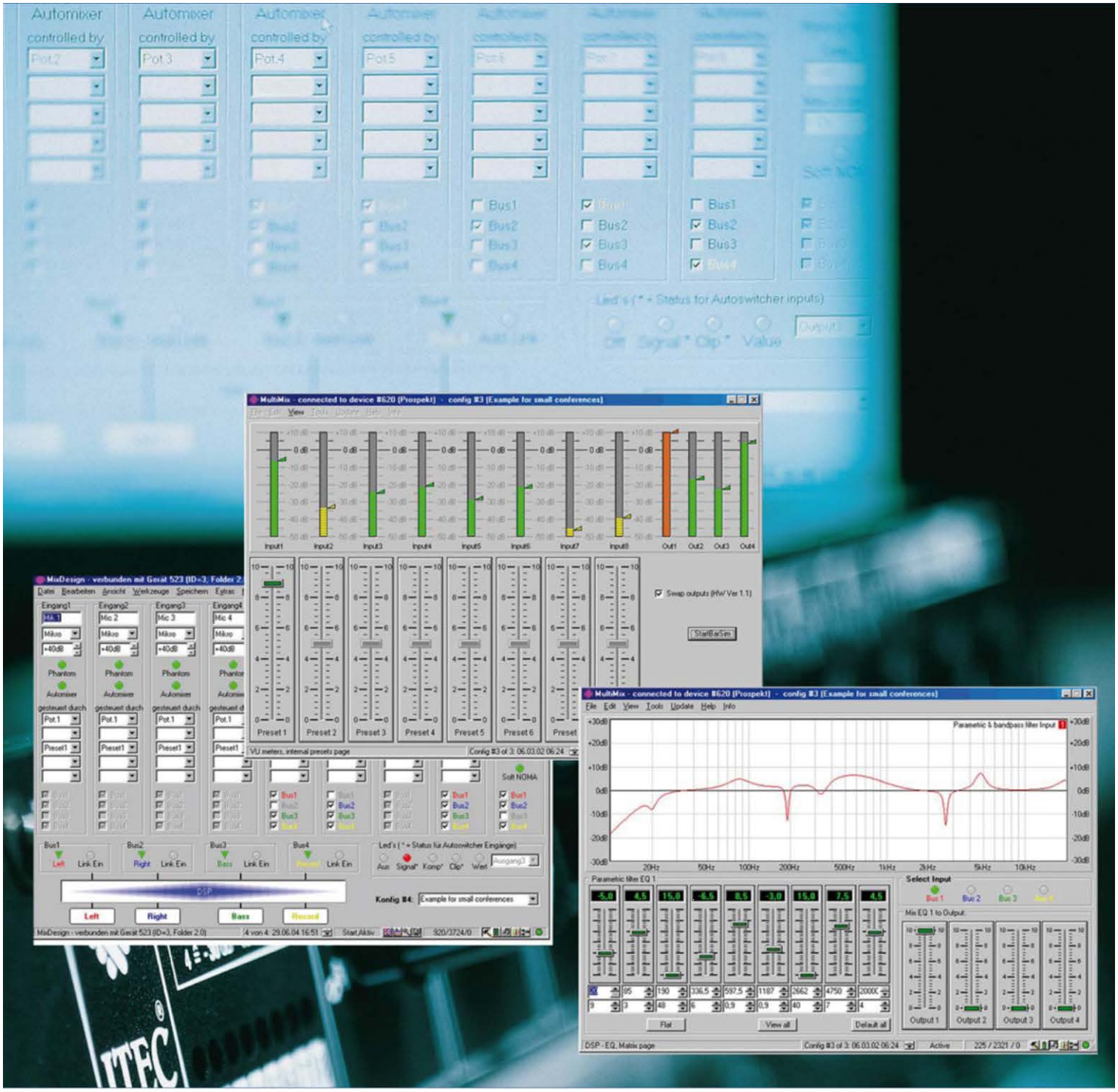

ITEC MULTIMIX 8/4 DIGITAL

MANUAL VERSION 3.0, SEPTEMBER 2009

PART 2: SOFTWARE ITEC MIXDESIGN

ITEC®

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CONTENTS: PART 2
SOFTWARE ITEC-MIXDESIGN

PART 2: SOFTWARE ITEC-MIXDESIGN

The PC software for the **ITEC-MultiMix 8/4 digital**:

The software package **ITEC-MixDesign** is the "tool" for the sound engineer to determine all the settings of the device. In addition to this, the mixer's functions can best be tested and checked in real time.

The settings are stored mains-independent in the MultiMix controller's flash memory. This comprises not only the data and parameters required for „stand alone“ operation but also, for example, freely selectable names for the inputs and outputs. This way, the user always has the complete data at his disposal.

Different situations require different settings. The Flash Memory stores up to 15 different complete configurations. The requested start configuration is stated in “**project preferences**”, the change to other configurations being carried out by means of an external switch (see hardware description chapter 7) or by a media remote control (chapter 8).

You find the latest version of the **ITEC-MixDesign** for a free of charge download under:

http://itec-audio.com/download/mixer/mixersetup.exe

Important hints for a quick start:

If a ready-for-operation device is linked via the RS 232 interface and you load the software **ITEC-Mixdesign** (mixer.exe), all the devices settings will first of all be copied to the PC. Device and PC are now synchronised, meaning that all the settings shown on the screen are identical with the latest device settings. And you can start to make your configurations.

On the other hand if you want to work with this programme without the connected ITEC-MultiMix, there are two ways of doing so:

"file" / "open project" loads an existing project;

"edit" / "new project" defines a new project.

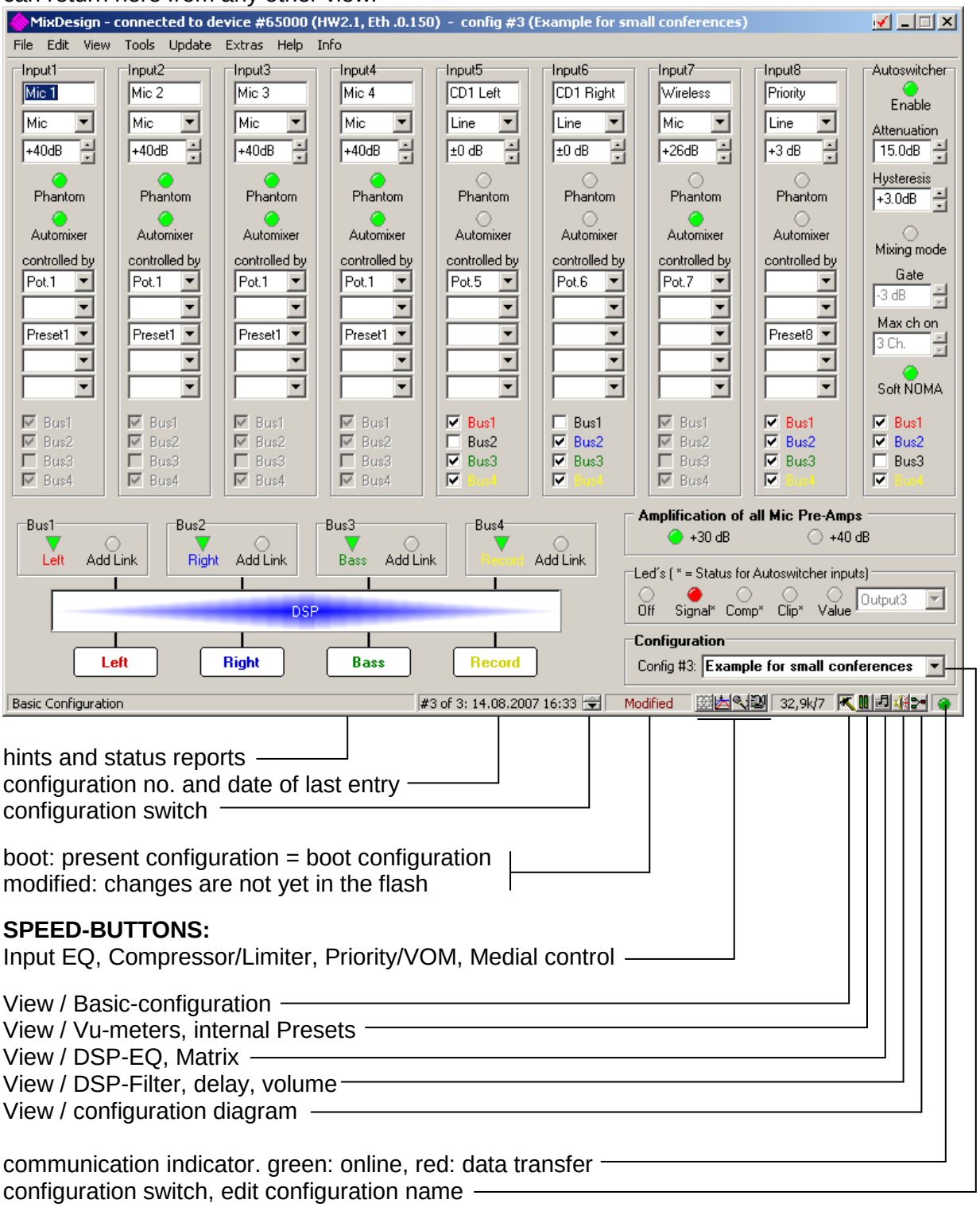
You need to choose a project name and one of the predetermined basic configuration (first configuration).
A complete device set-up can then be prepared and saved on your PC
("file" / "save project")
to be copied to a device later on
("file" / "open project") or “update” / “send project to device and store”.

You find more details described in the following chapters **„file“**, **„edit“** and **„update“**.

1) VIEWS

1.1 VIEW "Basic-configuration"

The first view you get on the screen after starting the programme is the **"basic configuration"**.
With "view" / "basic configuration" or the corresponding Speed Button in the status line you can return here from any other view.



hints and status reports
configuration no. and date of last entry
configuration switch

boot: present configuration = boot configuration
modified: changes are not yet in the flash

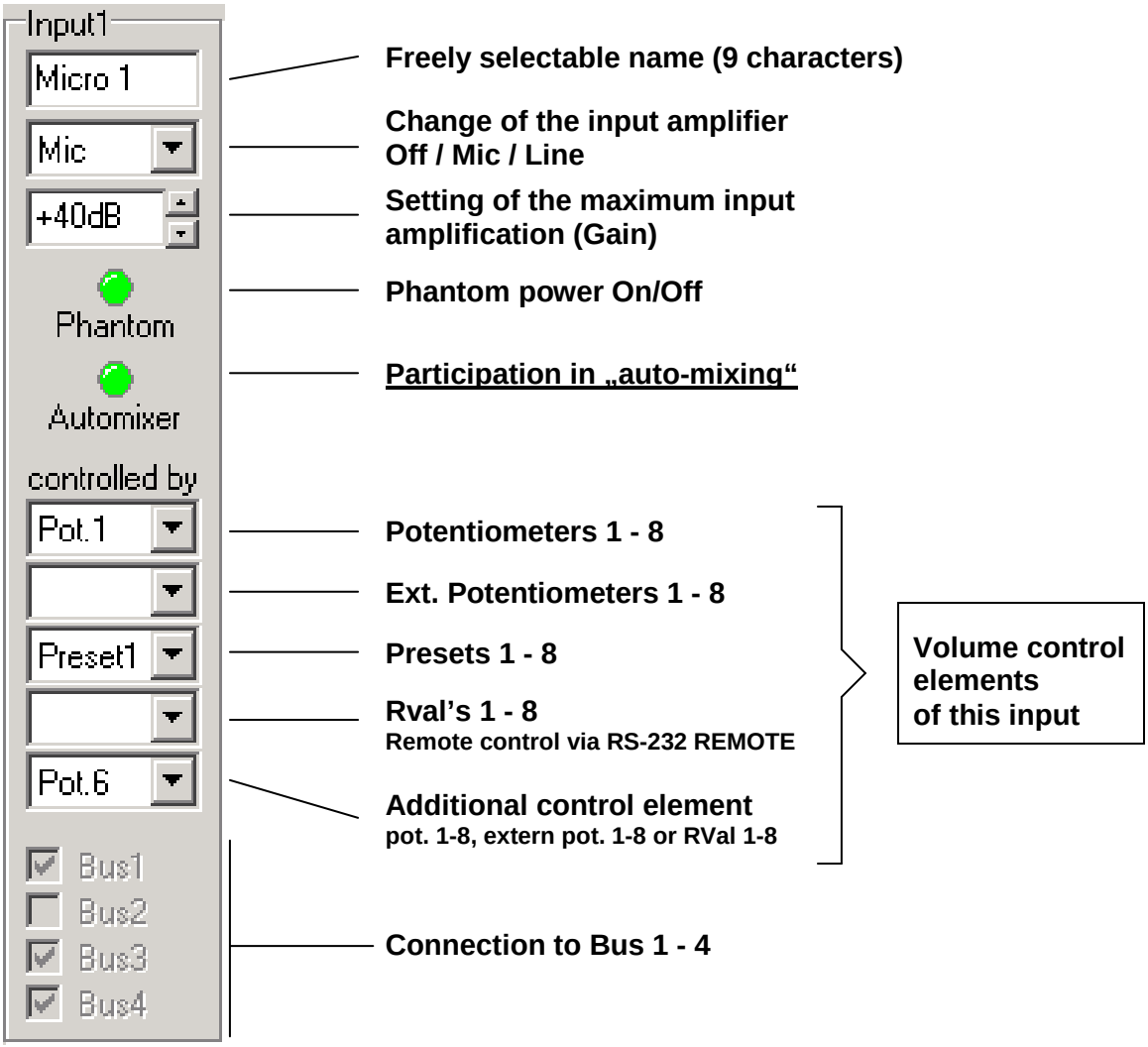
SPEED-BUTTONS:
Input EQ, Compressor/Limiter, Priority/VOM, Medial control

View / Basic-configuration
View / Vu-meters, internal Presets
View / DSP-EQ, Matrix
View / DSP-Filter, delay, volume
View / configuration diagram

communication indicator. green: online, red: data transfer
configuration switch, edit configuration name

VIEW "Basic configuration"

Configuring inputs:



Explanation of the control elements:

Potentiometers 1- 8 are the volume controls on the front panel of the device (see also hardware description chapter 3).
Extern 1 - 8 are the external potentiometers or control voltages that are connected to the external control socket (see also hardware description chapter 7).
Preset 1 - 8 are predetermined settings that have been adjusted with MixDesign (view / vu-meters / presets).
RVal 1-8 (**R**emote **Val**ue) are readings that are imported by a media remote control via the serial interface of the device.

Please note that, as it is the case with the other controls, 8 Rval's are possible but that Rval1 does not necessarily control input 1 but all those inputs that Rval1 has been allotted to.

Hint: Pressing the Ctrl-Key while selecting an element enables you to clear all other elements of the input in one step.

VIEW ”Basic configuration“

Configuring of the auto-mixer:

Every ITEC-MultiMix 8/4 has an integrated state-of-the-art automatic microphone mixer. The ingenious algorithms guarantee a recognition of the microphones being spoken into, even at a very high background sound level.
In the **switching mode** there is always only one microphone open. In the **mixing mode** you can have several active microphones. According to the number of active microphones the overall volume will be reduced, thus keeping constant the distance to the feedback threshold (NOMA, **N**umber **O**f **M**icrophone **A**ttenuation).

Auto-switcher/mixer On/Off

Attenuation of inactive microphones

Switching hysteresis

Mixing mode On/Off

Range within additional microphones can become active.

Maximum number of simultaneously active microphones

Soft NOMA

Switches to Bus 1 - 4
Note: all the channels that are switched to auto-mixer receive the same Bus allocation. Should you want a different allocation: once the cursor is on this field, press right mouse button and choose „enable manual setting“.

Explanations to the Auto-mixer:

"Attenuation" allows you to set the attenuation of inactive microphones.
The greater the attenuation, the more effective is auto-mixing. However, if the attenuation is too rigorous, the sound ambience will change when switching to a different microphone. Favourable readings are between 12 dB and 18 dB. In some cases, when speech intelligibility is top priority, the biggest possible attenuation (24 dB) may by all means be appropriate.
„**Hysteresis“** is the level that a microphone needs to be louder than the presently active one in order to become active and at the same time the new “leader” itself. Should the hysteresis have been set very low, the change of microphones will be fast and frequent; if it is high, the device will react rather slowly. Favourable readings are between 3 and 5 dB.
„**Mixing-mode“** means that several microphones can be active at the same time. They need to be within a predetermined range (“**Gate**”) of the “leading” microphone. Favourable readings appr. 3 - 6 dB.
"Max ch on" defines the maximum number of microphones that may be switched on simultaneously.
On activating **"Soft NOMA"**, the overall volume will be reduced smoothly if further microphones are activated in mixing mode.

VIEW "Basic configuration"

Common Base Gain of Mic Pre-Amps:

Determines the portion of the overall gain which the Mic Pre-Amp amplifies the input signal. The overall gain remains uninfluenced. If microphones with high outputs level are used and/or microphones with small distance to the speaker, the setting +30dB should be used in order to avoid distortions on the input. On using microphones with small output levels the setting +40dB can achieve a noticeable reduction of the background noise.
Note: +40dB is adjustable only on devices with hardware version >= 2.1.

Multi-functional LED display:

You can choose one of the following functions for the LED chain on the front panel:

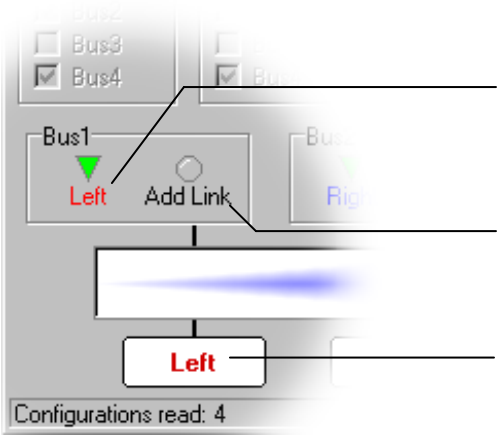
Off: LEDs are switched off.
Signal*: Input signal at the corresponding input (post-fade) is higher than - 60 dB.
Comp*: Input signal at the corresponding input is compressed by Compressor/Limiter.
Clip*: Input signal at the corresponding input (post-fade) is higher than + 3 dB.
Value: Level meter for one input or output (one LED equals 10 dB) in steps.
In the pull down menu you select the input/output to be indicated.

*When operating the "Auto-mixer" the LEDs signal the active microphones.

If the display if configured to display a **Value,** you can determine the current level with the following table:

LED no	1	2	3	4	5	6	7	8
Value greater or equal	-55dB	-50dB	-40dB	-30dB	-20dB	-10dB	-0dB	+10dB

Bus name, output name and "Add Link"



Change **Bus name** by double click

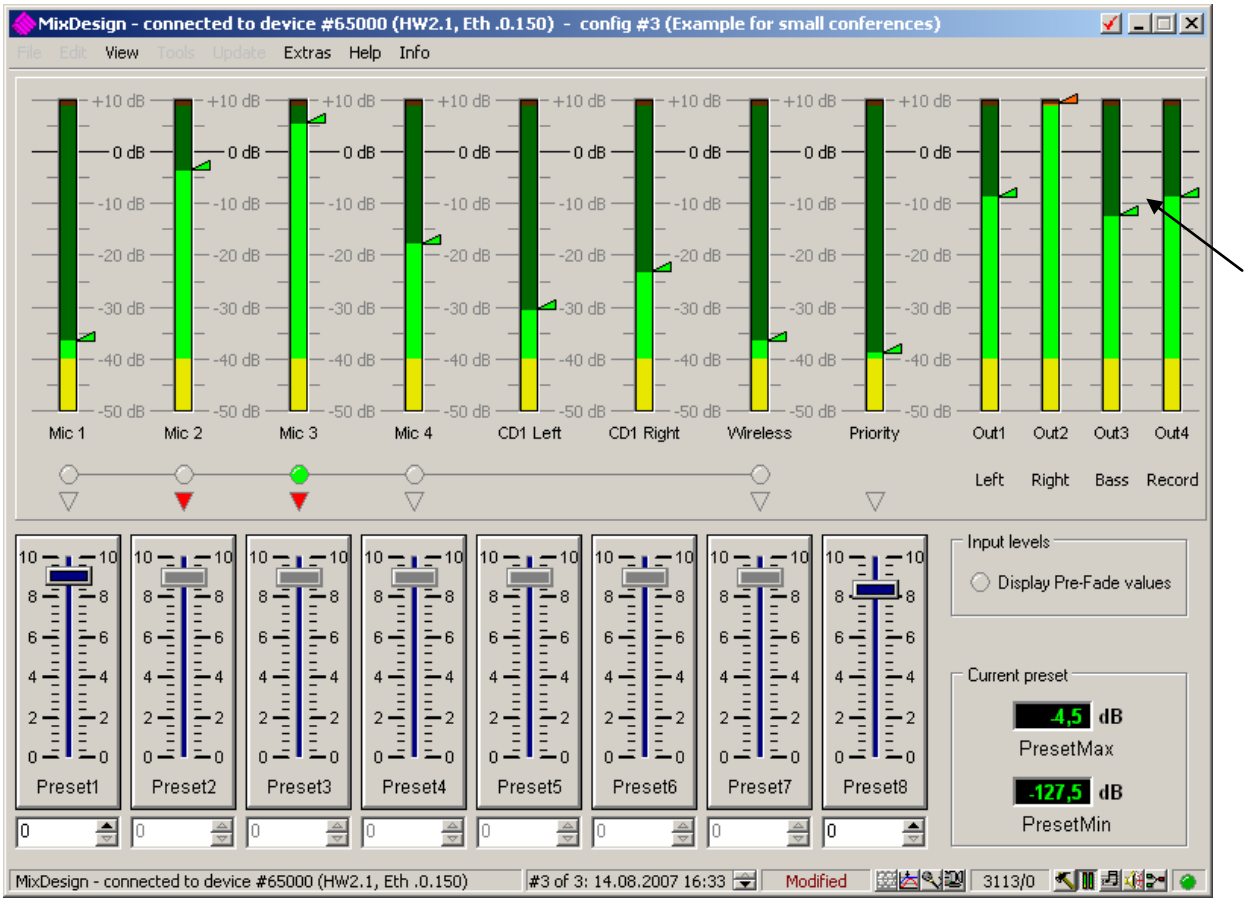
Add Link: Analogue link, switches input „Link-in" on or off

Change **Output Name** by double click

1.2 VIEW "VU-Meters, internal presets"

Shows the level of the 8 inputs (post-fade) as well as the levels of the 4 Busses or outputs. You can also switch the display to view the levels direct pending on the input (Display pre-fade values)

Below the input bars, you see the current active Automixer channels if the Automixer/Switcher is running (connecting lines), otherwise the elements indicate if a signal is present (Signal >= -60 dB) The arrows show the Compressor/Limiter activity.



Display of the Bus signals:

If you are not using the DSP module, the output signals are identical with the Bus signals.

When using the DSP module the Bus metering becomes interesting.

This is how you change the meter display:
- cursor to output level display (see arrow)
- press right mouse button,

now you can choose the metering between:
- display of **Bus 1 - 4**
- display of **Bus 1, 2** and **Out 1, 2**
- display of **Bus 3, 4** and **Out 3, 4**
- display of **Out 1 - 4**

VIEW: VU-meters, presets

Adjusting the presets

On the same page you will find 8 presets (predetermined volume settings).
Adjusting the preset controls is possible only when the appropriate control has been determined in the “basic configuration” as a control element for an input.

The attenuation, in relation to the maximum amplification, is as follows:

```
1 ..... -60 dB
2 ..... -40 dB
3 ..... -35 dB
4 ..... -30 dB
5 ..... -25 dB
```

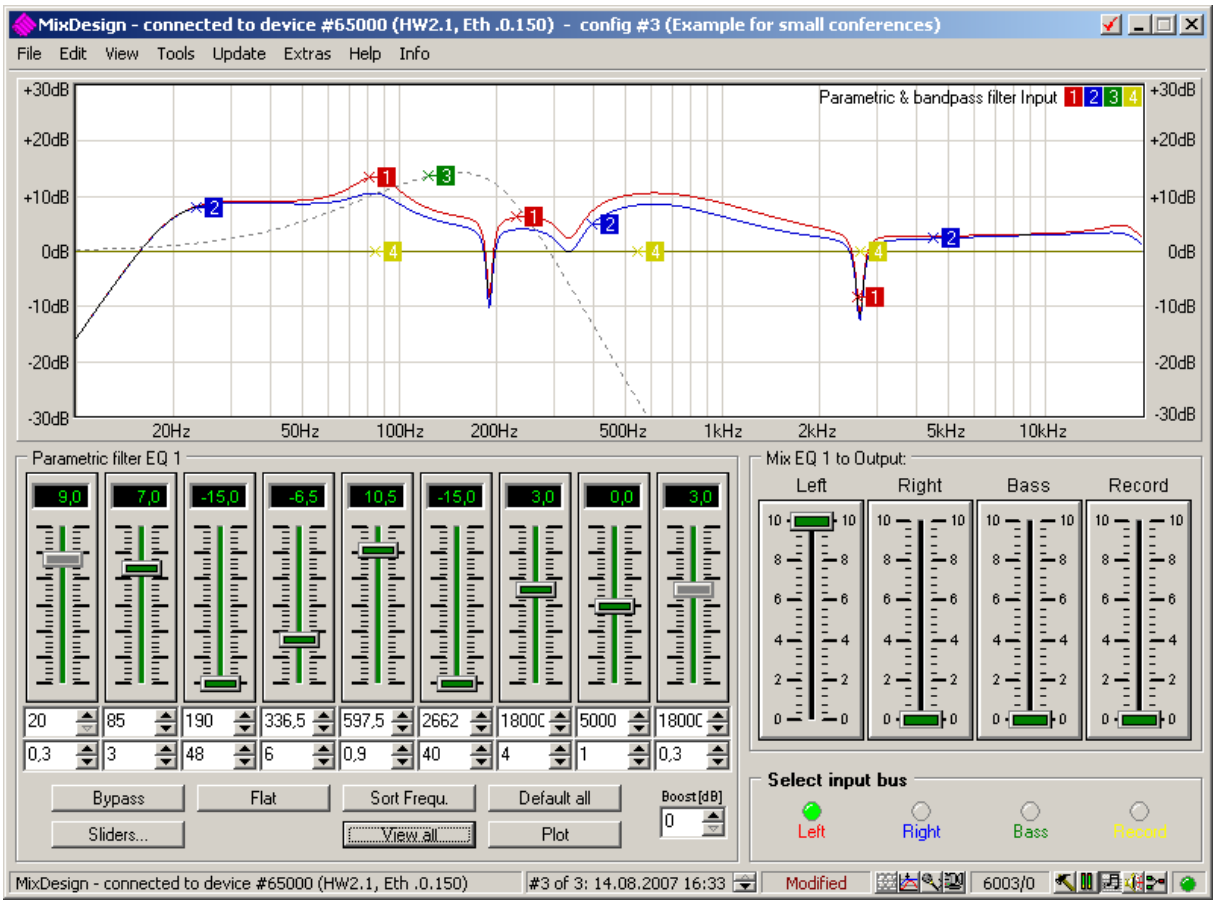
```
6 ..... -20 dB
7 ..... -15 dB
8 ..... -10 dB
9 ..... - 5 dB
10 ....   0 dB
```

See also hardware description chapter 3.

You can also predetermine a minimum preset value. You can choose a value between 0 and 10 (with one decimal). Calculate this value into dB according to the table above. The determined minimum value cannot be undershot by controlling the potentiometer or the remote control.
However, an attenuation by the auto-mixer can very well undershoot the minimum preset.

1.3 VIEW "DSP EQ, matrix"

Only active with versions that have a built-in DSP-module!



Parametric equalizer:

The DSP has four parametric 9-band equalizers, one per each Bus. Choose the desired Bus in the field „select input“ on the right-hand bottom of your screen.

Per band you can adjust:
the **attenuation/amplification** from -15 to +15 dB;
the **frequency** in steps of 1/16 octave;
the **quality** from 0.1 to 70.
(frequency / quality defines the filter's band range. Quality 10 at a frequency of e.g. 1600 Hz renders a band range of 160 Hz).

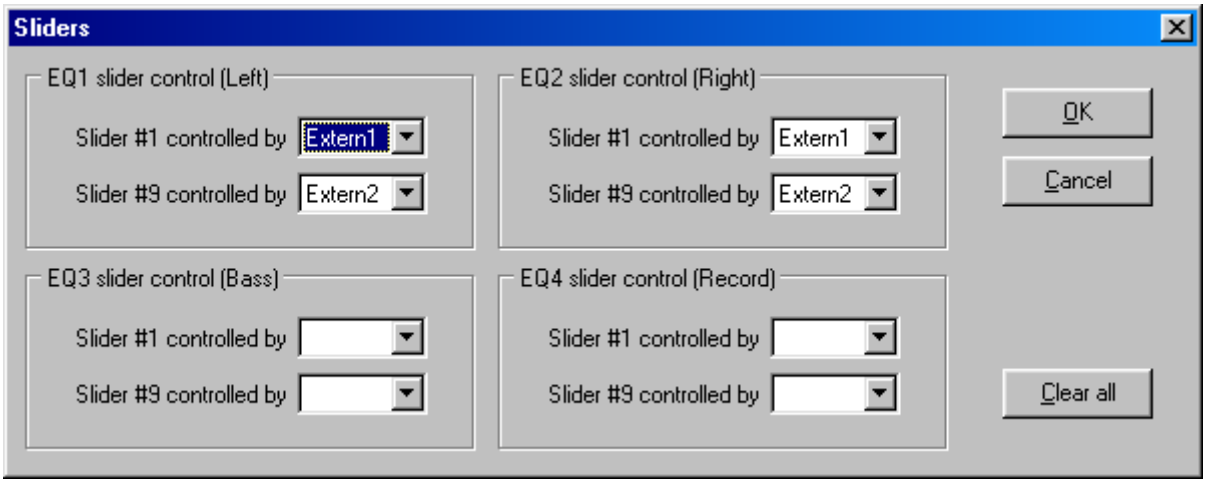
Below the equalizer you will find the following buttons:

Sliders: The first and the ninth control (on the far left and right respectively) can be taken over by another control element, e.g. Pot1, external Poti or Rval. For a detailed description see the next page..
Plot: The graphs of all the EQ's are printed on the selected printer.
View all: The graphic display shows you the chart of all four EQs simultaneously.
Bypass: The EQ is disabled by the device and drawn with a dashed line.
Flat: All the controls are set to 0 dB.
Sort.Frequ.: The nine bands are sorted by frequency (from left to right). Those not being used are on the very right.
Default all: basic setting (frequency in 1/1 octave-steps, quality 1, amplification 0).
Boost: Input-Booster. Adjustable from 0 to 12 dB (refer to Booster under 1.4)

Adjusting the equalizer by Poti or media remote control:

For each Bus two virtual slider controls of the parametric equalizer can be replaced by different control elements, namely by potentiometers 1-8, by external potentiometers 1-8 and by Rval 1-8 respectively. This way you can define e.g. a sound control that allows the user to handle it easily by manipulating a single control (on the front panel or installed elsewhere externally) or by media remote control .

By activating the button **„Sliders“** you open the following window:



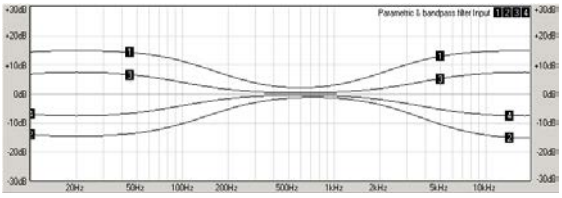
For each of the four equalizers there are the following setting options:

Slider #1 (slider control on the far left): Pot 1-8 or external Pot 1-8 or RVal 1-8

Slider #9 (slider control on the far right): Pot 1-8 or external Pot 1-8 or RVal 1-8

The first definition of control elements activates this function and transmits to the controls the standard readings (which you can, of course, set freely).
The standard readings are:

Slider #1: frequency 20Hz and quality 0,3
Slider #9: frequency 18000Hz and quality 0,3



This is the setting of a typical sound control with separate bass and treble controls.

Potentiometer in mid position reads 0dB each,
final position –15dB resp. +15dB.
RVal „0“ means –15dB, RVal „255“ means +15dB.

Additional functions to facilitate your work when adjusting parametric EQs

Link:
In order to adjust comfortably two or more channels simultaneously you can link EQs during processing.
First of all choose the Bus/EQ that ought to be processed in the „select input“ field.
Then point the cursor in the „select input“ field to the Bus/EQ that is to be synchronously adjusted, press right mouse button and choose "**Link EQ to Bus**".
This function comes in very handy, e.g. when synchronously adjusting the right and left channels of a stereo application.

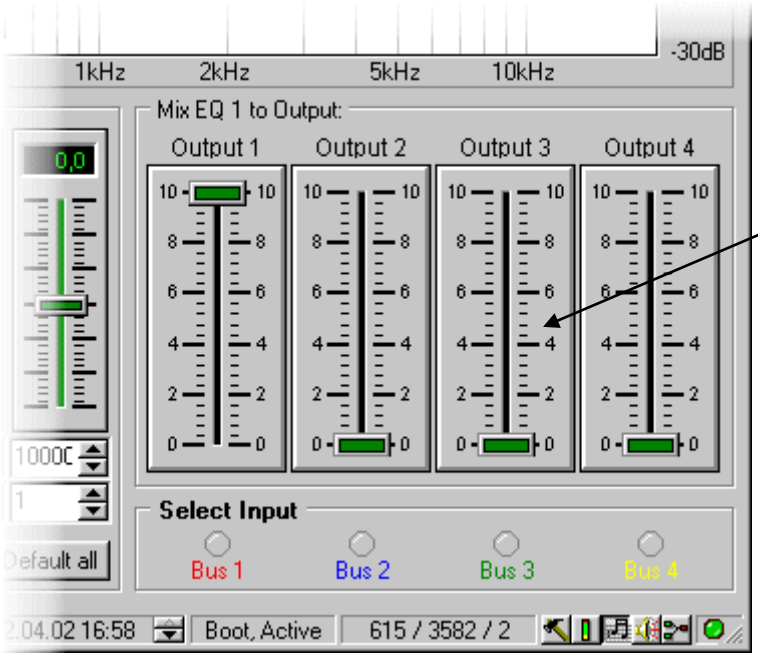
Note: The buttons "Bypass", "Flat", "Sort Frequ." and "Default All" execute their functions on all linked channels.

Copying equalizer settings:
Move cursor into the graphic area and press right mouse button. „**Copy EQ**“ will save the settings in the clipboard.
In the field „select input“ choose the Bus where the settings should be copied to.
Move cursor into the graphic area and insert the settings from the clipboard by choosing "**Paste EQ**".

Saving equalizer settings:
Move cursor into the graphic area and press right mouse button. „**Save EQ as…**“ will save the settings to disk, "**Load EQ**" loads the settings into the current equalizer.

Matrix-Mixer:

The matrix-mixer controls determine the level of the signals after the EQs to the outputs 1 - 4. In the basic settings EQ1 is on output 1, EQ2 on output 2, etc. Yet any other combination of level settings are possible.

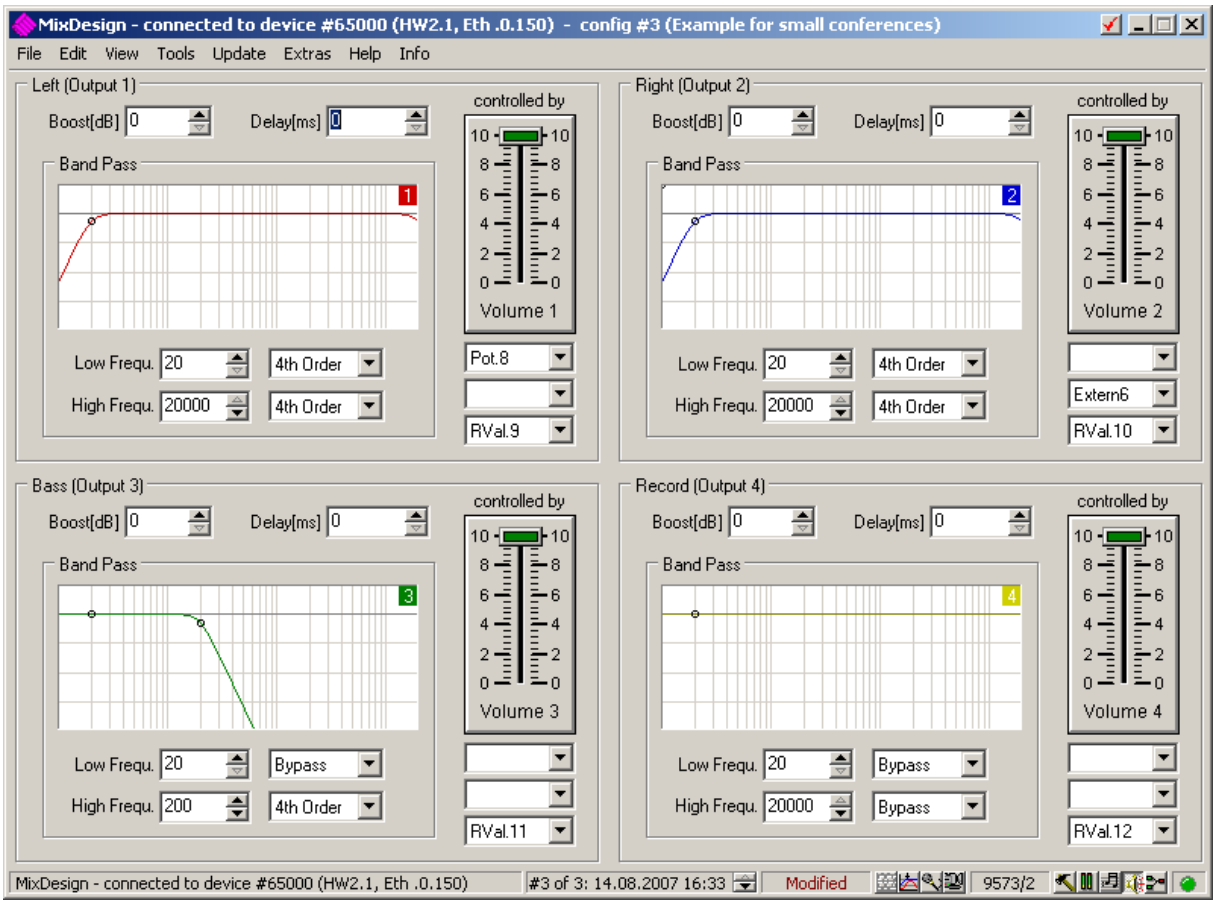


Quick default to the basic setting for a chosen channel: Move cursor into matrix field (arrow) and press right mouse button.
(EQ1-Out1, EQ2-Out2
EQ3-Out3, EQ4-Out4)

(Set mix to defaults)

1.4 VIEW "DSP Filter, Delay, Volume"

Only active with versions that have built-in DSP-module!



Adjusting the output volume:

The volume setting is executed by the DSP module, yet it happens after the D/A transformer and is consequently analogue. This means that the full resolution of 24 bits is warranted even at low volumes.

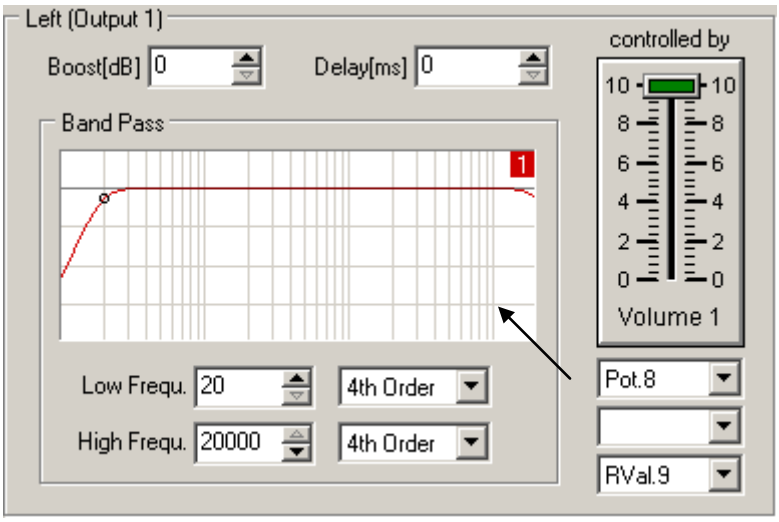
The output volumes can be adjusted by the virtual faders (e.g."Volume 1") and/or by the volume control elements to be configured below the faders:

	Potentiometers	1 - 8
and/or:	External Potentiometers	1 - 8
and/or:	Remote Values (RVal)	9 - 12

<u>Attention:</u> Please note that the potentiometers and the external potentiometers could have been choosen also for an input (basic configuration). Take care that you do not us the same element twice for different purposes.

Hint:
Function „verify current configuration“ (see 2.6) spots such double usages and gives you an according error warning.

Boost, Delay, Bandpass:
For each of the four outputs you can adjust the following settings:



Boost: Adjustable from 0 to 12 dB
This is a mathematical amplification in DSP. It comes in handy when DSP loses level owing to equalizer attenuation.
Generally you need to make sure that the input and Bus levels are set reasonably high. So fully use your analogue means. The level meter (view / VU-meters) will give you vital support. Should the pre-DSP level be very low, only a small amount of the possible resolution of the A/D transformation is being made use of; not even the booster will remedy this. What the booster will improve immensely in this case is the signal/sound disparity: subsequent output stages need not be turned up fully and the amplification of the basic DSP interference will be as low as possible.

Delay: adjustable from 0.023 ms to 500 ms.
The display can also be in meters or feet. Change the unit by moving the cursor into the delay field, press right mouse button and choose the desired unit of display.

Low Frequ.: (High-pass filter): choose low-frequency in Hz (in steps of 1/16 octave) and filter order (1st to 4th)or bypass).

High Frequ.: (Low-pass filter): choose high-frequency in Hz (in steps of 1/16 octave) and filter order (1st to 4th) or bypass).

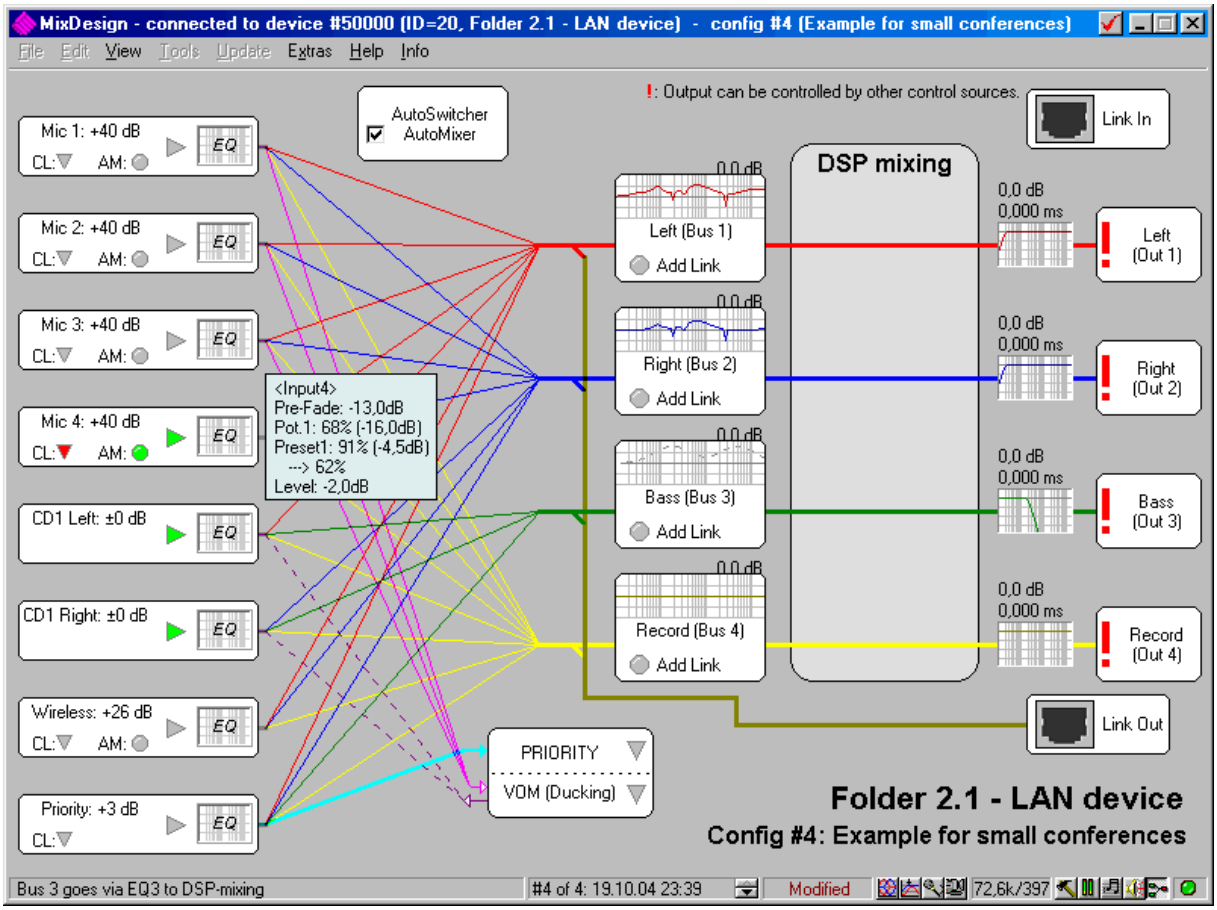
The chosen settings are displayed in the graphics field.

Copying of filter settings:
Move cursor into the graphic field of the filter that is to be copied, press right mouse button and choose "**copy bandpass**".
Move cursor into the graphic field of the output that is to take over the filter settings, press right mouse button and choose "**paste bandpass**".

1.5 VIEW "Configuration-diagram"

Displays the selected settings as an overview block diagram.
By placing the cursor in one of the fields and pressing the left mouse button you are shown additional information (e.g. level, pot's position, etc.).

By double-clicking this section you get to the corresponding configuration site.
By double-clicking the bus or output names you can change them, by pressing the right mouse button you change the display between bus and output signals.
The right mouse button also copies filter settings.



2) TOOLS:

2.1 Verify connection & device (Go online)
Checks the connection to the device and, should it be interrupted for whatever reason, re-establishes it.

2.2 Read all configurations from device
All the settings are read from device to PC.

2.3 Reload current configuration from flash
The present configuration of the flash will be loaded to the RAM of the microcontroller (If you edit the configurations online and you want to come back to the previous saved configurations you should use this function - or you have to switch off and on the device).

2.4a Lock device
Locks the device. You must first choose a password (see 2.4). Once it is locked, the device shows all the views, yet no changes can be made.

2.4b Unlock device
Unlocks the device by entering the password. The device remains unlocked for the duration of the session. For generally unlock see 2.4.

2.5 Set password
Enter a 4 – 10 digit alphanumeric password to lock the device.
To generally unlock the device also select this function and just press „enter“ instead of choosing a new password.

2.6 Compare configurations
Compares two configurations and marks the differences. The configuration can be located in RAM or Flash of the device (displays unsaved changes), in a saved project or in the configuration clipboard of MixDesign. Printing option is included.

2.7 Verify current configuration
Your assistent checking the configuration in respect of illogical adjustments, e.g. a line-level input with phantom- power activated. Found mistakes are listed and named as hint, warning or error. Printing option included.

2.8 Verify current project
Same as 2.7 but checks the whole project (all configurations)

2.9a Enable external config switch (RAM only)
Unlocks hardware configuration switch.
See hardware description chapter 7b.

2.9b Disable external config switch (RAM only)
Locks hardware configuration switch. See hardware description chapter 7b.

CAREFUL: The changes made by „enable” / ”disable external configuration switch“ only last for the duration of a session (they are not saved in the flash). Permanent changes can only be carried out in „project preferences“ (see „**edit**“ / „**project preferences**“)!!!

2.10 Switch to other device
Opens a dialog where you can quickly switch between devices (searches on all ports, independent from the settings in Serial port configuration)

2.11 Disconnect from device (Go offline)
Cuts the connection with the device (and closes the associated port)

3) UPDATE:

3.1 Store current configuration (into flash)
All the current settings are saved mains independent in the device's flash memory.

3.2 Send project to device and store (into flash)
An entire project is sent from a PC to the device and stored in the flash.

3.3 Store project preferences (into flash)
The "project preferences", meaning the basic configuration of a project, are sent to device. This function is only needed in special cases.

3.4 Send current configuration from PC to device (RAM only)
The settings accomplished on the PC are sent to the device, yet are not permanently stored (into the flash). This you can achieve by "store current configuration into flash".

3.5 Auto-send config changes (RAM only)
Once this function is activated (which is the normal operation), any changes made on the PC are immediately sent to the ITEC-MULTIMIX and carried out, yet not stored (into the flash). This must be done by the function "store current configuration into flash".

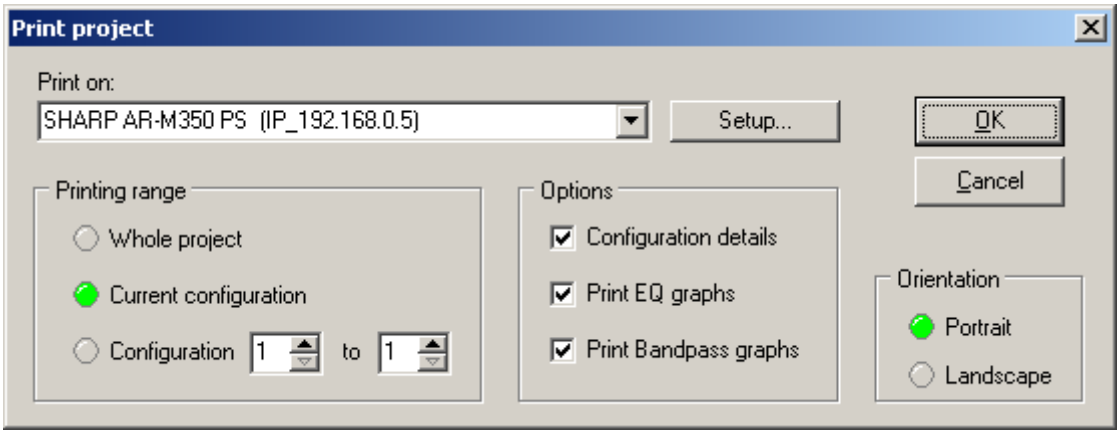
4) FILE: Saving / Loading of projects

4.1 Open project
Loads existing projects from a data carrier. (See also “Extras / MixDesign preferences / Other options / Extended dialog”

4.2 Save project
Stores the current project onto a data carrier. The current project name is used as filename.

4.3 Save project as
Stores the current project under a new name onto a data carrier. Please note that the project’s name is not changed. A project’s name can only be changed by **"Edit" / "Project preferences".**

4.4 Print project
Print single configurations or the whole project. The equalizer settings can also be printed as graphs.



4.5 Printer setup
Customize your printer output for “Print active view”
(See also “Extras / MixDesign preferences / Printing options“)

4.6 Mail project
Mail the current project via the integrated SMTP-server. Before sending the first project you have to fill in the mail settings. If you have questions please ask your system administrator.

5) EDIT: Creating new projects / Changing of projects

5.1 New Project

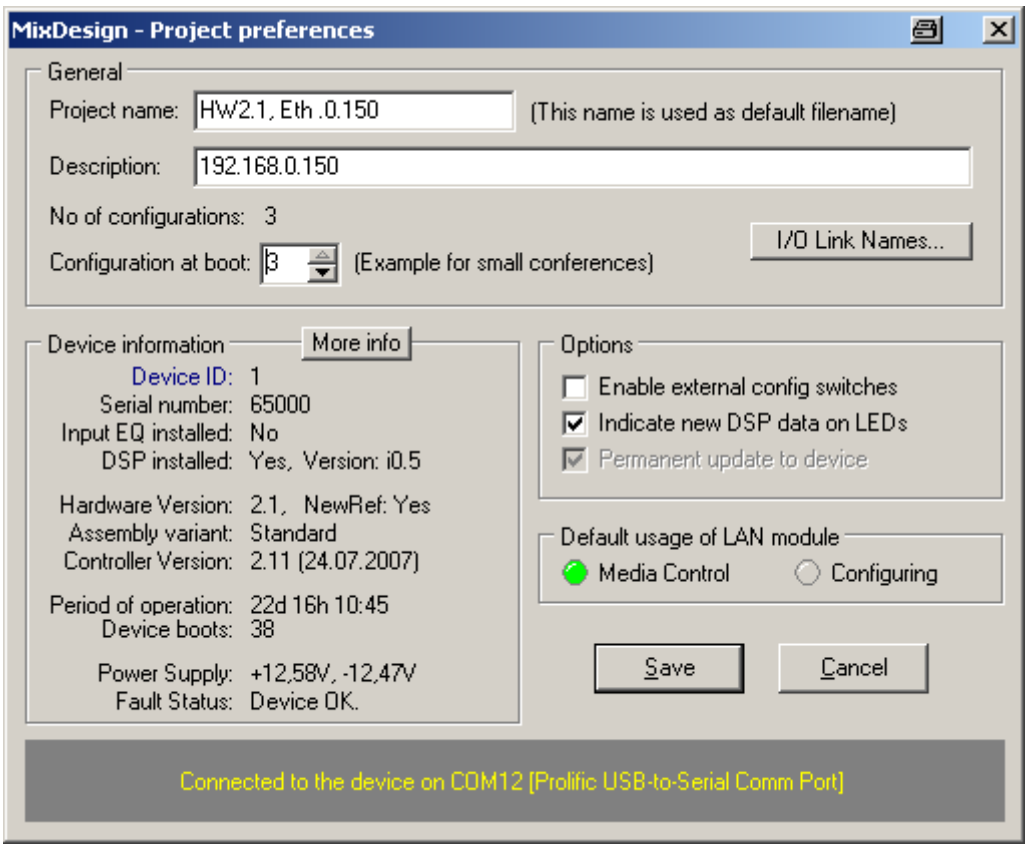
You first need to state the "project preferences". These are the project's basic data, and they comprise:

a) the **project's name**
This name is also used as the file's name when saving the project (apart from the function "save project as").
b) a **description**
This consists of a maximum of 60 characters.
c) the **number of the start configuration**
In "configuration at boot" state the number of the start configuration.
As a standard this is configuration no.1.
d) a **first configuration**
From a choice of predefined settings you select as your initial configuration the one that comes closest to the configuration to be drafted.
e) **Unlock / Lock** of the external configuration switch permanently (temporary changes can later be made by "Tools" / "enable/disable external config switch", but it cannot be stored permanently!).

After making your statements you get to the first view ("basic configuration") with your chosen start configuration.

5.2 Project preferences

Changes the project's basic data described above (e.g. Changing the project name, enabling the external configuration switches etc.)



5.3 Add predefined configuration

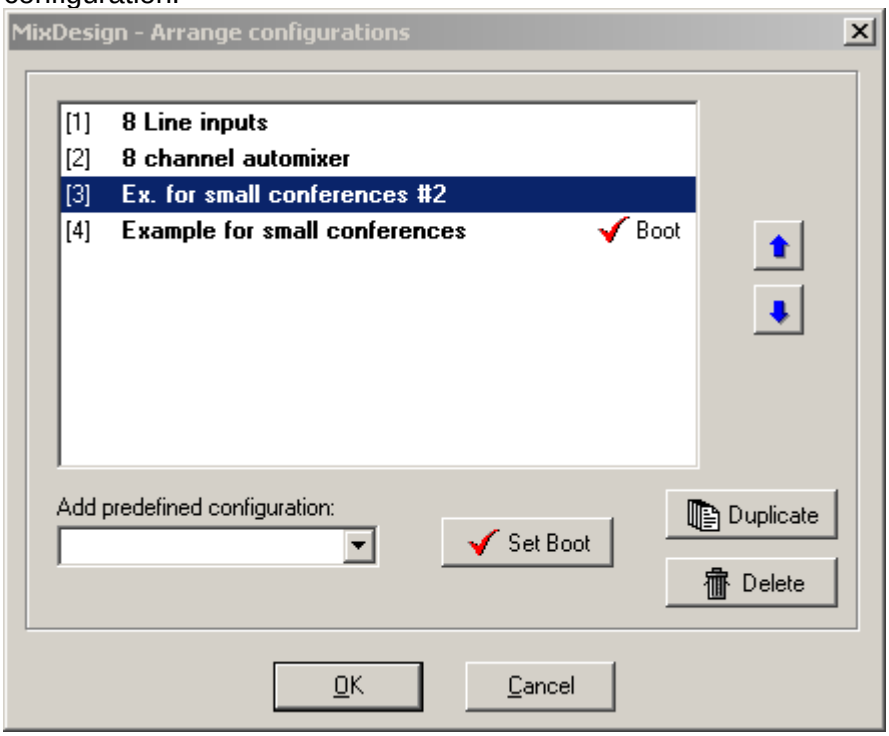
Attaches another configuration to the project (to be chosen from a number of predefined settings), which can then be adjusted according to one's own requirements.

5.4 Duplicate current configuration

Adds another configuration to the project which is identical with the current one but can then be changed as requested.

5.5 Arrange configurations

Allows you to comfortably shift, copy or start new configurations as well as setting the boot configuration.



5.6 Copy configuration

Copy a configuration into the configuration clipboard.

5.7 Paste configuration

Paste a previously copied configuration into the current one (overwrites the current configuration) or paste as new configuration (Appends the configuration).
Useful for inserting/appending single configurations from other projects.

5.8 Delete current configuration

Cancels the current configuration; subsequent configurations move up.
Note: If the boot configuration was deleted, then the first configuration becomes the boot configuration.

5.9 Copy DSP configuration

Copy a complete DSP configuration into the DSP clipboard.

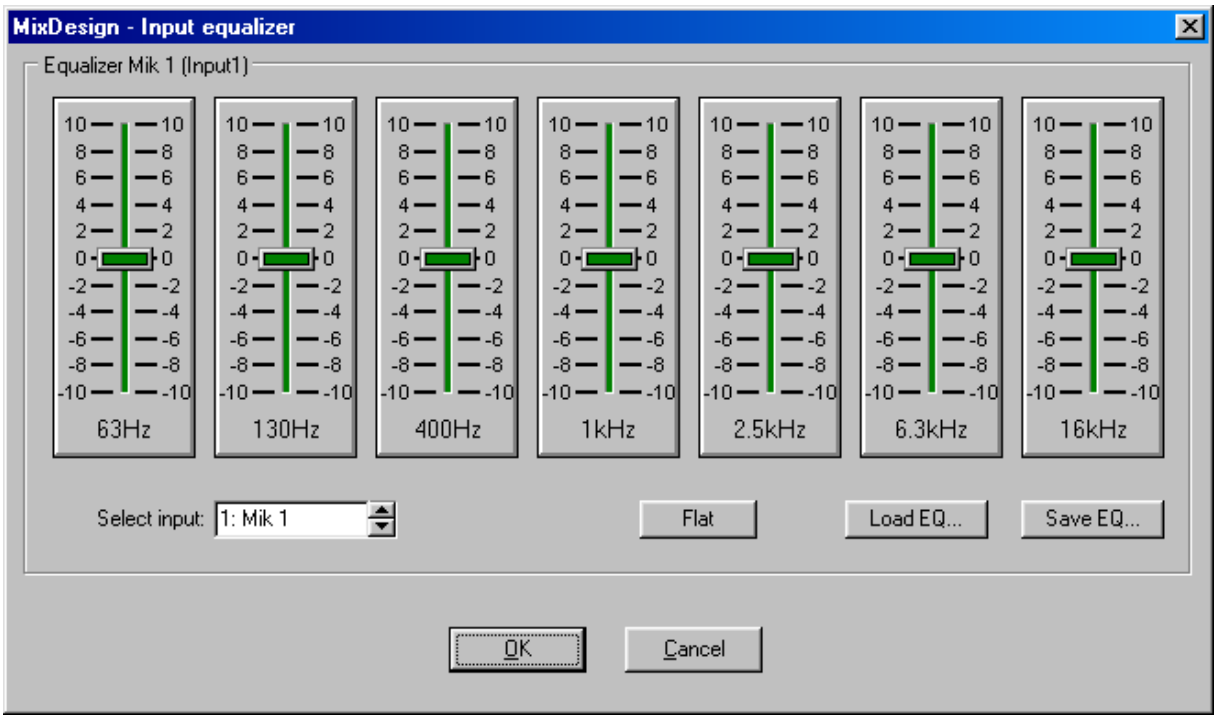
5.10 Select predefined DSP configuration

Select a complete DSP configuration (rewrites all DSP and Input-EQ parameters)

6) EXTRAS

6.1 Input equalizer configuration

Only available with versions that have a built-in Input equalizer-module!



The Input equalizer has eight graphic 7-band equalizers, one per each input. Choose the desired input in the field „select input“.
Per band you can adjust the **attenuation/amplification** from -10 to +10 dB.

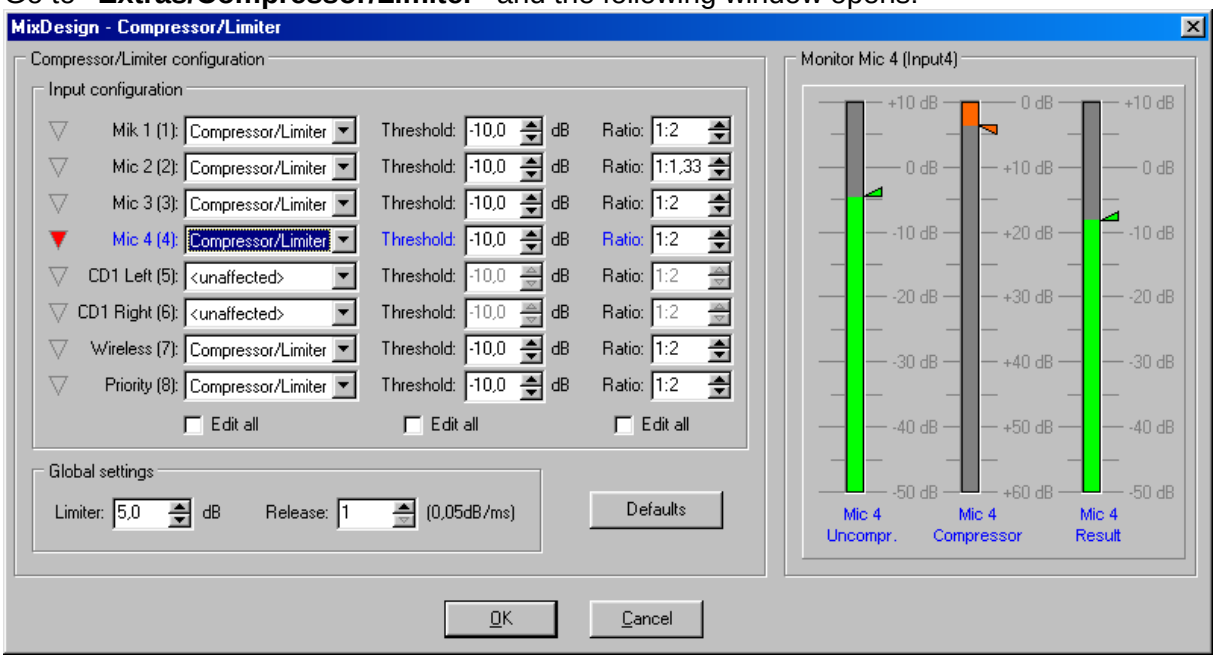
Below the sliders you will find the following buttons:

Flat: All the sliders are set to 0 dB.
Load EQ: Loads the settings from disk into the current equalizer.
Save EQ: Saves the current equalizer to disk.

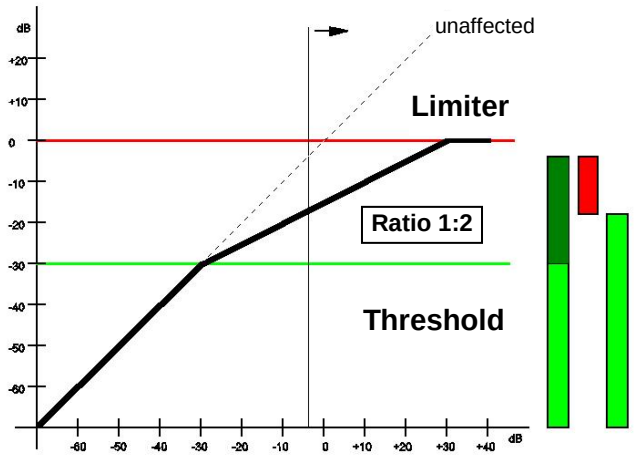
Copying equalizer settings:
Move cursor into the panel and press right mouse button. „**Copy EQ**“ will save the settings in the clipboard. In the field „select input“ choose the input where the settings should be copied to.
Move cursor into the panel and insert the settings from the clipboard by choosing "**Paste EQ**".

6.2 Compressor/Limiter configuration

Go to **"Extras/Compressor/Limiter"** and the following window opens:

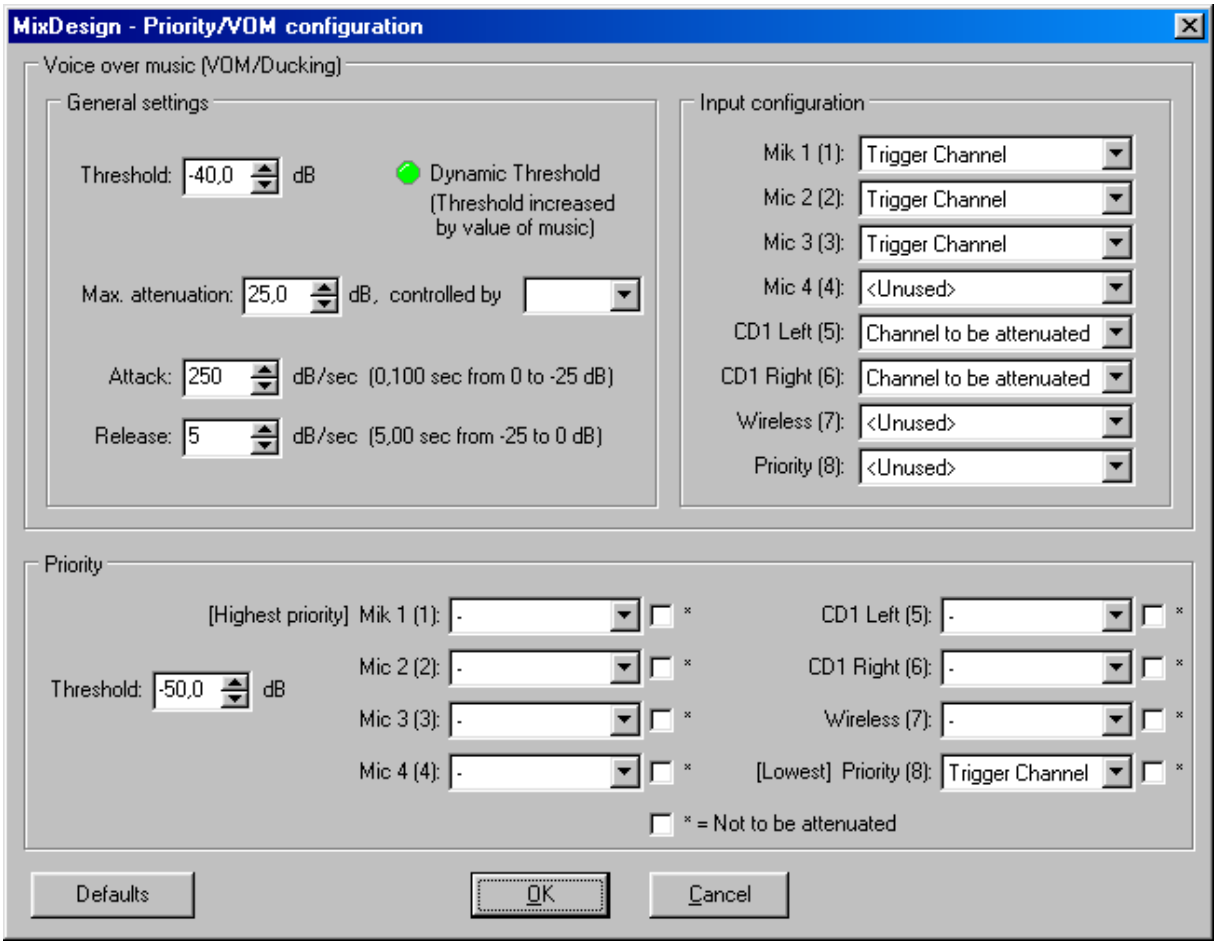


For each of the input channels compressor/limiter functions can be activated. For each channel the following parameters are configurable:
Threshold: Up to this level the signal will not be influenced. Levels exceeding the threshold will be compressed.
Ratio: Ratio of compression for levels above threshold: e.g. ratio 1:1 means no compression, ratio 1:2 means 50% compression of the part of the signal exceeding threshold.
Common for all channels:
Limiter: Adjusted limiter threshold value will definitely limit the levels.
Release: Time (speed) of release of compression. Should regularly be set to 1 (equals to a release time of 200ms by a compression of 10dB).
Displays:
The triangles on the left-hand side of the input lines become red if signals are compressed. The bars on the right-hand side show the levels of the selected channel. To select another channel click the left mouse button with the cursor on the channel to be shown.



Example: Threshold=-30dB, Ratio=1:2, level would be 26dB above threshold (-4dB). 26dB/2=13dB, therefore -30dB + 13dB=-17dB

6.3 Priority/VOM configuration



VOM - Voice Over Music

Automatic, voice-triggered attenuation of play-back music.- One ore more input channels can be defined as control channels (“trigger”) and one or more channels can be choosen as “channels to be attenuated”. If one of the trigger channels reaches the defined threshold level the selected channels will be attenuated.

The following parameters can be adjusted:

Threshold: proposed standard-value: -50dB
By increasing the value (e.g. -45dB !) the system becomes less sensitive,
by decreasing the value (e.g. -55dB !) more sensitive.

Dynamic Threshold: If switched on (green lamp) the threshold adjusts automaticly according to the level of the inputs to be attenuated. The meaning is that play-back music can not cause triggering.
If the "trigger"-microfone is placed in a sound sealed commentator-cabine switch off the dynamic threshold for more comfort.

Further parameters can be choosen for the channels to be attenuated:

Max. attenuation: in steps of 0,5dB. You can either select
- a fixed maximum attenuation or
- an internal/external pot. or RVal., with determines the maximum attenuation

Attack: speed of level-deduction in dB/second

Release: speed of level-increase after the release of the trigger in dB/second

In the right-side part of the VOM-window you can define all of the eight channels to be a “trigger” or a “channel to be attenuated”.

Priority

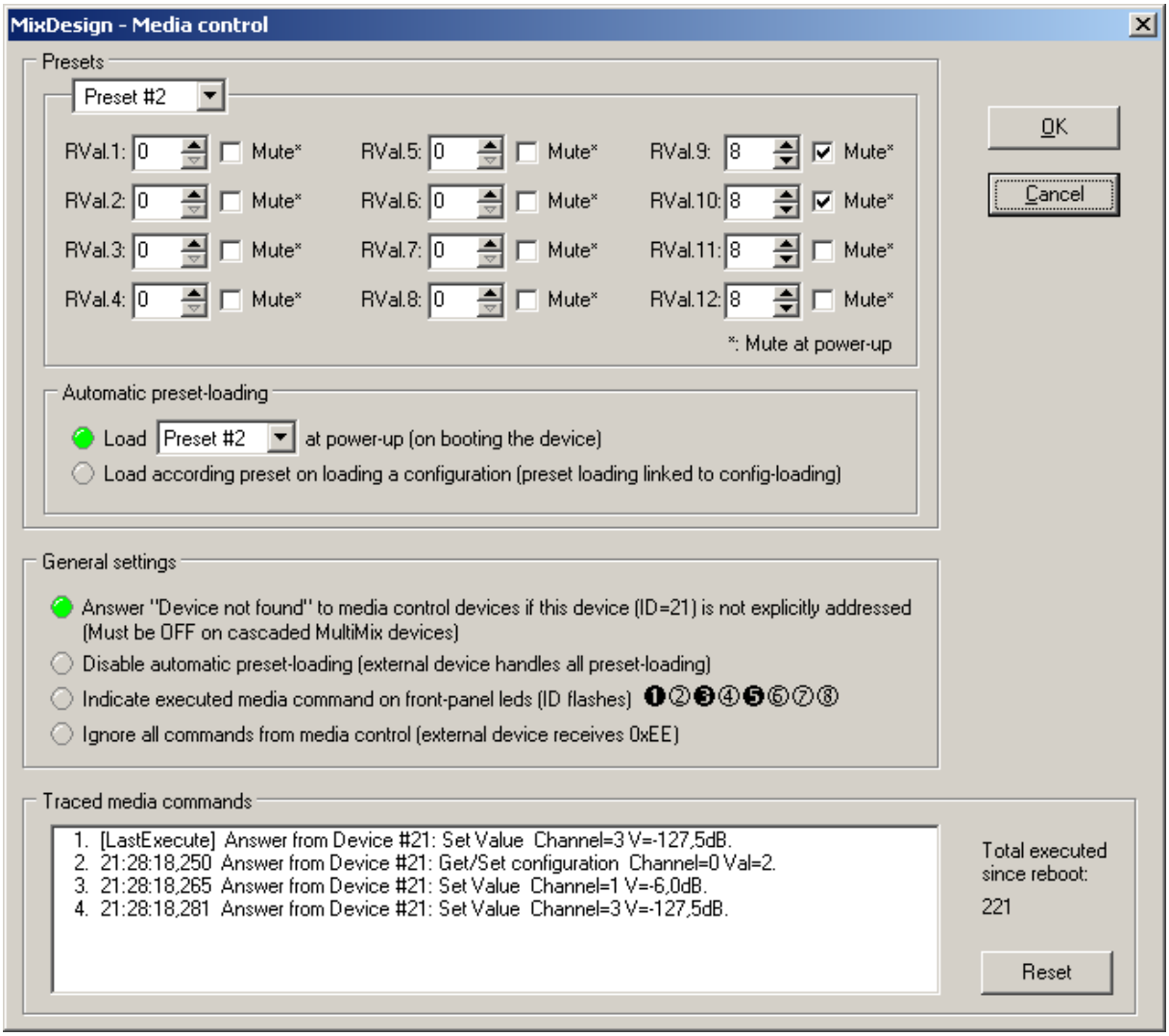
Priority functions can be selected in addition to the VOM-configurations. Chosen channels will always override all the others.
The main applications are alarm announcements, alarm gongs and paging announcements.
If you choose more than one priority "trigger"-channel the physical input with the lower input no. will override the inputs with higher numbers (e.g. input no.2 will attenuate input no.5).
If a signal is recognized (adjustable threshold) by a trigger-channel all the other channels will be muted unless they are marked "not to be attenuated" and also all the other priority trigger-channels with a higher input no.
Two seconds after the end of the announcement the muted channels will be activated again.
The only value to be adjusted: Threshold: in steps of 1dB, standard value: -50dB

6.4 Media control

In earlier chapters we mentioned the possibilities of controlling the device through media remote systems. Those systems can influence "Remote-values" if configured and activated in the input- and output menus "controlled by" (the RVal´s) or for EQ-sliders..
To predefine start-up conditions "Media-Presets" can be adjusted.

The table of possible values contains 15 groups (Preset #1 to Preset #15) with each 12 values (RVal 1-RVal 12). Furthermore an additional mute-function can be selected for the start-up condition. This function does not make sense if a "RVal" is selected for an EQ-slider.

Go to **"Extras/Media control"** and the following window opens:



Presets

The number of groups (Preset #1 to Preset #15) corresponds with the number of possible configurations. A practicable application will be adjusting the media-presets according to a configuration no. By switching on the function "Load according preset on loading a configuration" the preset no. will be the same as the configuration no. by switching to another configuration.

Alternatively you can select a media-preset not depending on any configuration No. by choosing the button "Load Preset #x at power up": In this case you have to select the No. of the start-up group. Later the media control system can switch to other presets.
This is the possibility for quick volume adjustments of all the values.
The values to be written in the table are between 0,0 and 10,0 in steps of 0,1 (which corresponds with the pot´s) but remember that the values to be sent from the media control system have to be always in steps between 0 - 255 (0xFF). - See appendix.

General settings

Answer if device is not explicitly addressed: This setting can be left active and must only be switched off if more MultiMix devices are addressed at the same time. In this case each device must have have a unique device-ID.

Disable automatic preset-loading: No presets were automatically loaded at power-up or upon switching to other configurations via any external device. The controlling device loads presets via command “Reload Preset“.

Indicate executed media command: Visual check on the remote-controlled device.

Ignore all commands from media control: Remote-controlling the MultiMix is disabled.

RS-232 settings on media control

Baud rate:	19200	Parity: none	
Data bits:	8	Stop bits:	1

6.5 Alternate slider characteristics

With this function you can create alternate, user defined slider characteristics, which can be assigned to internal and external potentiometers. Besides the default characteristic (APPENDIX: Potentiometer-scale / attenuation) two alternate characteristics can be defined. Table1 describes the characteristics of the internal pots, Table2 the characteristics of the external pots. The Screenshot shows the possibilities on devices with Firmware >= 2.11.

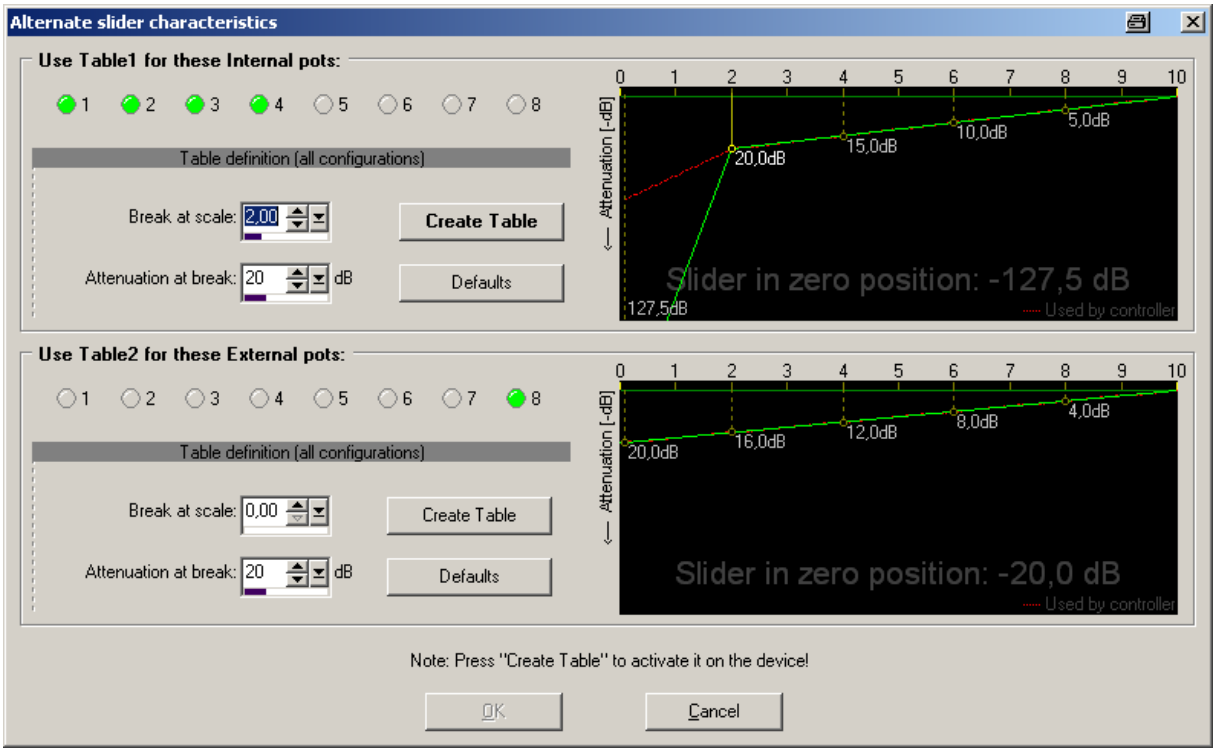


Table definitions:

Break at scale: Defines the position of the breaking point on the potentiometer scale. Choose 0,0 if you want to define a minimum level for the assigned input/output (x-direction)

Attenuation at break: Defines the attenuation at the break point in dB. (y-direction)

In the example shown above the internal pot. 1..4 use Table1, the external pot. 8 uses Table2. Please note that the settings for Table1 have been changed and Table1 was not yet created on the device. (the red line shows the slider characteristics which is currently used by the controller)

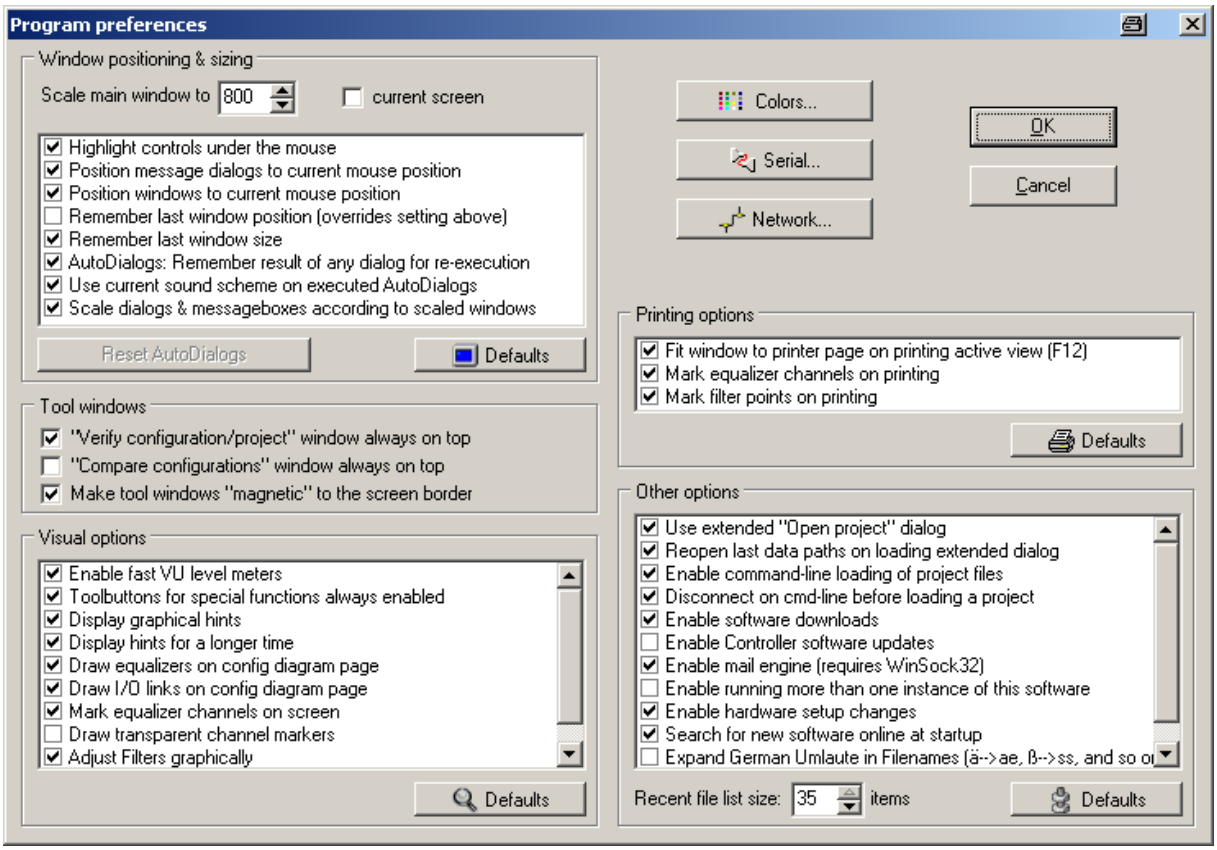
If your are using a pot. for adjusting the VOM-attenuation, currently no alternate slider characteristic is used. Note: The dB values shown by the MixDesign software, which are calculated from internal/external potentiometers are assumed to be default characteristics.

6.6 Language

Function for switching the active language of the MixDesign desktop.
The language setting is stored automatically.

6.7 MixDesign preferences

Using this menu item enables the user to modify basic software operation.



Under „Other options“, there are some interesting items:

Enable command line loading of project files:

ON: On double-clicking a MixDesign projekt, software loads the project and, if connected to a device, you can quickly transfer the project to the device.

Disconnect on cmd-line before loading project:

ON: If you´re currently connected to a device, the software automatically disconnects before loading the project.

Enable software downloads:

ON: The corresponding menu items are displayed to load software updates (Windows and MultiMix software).

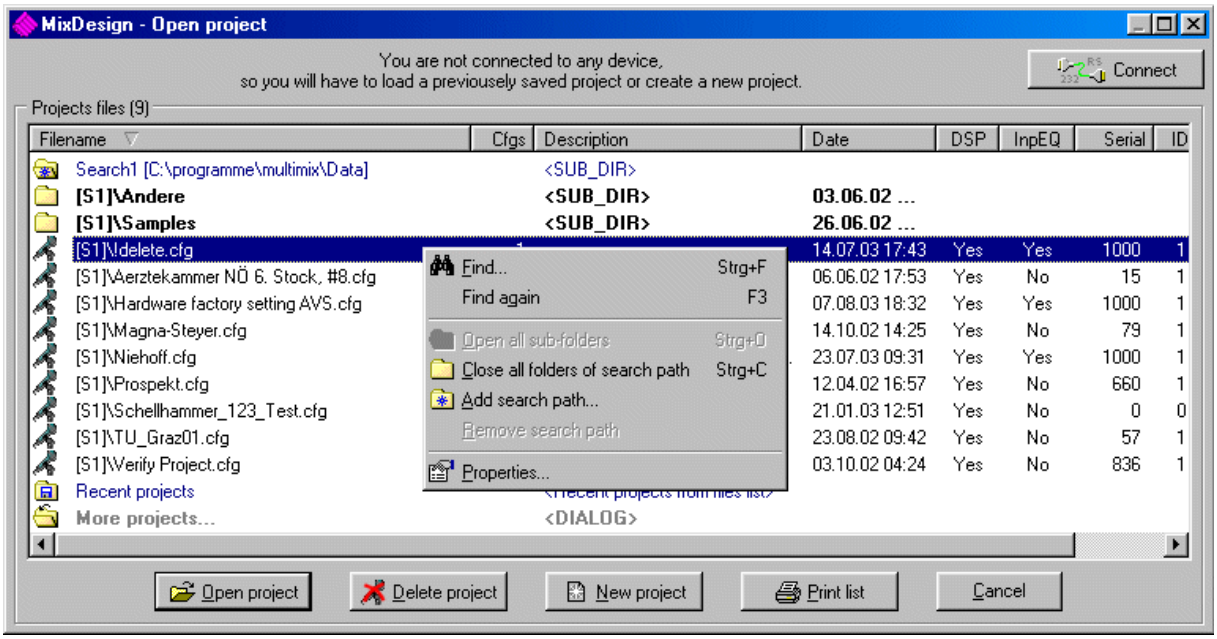
Enable Controller software updates:

ON: Enables the user to reprogram MultiMix devices with a new software.

Use extended “Open project” dialog:

ON: On command „Open project“ a different dialog box appears, which shows a quick overview with the most important items of your projects. Here you can also define your project searchpaths.

Extended “Open project” dialog



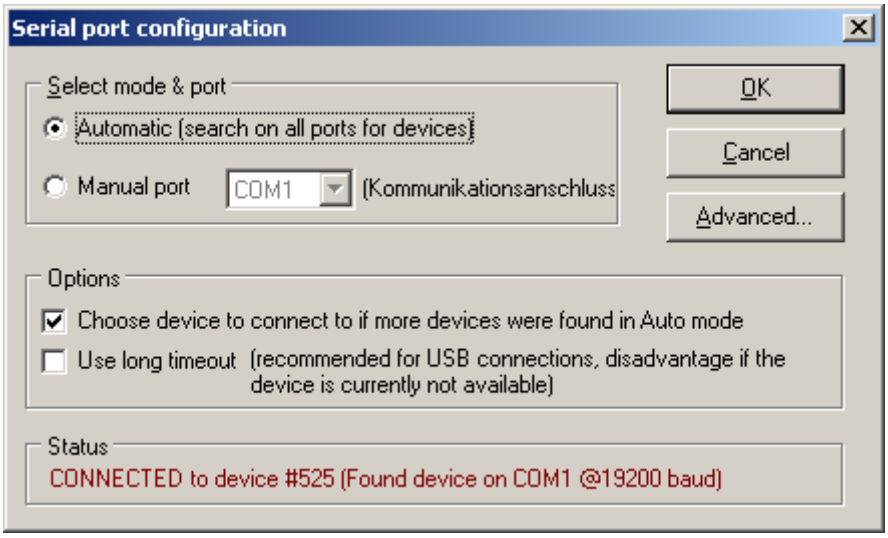
Project files are displayed in the folowing order:

- all projects in searchpaths and below
- recently used projects
- at the end of the list, „More projects...“ opens the standard-dialog

Most of the other settings control the behaviour how graphs are drawn and printed.
See also Usage of the AutoDialogs

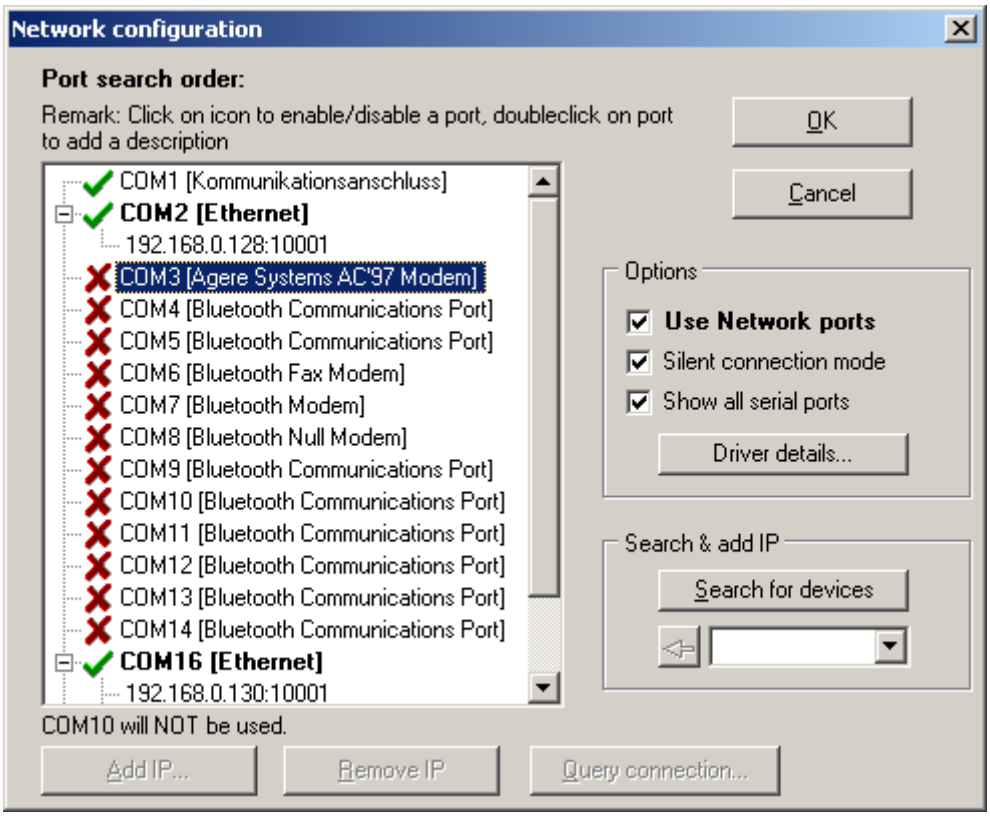
Serial port configuration

Opens a dialog, where you can define your preferred serial port. By default, the software searches for devices on all available ports.



Network configuration

Dialog to define the IP addresses for devices with the LAN option. Here you can also install/configure the LAN-driver (which redirects a serial port to a TCP/IP port), disable specific ports and assign a description to each port.



6.8 Hardware setup

This function is only needed after inserting or removing hardware modules.
Therefore it is disabled by default. (See also “Extra / MixDesign preferences / Other options / Enable hardware setup changes”)

6.9 Device Firmware update

This function searches for a newer controller software on all removable drives and in the MultiMix program folder of your local system.
Contrary to Search for new software local, this function JUST searches for a new firmware, named “mixerfirmware.bin”).

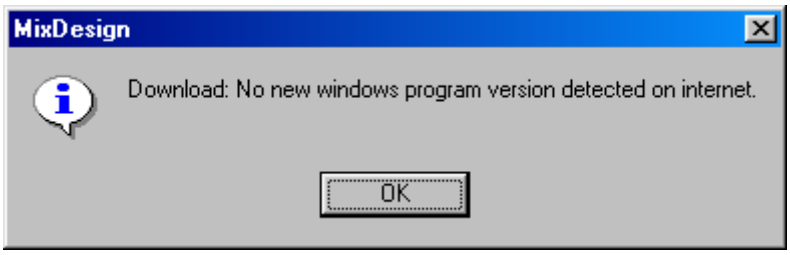
6.10 Search for new software online

If you have a connection to the internet, you can download both Windows and MultiMix software directly from the ITEC site and update them by

1) downloading Windows- and device´s software
2) updating software on the device
3) installing latest windows software

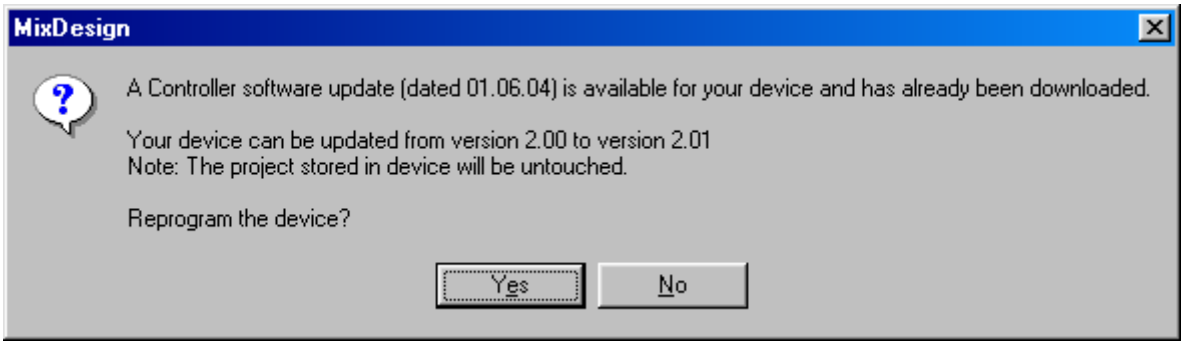
Downloading the software:
The two downloaded files are placed in the MultiMix program folder.

In case you have the latest software already on your local system, a message box similar to the following will appear:

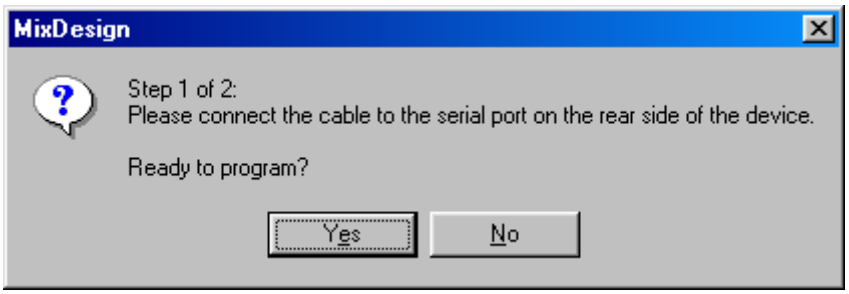


Updating software on the device:
(„Enable Controller software updates“ must be checked)

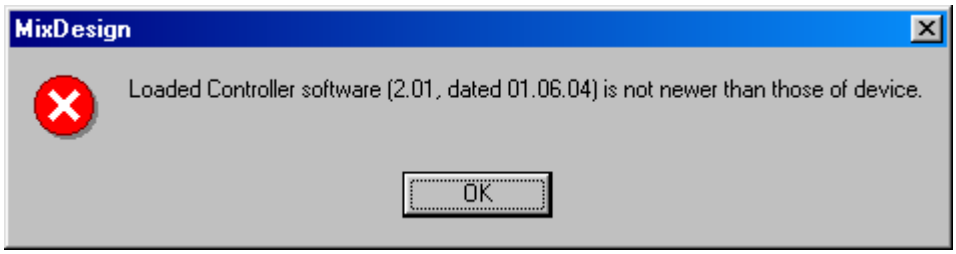
After passing several checks, the following window appears:



Updating the controller software of the MultiMix device takes place in two steps.
First you have to connect to the rear serial port (RS232 REMOTE, this step is probably not necessary), and than to the serial port on the front. (RS232/PC)



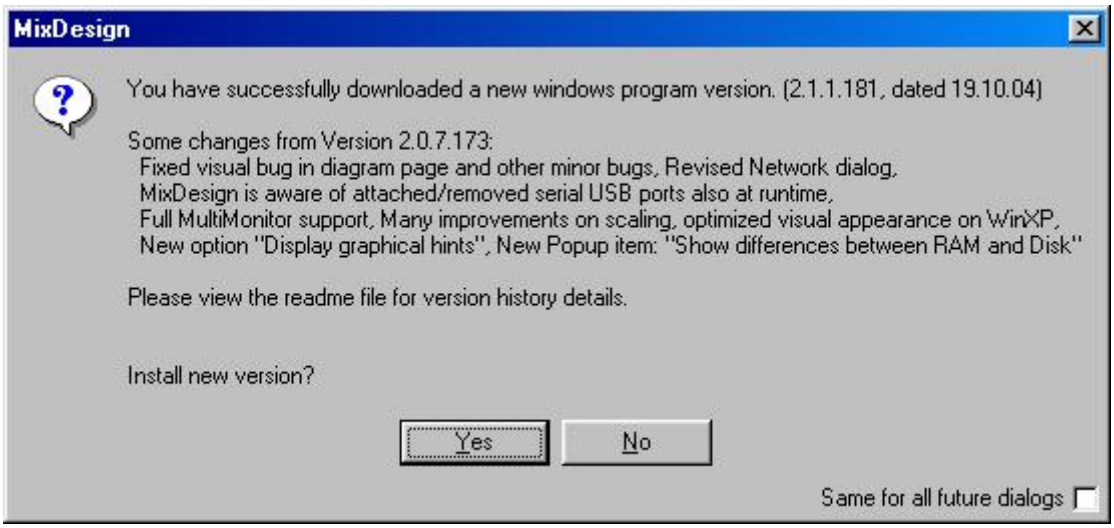
In case the device´s software has the latest release, the following message appears:



In case the device´s software is newer than the loaded one (e.g. from CD-ROM or floppy), the following message appears:

After re-programming, the device´s software automatically reboots itself and loads the stored project as usual.

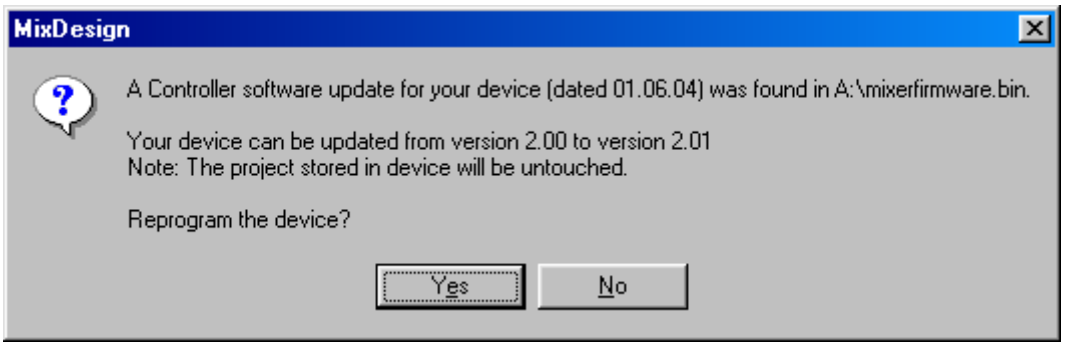
Updating windows software:
If a new version was found and successfully downloaded, you´re asked if you want to start the setup program, thus quitting the current MixDesign session.



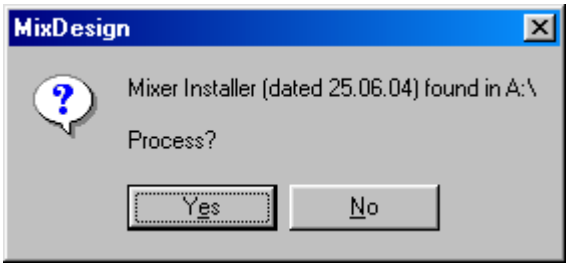
6.11 Search for new software local

This function searches on all removable drives and in the MultiMix program folder of your local system for new program versions. (At least two files, “mixerfirmware.bin” and “mixersetup.exe” are required)
Installation is performed in the same way described in 6.10

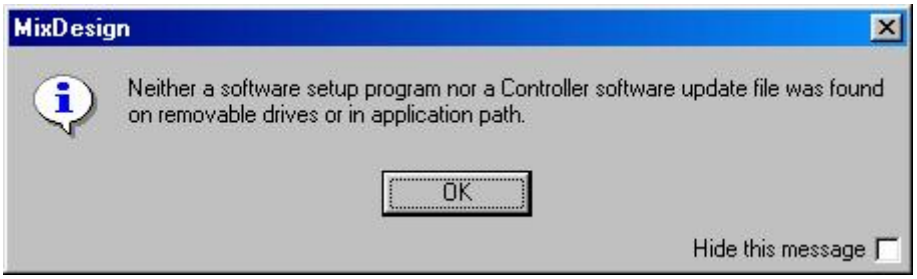
A similar window like the following appears before programming des MultiMix:



Before starting the windows setup, a message similar to the message below appears:



Starting the setup terminates the current MixDesign session.
The screenshot below shows the message if no setup was found.



Usage of the AutoDialogs

To automate the processing of unwanted messages and queries, switch on AutoDialogs in the Preferences.
In case of a query first click on “Same for all future dialogs” and then on the button which should be executed automatically the next time the identical dialog is about to appear.
You can switch on/off AutoDialogs or reset all stored AutoDialogs at any time in the MixDesign Preferences.
NOTE: The text must match exactly and is managed separately for all languages.

7) Configurations and Media Presets: (Switching performance)

Performance at power-on

Configuration:
The device boots with its predefined boot-configuration: See "Edit / Project preferences", chapter 5.

If an external configuration switch is connected and activated the device will boot with the configuration no. adjusted with the switch.

If an external configuration switch is activated but out of order, not connected or in wrong position (e.g. switch shows 7 but there are only 3 configurations stored) the device will boot with the boot-configuration.

Media-Presets:
(If automatic preset-loading is not disabled in “General settings”, see chapter 6.4)
Two different possibilities need to distinguished:

1) "Load according preset on loading a configuration": Device will load presets according to the configuration No.

2) "Load preset #x at power-up": Device will load presets according the preset No. defined.

Performance during operation

Configuration:
An activated external configuration switch overrides the PC switching possibilities. But with the function "Tools/disable external configuration switch" you can temporarily disable the external switch.

If the media remote control once switches the configuration an external configuration switch will remain out of order until re-booting the device.

Media-Presets: (If automatic preset-loading is not disabled in “General settings”)
Again, two different possibilities need to be distinguished:

1) "Load according preset on loading a configuration": By switching the external configuration switch the media-preset group will be loaded accordingly. But even in this mode the media remote control can switch to other preset-groups. Again, by switching the external switch the configuration- and preset numbers will be synchronized.

2) "Load at power-up": The preset-groups can be switched by the media remote control. By switching configurations the presets will be unaffected.

APPENDIX: Protocol of media remote control operation

Communication between MultMix devices and external control devices is organized as following:

- Command from external device (5 bytes)
- Answer from MultiMix device (5 bytes)

The external control device has to wait until it gets the answer, further commands during processing are simply ignored. The device responds very fast, typical answer times are 15-20 milliseconds (except command 0x83). See also RS-232 settings on media control

Command packet

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
DeviceID	Command	Rval-Nr.	Value	<CR>

Commands

Device Command	Dec (Hex)	RVal-Nr.	Value	Description
Set value	128 (0x80)	RV 1…12	Value in steps	set RVal in 0.5dB steps
Increase value	129 (0x81)	RV 1…12	Delta in steps	increase RVal in 0.5dB steps
Decrease value	130 (0x82)	RV 1…12	Delta in steps	decrease RVal in 0.5dB steps
Switch to Configuration	131 (0x83)	0xC0	ConfigNr[1]	switch to selected configuration
Store current value as preset[2]	132 (0x84)	RV 1…12 or 0xC0[3]	Preset Nr.	current value(s) become preset
Reload preset[2]	133 (0x85)	RV 1…12 or 0xC0[3]	Preset Nr.	reload value(s) from preset
Set preset loading mode[2]	134 (0x86)	0xC0 or 0xC1	Preset Nr.	set mode for auto loading pres.[4]
Mute at power up[2]	135 (0x87)	RV 1…12 or 0xC0[3]	Preset Nr.	mute RVal(s) at power-up[5]
Unmute at power-up[2]	136 (0x88)	RV 1…12 or 0xC0[3]	Preset Nr.	unmute RVal (s) at power-up[5]
Mute/Unmute[2]	137 (0x89)	RV 1…12 or 0xC0[3]	0x01 or 0x00	mute(1) or unmute(0) RVal(s)
Get muting status[2]	138 (0x8A)	RV 1…12	0x00	get muting status of an RVal
Set route[6]	139 (0x8B)	CH1..CH8	0x00..0x0F	Set route for an input channel[7]
Get route[6]	140 (0x8C)	CH1..CH8	0x00	Get route for an input channel[7]
Set input link[6]	141 (0x8D)	0xC0	0x00..0x0F	Set „Add-Link“ for Bus #1..4[7]
Get input link[6]	142 (0x8E)	0xC0	0x00	Get „Add-Link“ for Bus #1..4[7]
Reserved	143 (0x8F)			
Get input level (pre-fade)[8]	144 (0x90)	CH1..CH8	0x00	Get current input level (pre-fade)
Get input level (post-fade)[8]	145 (0x91)	CH1..CH8	0x00	Get current input level (post-fade)
Set fading speed[9]	144 (0x92)	0xC0 .. 0xC1	0x00..0x0F	Select fading speed[A]
Fade to value[9]	145 (0x93)	RV 1…12	Value in steps	Fade to value w. selected speed[A]

DeviceID:	1..63	0x01..0x3F	1 by default
RV Nr.:	RVal1..RVal8	0xC1..0xC8	for inputs
	RVal9..RVal12	0xC9..0xCC	for outputs
Value/Delta:	0..255	0x00..0xFF	in steps (1 step=0.5 dB, 0=Mute, 255=Max.)
ConfigNr:	1..15 or	0x01..0x0F	number of desired configuration.
	0	0x00	retrieve currently active configuration
PresetNr:	1...15	0x01..0x0F	number of preset-group
<CR>	#13	0x0D	end of packet marker

Note[1]: 1. If the selected configuration doesn´t exist, then the current configuration will be restarted.
2. If the config you want to switch to is the current one, the current config will be restarted.
3. If switching was executed successfully, the external switches were disabled until reboot.
4. Switching can take up to 1.2 sec, after this time the external device gets the answer.

Note[2]: Command implemented on controller versions >=1.14

Note[3]: 0xC0 for all RVals von 1 ... 12

Note[4]: 0xC0: Load preset „PresetNr“ once at power-up
0xC1: Load according preset on loading a configuration. Note: requires also a valid PresetNr., but is unused.

Note[5]: All channels are unmuted as default at power-up.
Calling this function doesn´t affect current muting status.

Note[6]: Command implemented on controller versions >=1.23

Note[7]: The value bits represent the bus lines (Bit #0=Bus1, Bit #1=Bus2, Bit #3=Bus3, Bit #3=Bus4)

Note[8]: Command implemented on controller versions >=1.25

Note[9]: Command implemented on controller versions >=1.30

Note[A]: Set fading speed/Fade to value: The fading speed can be adjusted separately for inputs (RVal-Nr. = 0xC0) and outputs (RVal-Nr. = 0xC1). The predefined value is 3 (50dB/sec)

Value	0	1	2	3	4	5	6	7	9	10	12
Speed [db/sec]	200	100	67	50	40	33	29	25	20	18	15.4

Value	15	17	19	21	24	27	32	39	49	65	99
Speed [db/sec]	12.5	11.1	10.0	9.1	8.0	7.1	6.1	5.0	4.0	3.0	2.0

A “Fade to value” command will be cancelled for a channel if a “Set value”, “Increase value” or “Decrease value” command is received for the selected channel.
All running faders will be cancelled if a “Switch to configuration” or a “Reload preset” command is received. Please also note that a “Store current value as preset” command will save the current values if any faders are running.

Answer packet

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Device ID	Command	RVal Nr. [1]	Value/ConfigNr/PresetNr[1,2]	<ACK>

Value:	0..255	0x00..0xFF	absolute value in steps (1 step=0.5 dB)
ConfigNr/PresetNr:	1..15	0x01..0x0F	activated configuration
<ACK>:	#6	(0x06)	device acknowledge

Note[1]: If the device addressed cannot be found or if faulty data have been detected in the command packet, the fields “RVal Nr“ and “Value“ show: 0xFF

Note[2]: Return values for commands „Get input level“ (0x90,0x91): The absolute input level can be calculated by the formula: Level[db] = Value/2 –70

Addressing modes

The first byte of the command packet (DeviceID field) can hold three different addressing modes. They determine which MultiMix devices process the request and if it should send an answer to the request.

Addressing Mode	DeviceID field (bits)	Description
Standard	00xxxxxx	Device with matching ID processes the request and sends the answer
NoAnswer	01xxxxxx	Device with matching ID processes the request, but doesn´t return an answer
Broadcast	11111111	All connected devices process the request, no device answers.

APPENDIX: Examples of the communication MULTIMIX - REMOTE CONTROL

1. Set device no.1's input-2 (RVal2) to -20 dB.

Command:

Device ID	Command	Channel	Value	<OK>
0x01	0x80	0xC2	0xD7	#13

(255 – 20*2 = 215 = 0xD7)

Answer:

Device ID	Command	Channel	Value	<ACK>
0x01	0x80	0xC 2	0xD7	#6

2. Increase device no.1's input-2 (RVal2) by 3 dB.

Command:

Device ID	Command	Channel	Value	<OK>
0x01	0x81	0xC2	6	#13

(3*2)

Answer:

Device ID	Command	Channel	Value	<ACK>
0x01	0x81	0xC2	0xDD	#6

(215(old value) + 6 = 221 = 0xDD)

3. Set device no.1's output-1 (RVal9) to 127,5 dB (mute).

Command:

Device ID	Command	Channel	Value	<OK>
0x01	0x80	0xC9	0	#13

Answer:

Device ID	Command	Channel	Value	<ACK>
0x01	0x80	0xC9	0	#6

4. Checking current value of device no.1's RVal1.

Command:

Device ID	Command	Channel	Value	<OK>
0x01	0x81	0xC1	0	#13

Answer:

Device ID	Command	Channel	Value	<ACK>
0x01	0x81	0xC1	**xx**	#6

note: the value to be checked is increased by 0.
The answer will then show the requested result (**xx**).

5. Load all RVals(1-12) of preset-group #4. (device #1)

Command:

Device ID	Command	RVal Nr.	Value	<CR>
0x01	0x85	0xC0	4	#13

Answer:

Device ID	Command	RVal Nr.	Value	<ACK>
0x01	0x85	0xC0	4	#6

6. Mute all device no.1's inputs assigned to RVal1.

Command:

Device ID	Command	RVal Nr.	Value	<CR>
0x01	0x89	0xC1	1	#13

Answer:

Device ID	Command	RVal Nr.	Value	<ACK>
0x01	0x89	0xC1	1	#6

7. Route input channel #2 of device no.1 to bus #1 and bus #2.

Command:

Device ID	Command	RVal Nr.	Value	<CR>
0x01	0x8B	0xC2	0x03	#13

Answer:

Device ID	Command	RVal Nr.	Value	<ACK>
0x01	0x8B	0xC2	0x03	#6

APPENDIX: Potentiometer-scale / attenuation/ Rval

scale	attenuation	Remote Value (dez, hex)	
0	**-127.5 dB**	**0**	**0x00**
0.2	-76	103	0x67
0.4	-72	111	0x6F
0.6	-68	119	0x77
0.8	-64	127	0x7F
1	**-60**	**135**	**0x87**
1.2	-56	143	0x8F
1.4	-52	151	0x97
1.6	-48	159	0x9F
1.8	-44	167	0xA7
2	**-40**	**175**	**0xAF**
2.2	-39	177	0xB1
2.4	-38	179	0xB3
2.6	-37	181	0xB5
2.8	-36	183	0xB7
3	**-35**	**185**	**0xB9**
3.2	-34	187	0xBB
3.4	-33	189	0xBD
3.6	-32	191	0xBF
3.8	-31	193	0xC1
4	**-30**	**195**	**0xC3**
4.2	-29	197	0xC5
4.4	-28	199	0xC7
4.6	-27	201	0xC9
4.8	-26	203	0xCB
5	**-25**	**205**	**0xCD**
5.2	-24	207	0xCF
5.4	-23	209	0xD1
5.6	-22	211	0xD3
5.8	-21	213	0xD5
6	**-20**	**215**	**0xD7**
6.2	-19	217	0xD9
6.4	-18	219	0xDB
6.6	-17	221	0xDD
6.8	-16	223	0xDF
7	**-15**	**225**	**0xE1**
7.2	-14	227	0xE3
7.4	-13	229	0xE5
7.6	-12	231	0xE7
7.8	-11	233	0xE9
8	**-10**	**235**	**0xEB**
8.2	-9	237	0xED
8.4	-8	239	0xEF
8.6	-7	241	0xF1
8.8	-6	243	0xF3
9	**-5**	**245**	**0xF5**
9.2	-4	247	0xF7
9.4	-3	249	0xF9
9.6	-2	251	0xFB
9.8	-1	253	0xFD
10	**0**	**255**	**0xFF**

Since the potentiometers show an adapted characteristic, the relationship between the scaling and the actual attenuation is not continuous linear. Rather there is a break at potentiometer position 2 (-40dB).
The represented standard characteristic can be changed via Alternate slider characteristics.

RVals of a media remote control unit however works continuous linear with steps of 0.5 dB. The accompanying table reflects this.

APPENDIX: Available functions depending on device´s firmware

Some functions require a minimun revision of the devices´s software
(also called Firmware version or Controller version).

The configuration software deactivates these functions (or part of them) on lower controller versions or returns an explaining message.
The menu item „Info“ shows under „Additional info“ the controller versions supported by the software.
The menu item „Edit“ | „Project preferences“ contains under „Device information“ among other things the controller version of a connected device.

Function	**minimum Controller Version**	**Release Date**
Extensions for Hardware 2.1 (Fault Status, Mic-Amps +40dB, …)	2.11	24-07-07
MC "Set fading speed": Max. value (slowest) is now 99 = 2 db/sec	2.06	27-06-06
Tracing executed Media control commands	2.04	18-04-05
LED indication during loading new DSP data can be switched off	2.04	18-04-05
Fast Media control commands execution and code optimizations	2.03	26-11-04
Alternate slider characteristics	2.01	01-06-04
VOM attenuation controllable by other sources	2.00	07-04-04
LAN support	2.00	07-04-04
Media control commands for “Fading”	1.30	23-01-04
Changes for Hardware 2.0 (Faster Compressor/Limiter and more)	1.29	14-01-04
„General settings“ available in Media control dialog	1.28	08-10-03
Maximum mic gain is 60dB (devices delivered after 10 Jun 2003)	1.27	10-06-03
Input equalizer	1.26	16-05-03
Display pre-fade input values	1.25	08-05-03
Media control commands for receiving input levels	1.25	08-05-03
Bypass parametric equalizers	1.25	08-05-03
Media control commands for routing input signals	1.23	11-03-03
Controller Software updatable via Configuration-program	**1.21**	20-12-02
Automixer: Soft NOMA function	1.19	21-11-02
Compressor/Limiter	1.16	23-10-02
Priority: Inputs not to be attenuated	1.14	30-09-02
Parametric equalizer: Slider control	1.14	30-09-02
Inputs: additional 5th control source	1.14	30-09-02
Media presets (including media control commands)	1.14	30-09-02
Outputs: output value controlled by external control sources	1.12	18-06-02
Priority/VOM	1.11	12-06-02