached by rapidly moving the stick downward twice, and holding the stick in the final position. Position 2 “up“ is reached by rapidly moving the stick upward twice.

To operate 3 motors in clockwise and counterclockwise rotation and 2 additional loads, supplementary “synchronous sound module” hardware can be acquired through Conrad (order no. 205541).

Inserting Acceleration and Delay Files:

Starting with **Module Version 3.2.2010 RC** and **PC Version V2.5.62** it is possible to insert acceleration and delay files in addition to rotation files. The conditions for playback of these files can be programmed in any way.

Example: When hitting full speed out of neutral, the sound differs from that of slow acceleration. All of these sound effects can be implemented by the new version. The acceleration and delay sounds are activated immediately after the condition is triggered. If the acceleration file is active and the next condition has already been triggered, acceleration is stopped and the delay file is played back, e.g. This ensures that the sound always follows the changes of the motor quickly.

This functionality will be explained in the following example of truck sounds:

First upload the image file “Truck“(=“LKW“) via the “Load“ button:

Sound Modul							
Datei Extras ?							
Nr	Titel	Kanal	Modus	Aus	Output	SampleRate	Größe
1	start	0	Chain	Nach Dur...	No pin	11025 Khz	20.543
2	stop	0	Chain	Nach Dur...	No pin	11025 Khz	20.979
3	anfahren	0	Chain	Sofort	No pin	11025 Khz	18.623
4	beschl+schalt	0	Chain	Sofort	No pin	11025 Khz	72.803
5	beschl oben	0	Chain	Sofort	No pin	11025 Khz	23.625
6	vollgas	0	Chain	Sofort	No pin	11025 Khz	96.428
7	verz0	0	Chain	Sofort	No pin	11025 Khz	18.623
8	verzfahrt	0	Chain	Sofort	No pin	11025 Khz	32.466
9	verz+schalt	0	Chain	Sofort	No pin	11025 Khz	41.840
10	F9	0	Chain	Nach Dur...	No pin	11025 Khz	3.126
11	F9	0	Chain	Nach Dur...	No pin	11025 Khz	3.126
12	F8	0	Chain	Nach Dur...	No pin	11025 Khz	3.290
13	F7	0	Chain	Nach Dur...	No pin	11025 Khz	3.473
14	F6	0	Chain	Nach Dur...	No pin	11025 Khz	3.677
15	F5	0	Chain	Nach Dur...	No pin	11025 Khz	3.907
16	F4	0	Chain	Nach Dur...	No pin	11025 Khz	4.168
17	F3	0	Chain	Nach Dur...	No pin	11025 Khz	4.465
18	F2	0	Chain	Nach Dur...	No pin	11025 Khz	4.809
19	F1	0	Chain	Nach Dur...	No pin	11025 Khz	5.210
20	leerlauf	0	Chain	Nach Dur...	No pin	11025 Khz	4.744
21	leerlauf	0	Chain	Nach Dur...	No pin	11025 Khz	4.744
22	rück1	0	Chain	Nach Dur...	8	11025 Khz	8.436
23	rück1	0	Chain	Nach Dur...	8	11025 Khz	8.436

Excerpt of all truck engine files from the list.

As usual, Postions 1 and 2 feature the start and stop files.

Following these are the acceleration and delay files, then the actual rotation files are set up. In order to facilitate recognition of the additional files, these are highlighted in yellow as soon as an operation has been defined where these will be played back.

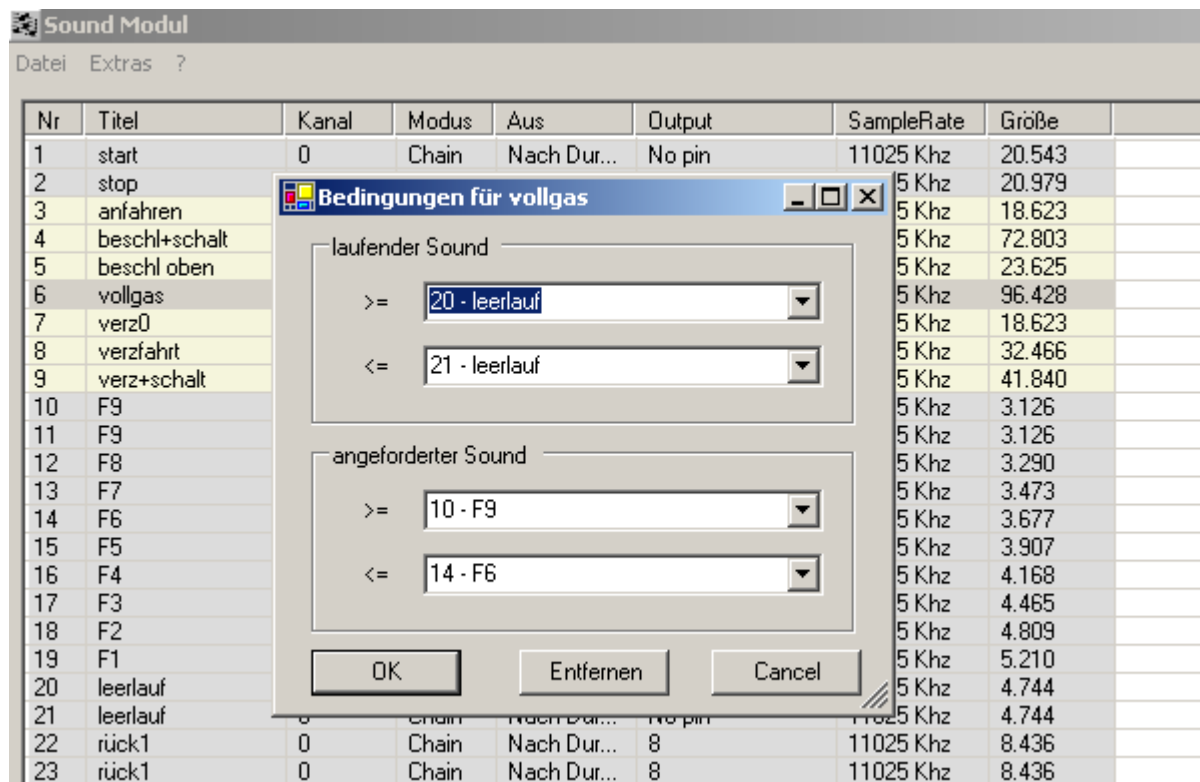
In order to define the conditions, an additional point in the menu was added:
“Set Conditions“ (access via the right mouse click over the respective line)

Sound Modul							
Datei Extras ?							
Nr	Titel	Kanal	Modus	Aus	Output	SampleRate	Größe
1	start	0	Chain	Nach Dur...	No pin	11025 Khz	20.543
2	stop	0	Chain	Nach Dur...	No pin	11025 Khz	20.979
3	anfahren	0	Chain	Sofort	No pin	11025 Khz	18.623
4	beschl+schalt	0	Chain	Sofort	No pin	11025 Khz	72.803
5	beschl oben	0	Chain	Sofort	No pin	11025 Khz	23.625
6	vollgas	0	Chain	Sofort	No pin	11025 Khz	96.428
7	verz0	0	Chain	Sofort	No pin	11025 Khz	18.623
8	verzfahrt	0	Chain	Sofort	No pin	11025 Khz	32.466
9	verz+schalt	0	Chain	Sofort	No pin	11025 Khz	41.840
10	F9	0	Chain	Nach Dur...	No pin	11025 Khz	3.126
11	F9	0	Chain	Nach Dur...	No pin	11025 Khz	3.126
12	F8	0	Chain	Nach Dur...	No pin	11025 Khz	3.290
13	F7	0	Chain	Nach Dur...	No pin	11025 Khz	3.473
14	F6	0	Chain	Nach Dur...	No pin	11025 Khz	3.677
15	F5	0	Chain	Nach Dur...	No pin	11025 Khz	3.907
16	F4	0	Chain	Nach Dur...	No pin	11025 Khz	4.168
17	F3	0	Chain	Nach Dur...	No pin	11025 Khz	4.465
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19	F1	0	Chain	Nach Dur...	No pin	11025 Khz	5.210
20	leerlauf	0	Chain	Nach Dur...	No pin	11025 Khz	4.744
21	leerlauf	0	Chain	Nach Dur...	No pin	11025 Khz	4.744
22	rück1	0	Chain	Nach Dur...	8	11025 Khz	8.436

- Set Channel ▶
- Set Mode ▶
- Set Halt ▶
- Set Output ▶
- Set Samplerate ▶
- Set Conditions**
- Umbenennen
- Kopieren

We would like to explain the definition of the “Full Speed“ file here, all other functions work the same way.

The following window appears after clicking the menu item “Set Conditions“:

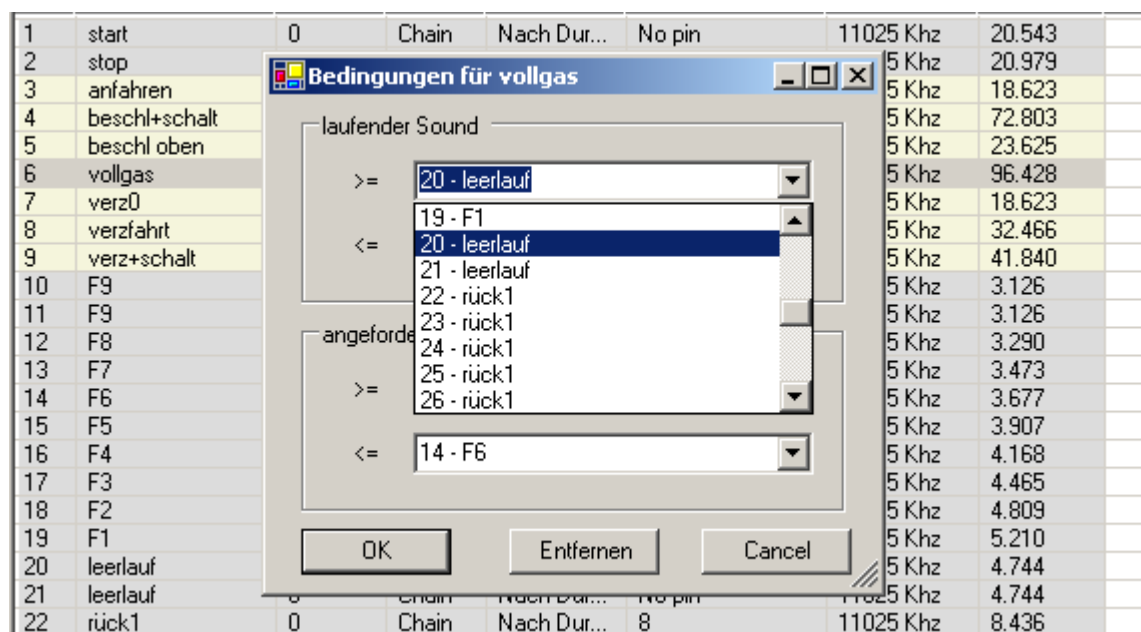


The condition requiring definition is:

If the engine is in neutral (arranged dually here to provide the control stick with some dead space) and then accelerates fully (level F6-F9), the “Full Speed Acceleration File“ should be played back.

The range of the running sound is entered into the top field. A range is always defined in order to ensure flexibility. If one file is truly the only condition, it is entered into both lines, >=(greater or equal) and <=(less or equal).

Click on the small arrow on the right side of the line and the menu will open, offering all possible options. The user is responsible for defining meaningful definitions.



The box on top includes the currently running rotation, the bottom one includes the rpm and/or the range according to the new respective position of the stick. If both conditions are met, the file which was the point of origin in the entire list will be recalled. In this example its "Full Speed". Once the acceleration file has been played back, the respective rotation file will resound.

At first glance, this function may seem a bit complicated, but once the principal is clear adding acceleration and delay files will not pose any problems. Beware to ensure that all definitions are conclusive.

ad 5) Switch-Channel Function:

Starting with **PC Version 2.3.62** and **Module 30.11.2009 RC**, as many as 8 additional independent switch-channels can be defined alongside the 2 soundfiles that can be played back simultaneously. By the way, this function turns the sound module into a comprehensive switch-channel decoder. It can be controlled just like the sound files.

A switch-channel is defined via the



button.

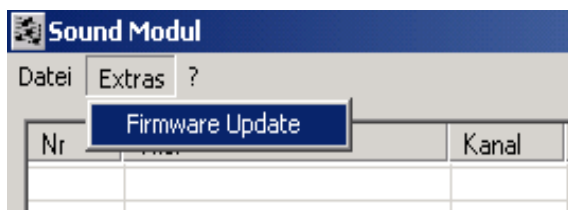
The contents of the "Channel", "Mod2", "Off", "Samplerate", and "Size" columns are ignored. A switch-channel can be located at any place in a list. The output only provides approx. 2mA, sufficient for a "low current LED". If larger currents shall be applied, a transistor level has to be integrated.

ad 6) Software Update

The sound module offers the possibility of installing new versions of software to the hardware anytime. The user can easily perform this step.

Starting with the module version Sound_11_01_08 sync_BETA (=RC Version) or TRAIN, the software update can be performed from the sound module software screen directly with the PC Version **V 2.2.43** or higher. The hyper terminal will no longer be necessary. If your module features an even older version, the hyper terminal will still be required.

The dropdown menu "Extras" was added to the menu bar. Click on it and "Firmware Update" can be selected.



Important Note:

When loading a file other than the intended *.hex file, the module cannot be programmed. As the old software will have been deleted, the module is no longer operational and the bootloader cannot be accessed anymore. The sound module will have to be sent in and reprogrammed completely.

Appendix A:

Software Update via the Hyper Terminal for Old Software Versions

In order to be able to communicate with the hardware the “hyper terminal“ available on every PC is used. This is a simple communication program that directly accesses the interfaces. The “hyper terminal“ is accessed via – Programs – Accessories – Communication - Hyper Terminal.

If a new connection is created, the hardware has to be attached via the USB cable. In the first window that opens, the connection has to be named (e.g. sound module) and a symbol has to be designated. The serial port is selected in the next window. Generally, the next number of the actually available serial ports is used. If, e.g. the system being used has 2 serial ports COM 1 and COM 2, then the USB interface will be designated COM 3. Otherwise the computer manager has to be checked.

Configuring the Hyper Terminal

In the next window the interface is configured. The same is true here as in Chapter 1.



Then, click on save. Now the “Hyper Terminal“ has been configured. In the bottom lefthand of the “Hyper Terminal“ window, the serial port is shown as open, a clock is also displayed. Otherwise, “Offline“ will be indicated.

Performing an Update

In order to upload new software to the module, the hardware has to be supplied with power and connected to the PC via USB, then the hyper terminal will be opened; ensure that the connection to the hardware is online.

The “bootloader“ jumper is bypassed briefly in order to start the programming process. The following menu will then pop up in the window of the “hyper terminal“:

```
Firmware Updater
*****
1. Update Firmware *
2. Firmware Update abbrechen *
3. Befehlsliste anzeigen *
*****
Auswaehlen (1,2,3)>
```

By pressing button 1, the internal memory is deleted and prepared for the new version.

```
Firmware Updater
*****
1. Update Firmware *
2. Firmware Update abbrechen *
3. Befehlsliste anzeigen *
*****
Auswaehlen (1,2,3)>
*** Loesche Flash
*** Flash pages geloescht
Bereit zum Empfangen...
```

Once this has happened, click on “**Transfer**“ on the top of the “Hyper Terminal“ window and click on “**Send Text File**“ in the menu. Go to the file that now contains the new version and click it, then click OK. The file is a so-called “hex“ file, i.e. it features the file type .hex. As the hyper terminal searches for “txt“ files, “*.hex“ has to be entered in the file name field so the file will be displayed and can be selected.

Important Note:

When loading a file other than the intended *.hex file, the module cannot be programmed. As the old software will have been deleted, the module is no longer operational and the bootloader cannot be accessed anymore. The sound module will have to be sent in and reprogrammed completely.

The programming process has been started and will take approx. 20 seconds. Progress can be monitored via the points. As soon as the hardware has been fully programmed, the system will automatically reset itself and will return to its regular operating mode.

```
Firmware Updater
*****
1. Update Firmware *
2. Firmware Update abbrechen *
3. Befehlsliste anzeigen *
*****
Auswaehlen (1,2,3)>
*** Loesche Flash
*** Flash pages geloescht
Bereit zum Empfangen...
*****
** Firmware Update komplett **
** RESETTING **
-
```

Close the connection to the “Hyper Terminal“ by hanging up:



If the connection stays open the software of the sound module cannot access the hardware and an error message will be issued.

In order to download new updates free-of-charge visit our homepage at

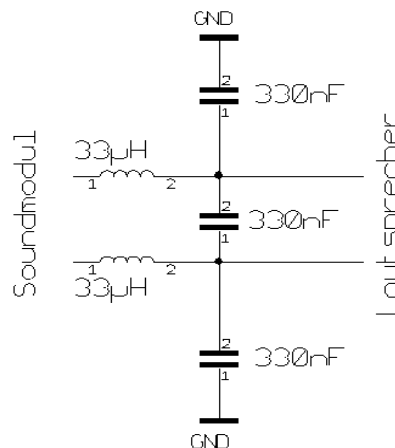
www.neuhaus-electronics.at

Appendix B:

Additional Interference Suppression for Long Speaker Cables

Important Note:

If the cable between the module and the speaker is clearly longer than 30cm, a filter should be interposed immediately following the module in order to abide by EMV Regulations.



Example:

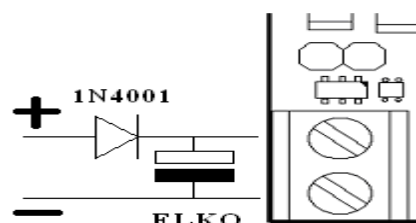
GND stands for **ground** (= minus). Attach both connectors to the negative power supply clamp of the module directly without using a long line.

The inductors should feature a low ohm rate, not more than 0,2 Ohm.

Appendix C: 10 Watt Snap-On Auxiliary Amplifier (Conrad 205789)

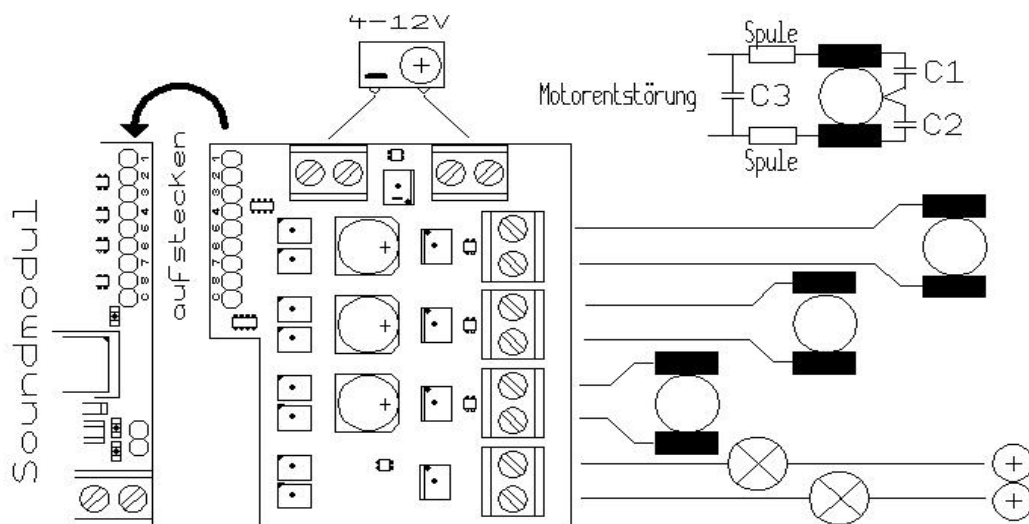
Now that the onboard amplifier is not being used, the sound module can also be operated on 14 Volts. If the module is being used along with a motor from the same voltage source, beware of proper interference suppression. Nonetheless, interfering humming noises may still be emitted from the speaker. In order to clearly reduce these, switch a diode and a large ELKO in front of the sound module, the larger the capacity (>2200µF) the better the interfering noise can be suppressed. Conrad offers cheap ELKOs. Components featuring low serial resistance are well suitable (low ESR).

Beware of the maximum voltage of 16 Volts.



Appendix D: Expansion Card for Motor Control (Synchronous Sound Module Conrad 205541)

This module, also a snap-on, enables switching up to 3 motors and 2 on/off functions at the same time with one sound. An additional channel of the remote control is not required. The additional hardware aims at being able to perform a movement synchronous to a sound. E.g.: on a tank, the canon with the real sound can be raised and lowered with the respective sound. Refer to the "Output" chart in order to assign the sounds to an output. Refer to page 9 for details.



Appendix E: FAQs and Trouble-Shooting

- **Installing the software on the PC was performed properly. The red diode also lights up when the module is connected. However, the software cannot be opened.**

There have been occasional problems with the automatic port assignment of Windows XP: the sound module has to be designated to COM Port 1 manually, and the module has to be connected before starting the software. Go to system control and select the finder under system, then assign the sound module (CP2101 USB to UART bridge controller) numeral 1. The problem should be solved.

Or:

A bug was detected in the port assignment and corrected, download the latest version, then there shouldn't be any problems on laptops anymore either.

- **The module only plays back the selected sound once, but not as a loop.**

Check to ensure the "Loop" option has been selected in the PC software. Go to the respective line with the mouse and click the right mouse button to access the options. Select "Loop". Important: every modification also has to be uploaded to the module. Therefore, perform an upload once all options have been set accordingly.

- **The module crashes after playing back the sounds briefly.**

This problem can occur if the voltage source produces a peak current that is too low or if the supply features ohm that is too high. i.e. Use a rechargeable battery that supplies a minimum 1 A, and more when there is an additional amplifier. It is extremely important to ensure that the supply lines are not too thin and, especially, that all connections do not offer great resistance. Therefore, plugs or clamps that already show a layer of oxide are most definitely not suitable.

- **The module plays back the sounds at a wrong speed or only omits strange sounds.**

Here, the sample rate may be the problem. E.g.: if a sound was recorded at 8kHz and then played at 11kHz it will sound too fast. The same thing is true vice versa: if a file was uploaded with a sample rate of 22kHz and played at 11kHz it will naturally sound too slow. If there are only strange sounds being omitted, the data format may not be correct. Sometimes it is overlooked that the file is stereo and features a 16bit resolution. Every file has to be converted to the format "8 Bit unsigned Mono". 2 playback speeds are supported: 11 and 22 kHz. If the original file only features 8 kHz, it needs to be re-sampled to 11 or 22 kHz. Generally, any audio processing software can perform this task.

- **The module occasionally crashes.**

When operating under a very low voltage, it can happen that short voltage breaks occur in the supply line. Especially when other loads are attached to the same voltage source. The module should certainly have its own line to the battery (or transformer) and must not be connected to the same cord as other loads or even be located at the end of it. Furthermore, it can be helpful to place a major ELKO directly by the input screw terminals of the modules (1000µF and more)

- **The sounds can be activated via the PC, but not via the socket board**

The wrong version was uploaded.

There are 2 versions available starting with module version 11_01_08:

RC Version: this one uses the socket board as output in order to be able to operate external loads synchronous to sound. To operate 3 motors in clockwise and counterclockwise rotation and 2 additional loads, supplementary "synchronous sound module" hardware can be acquired through Conrad (order no. 205541)

Train Version: The “Train“ version differs from the RC version by using the 9-pole socket board as input. By itself, this would not be any news, but the improvements of the RC version are also available now:

- Selecting the stop mode,
- Ending one sound before activating a new one is no longer necessary as the ending occurs fully automatic.

RC functions that are controlled via the receiver input are not available. Furthermore, assigned output pins are ignored, but they should be defined as “no pin“.

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