R1 Version 1.8.x
Manual

d&b audiotechnik

General Information

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Manual

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d&b audiotechnik GmbH
Eugen-Adolff-Strasse 134, D-71522 Backnang, Germany
Phone +49-7191-9669-0, Fax +49-7191-95 00 00
E-mail: docadmin@dbaudio.com, Internet: www.dbaudio.com

Contents

1. Introduction

The **R1** Remote control software succeeds the d&b ROPE C software. It is a software package designed to operate d&b amplifiers (D12, D6, E-PAC with Display) remotely using the d&b Remote network based on CAN-Bus technology. A detailed description of the d&b Remote network and CAN-Bus is given in the technical information TI 312 d&b Remote network (d&b Code: D5312.EN).

R1 can be downloaded from the d&b website at www.dbaudio.com.

R1 runs on a PC or laptop computer (Windows VISTA/XP/2000) equipped with a CAN interface. The program can also be run without the network and interface connected in order to prepare an R1 setup for a sound system.

TI 391 Effective use of R1 (d&b Code: D5391.EN) is provided as supplementary information and describes how to create an R1 project which is easy to operate and can be quickly adapted to changing situations.

This manual describes how to operate an R1 software environment without detailing the settings of the controller section of the d&b amplifiers. Please refer to the respective loudspeaker manuals for the correct configuration.

A number of publications providing supplementary information on our products such as the TI 312 and TI 391 are available from the Documentation section of the d&b website at www.dbaudio.com. You can either download these directly or use the online order form to request a printed version.

If the form does not contain the desired document, please enter the respective title in the box after providing your address information.

1.1. Functions

- Scanning the network to detect all connected devices.
- Drag and drop editor to create a graphical user interface to control the system.
- Configuration of the system by storing and recalling System settings and Control settings.
- Executing the System check procedure and displaying and storing its results.
- Amplifiers can be controlled in user definable groups providing access to the parameters of each single amplifier channel, for example:
  - gains and levels
  - loudspeaker selection
  - controller configuration
  - input and output routing (D12)
  - delay and equalizer settings
  - amplifier temperature
  - error status and warnings
  - Input and Load monitoring settings

1.2. System requirements

- PC with Intel/AMD (800 MHz or more)
- 256 MB RAM, 512 MB recommended
- 10 MB free hard disk capacity
- Windows 7 / VISTA SP1 / XP SP3
- Mouse
- 1024 x 768 or higher recommended
- CAN interface (refer to section 2.3 CAN interfaces on page 7)

2. Installation

The installation process consists of three steps, which can be executed in any order.

- Installation of R1
- Installation of CAN interface (hardware)
- Installation of CAN interface drivers

2.1. Installing R1

To install R1, start "setup.exe" and follow the instructions in the setup dialog.

2.1.1. Installing R1 for multiple users

1. Login as administrator.
2. Create a new folder with read access for every intended user account, e.g. C:\MySoftware\dbaudio\R1.
3. Extract the ZIP file to this folder.
4. Start "setup.exe" from this folder and install R1.
5. Login as user and start R1. To operate R1 from this account, several files are now copied to the directory of this user account.
6. Repeat step 5 for every intended user account.

Note:
Do not delete any of the extracted files as long as R1 is installed on your computer.

2.2. Uninstalling R1

To remove R1 from your System, go to Start – Settings - Control Panel - Add or Remove Programs in the Control Panel folder. Select the R1 entry from the list and click the Remove button. The uninstall routine starts and the software is removed including all related components.

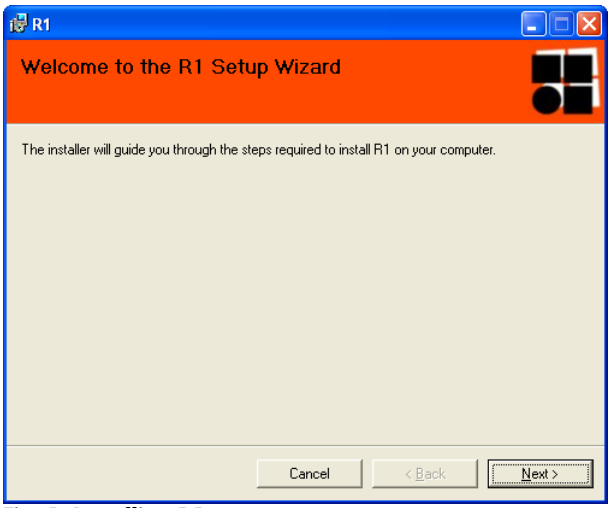


Fig. 1: Installing R1

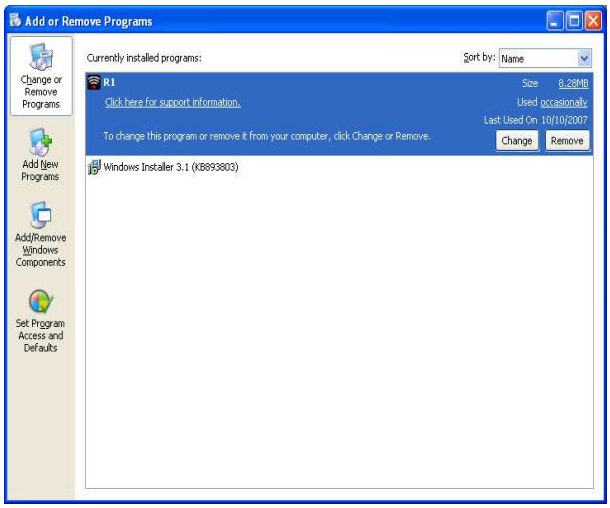


Fig. 2: Uninstalling R1

2.3. CAN interfaces

Two CAN interfaces are available from d&b. For installation details, refer to the respective manuals.

Up to five interfaces may be connected to a PC and simultaneously operated by the R1 software.

2.3.1. R60 USB to CAN interface

The Z6118 R60 USB to CAN interface provides two RJ 45 CAN connectors with a built in switchable terminator as well as a USB type B connector and comes with drivers for Windows® operating systems. The required drivers for the R60 can be found in the R1 installation folder, e.g.: C:\program files\dbaudio\R60_D6_USB_DRIVER.

2.3.2. R70 Ethernet to CAN interface

The Z6124 R70 Ethernet to CAN interface provides two RJ 45 CAN connectors with a built in switchable terminator as well as a LAN connector. The R70 contains a web interface and does not require its own drivers for use with a computer. All configurations can be set using a standard web browser with JavaScript enabled.

2.3.3. Additional interfaces

Additionally, the following interfaces are supported by the d&b Remote network:

- Peak USB to CAN interface (isolated, single CAN channel on D-SUB 9 connector). Only a single Peak USB interface may be connected; however, it may be combined with additional d&b interfaces.
- Peak PCI to CAN interface (isolated, single CAN channel on D-SUB 9 connector). Only a single Peak PCI interface may be installed; however, it may be combined with one Peak USB to CAN or d&b interfaces.

For installation details, refer to the respective manuals.

3. R1 Remote control software

3.1. Starting R1

Windows automatically links R1 project files (*.rop) to R1. The program can therefore be started either by clicking "Start/Programs/dbaudio/R1/R1" or by double clicking on an R1 project file.

Note: Project files from previous ROPE C also start R1. They can be operated using R1 but the layout of the workspace may need some adaptation to fit the new design of the controls. Project files created with R1 cannot be operated using ROPE C. The file association can be changed by right clicking on the file and selecting "Open With". Browse for ROPE C and select the "Always use the selected program to open this kind of file" check box.

R1 incorporates two modes.

Edit mode
Project design. When you are in Edit mode, there is no communication with the devices connected.

Run mode
System operation. When this mode is enabled, communication is active and the PC is connected to the d&b Remote network.

3.2. Components of the R1 window

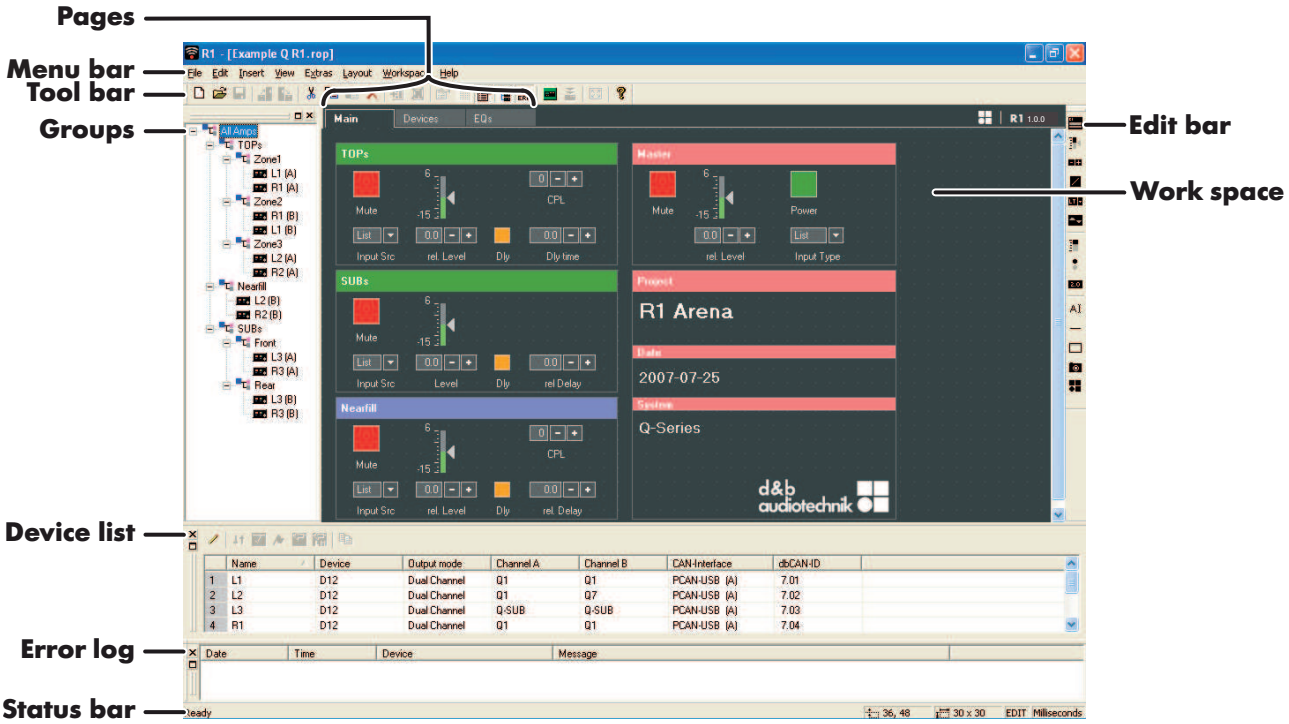


Fig. 3: R1 in edit mode with all views open

Menu bar

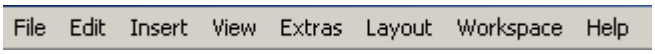


Fig. 4: Menu bar

The Menu bar contains several pull-down menus. (for detailed description, please refer to section 3.3 R1 configuration on page 11)

Toolbar

Fig. 5: Toolbar

The available buttons on the Toolbar depend on the current operating mode (Edit or Run mode). A right mouse click into the Toolbar area displays or hides the symbol titles.

Symbol	**Function** (short cut)	**Run mode**	**Edit mode**
	New (Ctrl+N)	X	X
	Open (Ctrl+O)	X	X
	Save (Ctrl+S)	X	X
	Load Control settings	X	
	Save Control settings	X	
	Cut (Ctrl+X)		X
	Copy (Ctrl+C)		X
	Paste (Ctrl+V)		X
	Delete (Del)		X
	Undo: Control added (Ctrl +Z)		X
	Redo (Ctrl+Y)		X
	Join Elements		X
	Split Elements		X
	Properties (F2)		X
	Target (F5)		X
	Grid on/off		X
	Device list (Ctrl+L)	X	X
	Groups (Ctrl+G)	X	X
	Templates (Ctrl+T)		X
ERR	Errors	X	X
	Enable CAN		X
	Disable CAN		X
	Run mode (Ctrl+R)		X
	Edit mode (Ctrl+E)	X	
	Full/Normal screen (F11)	X	
	Info	X	X

Tab. 1: Toolbar symbols

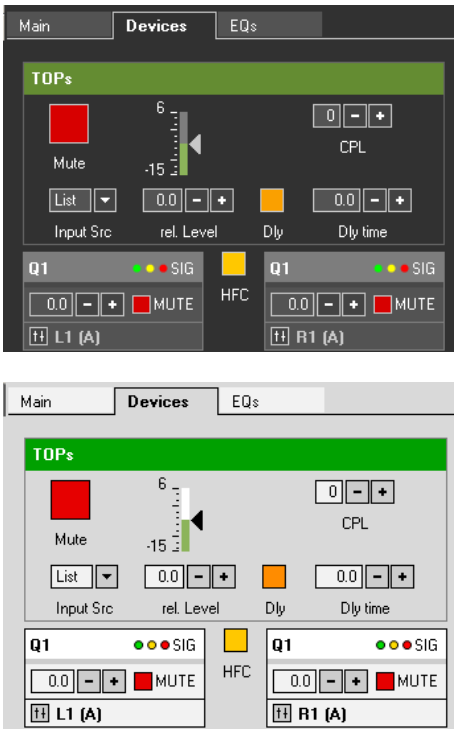


Fig. 6: Workspace for dark/bright environment (partial view)

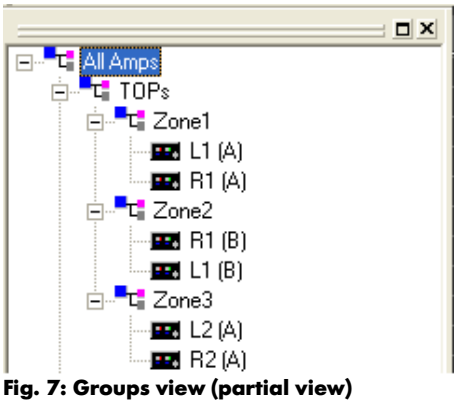


Fig. 7: Groups view (partial view)

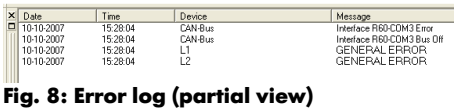


Fig. 8: Error log (partial view)

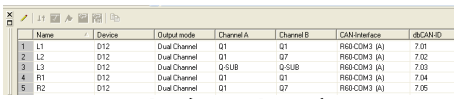


Fig. 9: Device list (partial view)

Edit bar

The Edit bar contains the elements necessary to design the Workspace. It can only be accessed in Edit mode. For a detailed description of the elements, refer to section 3.4.1 Operating and graphic elements on page 17.

Workspace/Pages

The Workspace represents the main working area of R1 where projects are created in Edit mode and operated in Run mode. The Workspace can be subdivided into up to ten pages (refer to section 3.3.2 Workspace menu (Organizing the Workspace) on page 12).

Groups

Groups of d&b amplifier channels are displayed. Any control element in the Workspace can either be linked to a single Device or to one of the groups defined in the Group view. Right click on the Group view and then select the desired function from the context menu which pops up to create a Group and to add devices.

Templates

R1 Controls and/or graphical elements as well as groups of controls and elements can be saved as a template to allow multiple use in other R1 projects (refer to section 3.8 R1 Templates on page 36).

Error log

R1 generates an Error logbook showing a list of occurring amplifier errors or warnings and CAN network or CAN interface errors.

Device list

To control d&b amplifiers, the dbCAN address and the basic configuration data for each channel have to be defined. This is done in Edit mode. For further details, refer to section 3.7 Device list and editor on page 30.

If there is a connection to a d&b remote network, it is also possible to scan the network and transfer the found devices to the Device list. (refer to section 3.7 Device list and editor on page 30)

Status bar

At the bottom of the application window the Status bar displays information about the status of R1.

- Help text for the menu items on the left-hand side.
- Edit Mode:
  Size of the selected control.
  Position of the selected control.
- Run Mode:
  Last Control/System Settings loaded.
- Current Mode (RUN/EDIT/LOCK)
- Units chosen for the Delay (milliseconds, meters or feet. Refer to section 3.3.3 Extras - Options - Project on page 15).

3.3. R1 configuration

This section describes how to configure R1 with respect to both, the layout of the graphical user interface and the system properties.

Some of the menu items can either be switched on or off. A tick (✔) in front of the respective item indicates that the function is selected. Some of the functions are also accessible by clicking on the icons in the Toolbar or using short cuts. Entries in gray letters are not available in the current operating mode.

> **Note:**
> After an R1 installation has been updated to a later version or the current version has been repaired the program is in its default configuration. Any configuration changes made before have to be repeated. In particular, check the settings in the Extras – Options section.

3.3.1. View menu

When you select View, a drop-down menu with the following options opens:

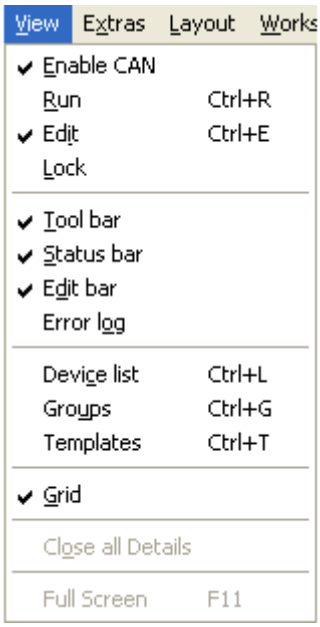


Fig. 10: View menu

Enable CAN: Enables and disables communication via the CAN network.

Run: Switches from Edit mode to Run mode (refer to section 3.9 Run mode on page 39).

Edit: Switches from Run mode to Edit mode.

Lock: Protects R1 in Run mode against accidental operation.

Toolbar: Displays or hides the Toolbar.

Status bar: Displays or hides the Status bar.

Edit bar: Displays or hides the Edit bar.

Error log: Displays or hides the Error log.

Device list: Displays or hides the Device list.

Groups: Displays or hides the R1 Group explorer.

Templates: Displays or hides the R1 Templates explorer.

Grid: Displays or hides the grid in Edit mode.

Close all Details: Closes all Device Detail views opened in Run mode.

Full Screen: In Run mode, the Workspace can be expanded to full screen size to allow for more available space.

3.3.2. Workspace menu (Organizing the Workspace)

When you select Workspace, a drop-down menu with the following options opens:

Fig. 11: Workspace menu

New page
Adds a new page to the Workspace.

Delete page
Deletes the selected page.

Page settings
Configures the settings of the selected page (see below).

Goto page
Lists the pages between which you can toggle.

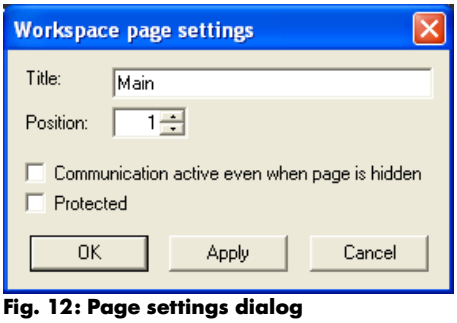


Fig. 12: Page settings dialog

Title
Allows you to enter a corresponding page title.

Position
The page order can be defined by a numeric value. Alternatively, the page order can be changed by selecting the respective page and continuously pressing the left mouse button to move the page to its desired position.

Communication ...
By default, only the controls of the active page are continuously updated. You can activate an option to continuously update the background pages.

Protected
You can protect a page against access by using the password function Extras – Password (refer to section 3.3.3 Extras - Password on page15).

Control objects can be moved and/or duplicated between different pages using the Windows copy, cut and paste functionality or by drag and drop.

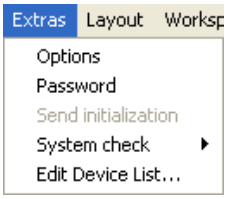


Fig. 13: Extras menu

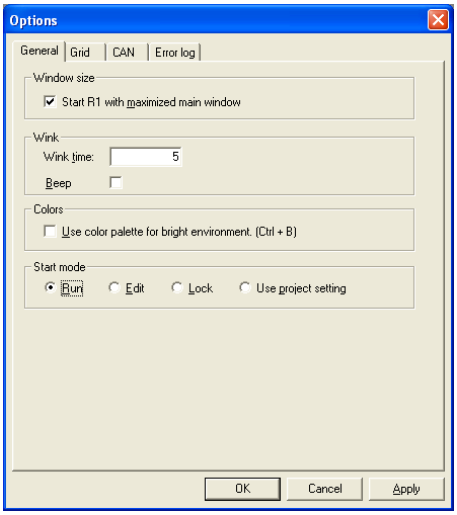


Fig. 14: Options – General

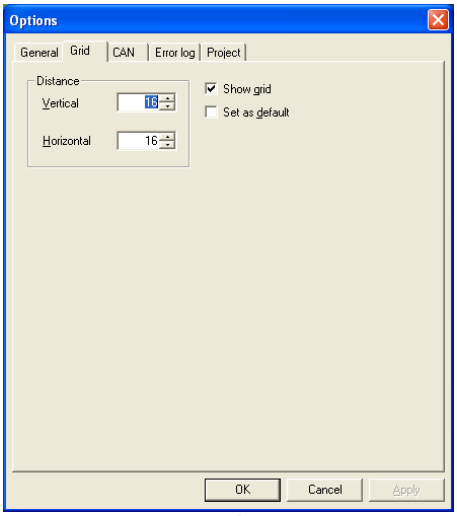


Fig. 15: Options – Grid

3.3.3. Extras menu (Settings)

Selecting Extras allows the following settings:

Extras - Options - General
Window Size
Starting R1 with maximized main window.

Wink
A Wink command physically identifies an amplifier by its entry in the Device list.

Procedure: Mark the amplifier in the Device list in Run mode. Click on in the Toolbar of the device list. The display of the amplifier flashes and shows the dbCAN-ID. The duration (**Wink time** in seconds) of the flashing and also an audible signal (**Beep**) can be defined.

Colors
Select the color palette to be used (refer to Fig. 6: Workspace for dark/bright...).

Start Mode
Select the mode to be activated when R1 is started or a project file is opened. Select the 'Use project setting' option to use the start mode set in the project file (see also Extras – Options – Project).

Extras - Options - Grid
A grid can be activated for easy alignment of the operating and graphic elements in the Workspace. The horizontal and vertical spacing of the grid can be set individually.

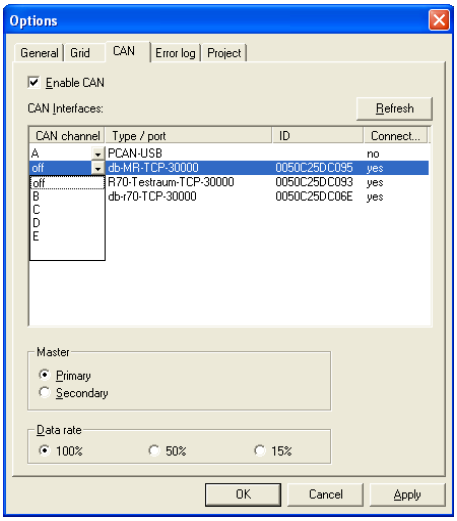
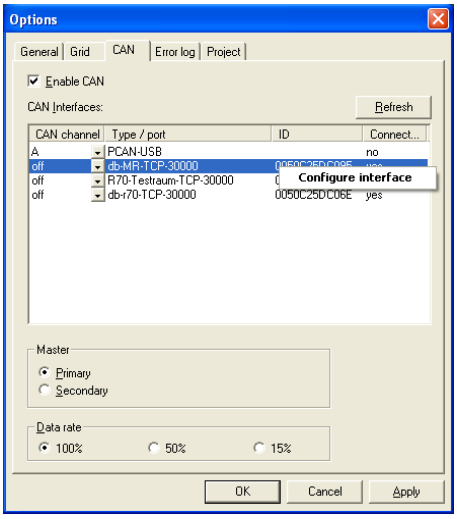


Fig. 16: Options – CAN



Extras - Options - CAN

Enable CAN

Enables and disables communication via the CAN network.

CAN Interfaces

Up to five interfaces can be connected to a PC and simultaneously operated by the R1 software.

CAN channel: The respective CAN interface can be set to 'off' or assigned to a desired CAN channel.

Type/port: Displays the interface type, including the respective port to which the interface is connected.

ID:

R60

In case of the R60 interface, this represents the serial number of the respective R60 interface depending on the displayed status as described below (see 'connected').

R70

In case of the R70 interface, this represents the MAC IP address.

Connected

Indicates if the respective interface is physically connected to the PC according to the following conventions:

no: No interface is connected. Connect the interface and press the 'Refresh' button to display the current status.

yes: Interface is connected.

R60

In case of the R60 interface, 'yes' is displayed as long as the serial number of the connected R60 interface is identical to the serial number shown under 'ID'. If an R60 interface with a different serial number is connected, this serial number will be displayed instead of 'yes'.

R70

To access the R70 web interface, right click on an R70 entry and select "Configure Interface".

yes (no access): Interface is connected but accessed by another application (program). Close the respective application and press the 'Refresh' button to display the current status.

Master (Primary/Secondary)

If two masters (e.g. two PCs running R1) are used in one CAN network, one must be the 'Primary' and the other one the 'Secondary' master.

When you use the R70 interface to connect up to four PCs running R1, each PC must have the same setting (Primary or Secondary).

Data Rate

In more complex CAN networks using multiple bus segments and/or dual masters, it might be necessary to reduce the CAN data rate. When individual controls of devices can occasionally not be operated (response timeout) this indicates that the data rate is too high.

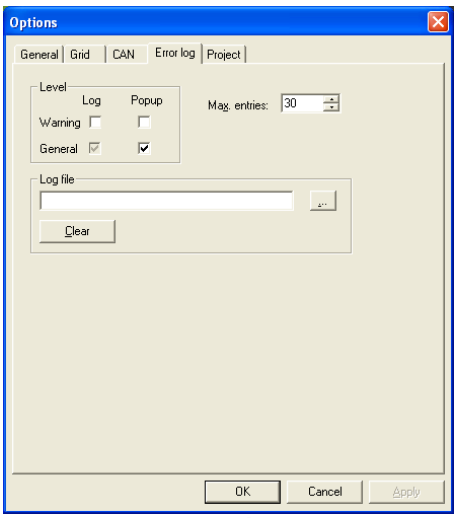


Fig. 17: Options - Error log

Extras - Options - Error log

In the Extras – Options – Error log menu, the properties of the Error log are defined. You can select the error level which causes an entry. The Error log can optionally be stored in a Log file. To do so, you must specify the file location and the file name.

Errors are divided into two classes:

1. WARNING

Check Devices: 'No Response'. The amplifier does not respond.

2. GENERAL

General error: Error message from the amplifier.

Check Devices: 'Missing Driver'. The driver for the connected amplifier or its firmware version is not installed (obtain latest R1 version)

Check Devices: 'Invalid amplifier connected'. The type of amplifier connected does not match the entry in the Device list (e.g. D6 instead of D12)

CAN-Bus communication error

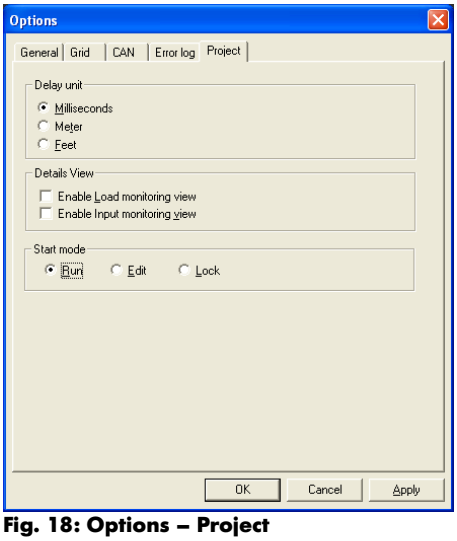


Fig. 18: Options – Project

Extras - Options - Project

Note: The project tab is only available when a project has been opened.

Delay unit

The signal delay in the amplifier can be displayed in different units (milliseconds, meters, feet). The selected unit is displayed in the Status bar at the bottom right (

). The selected delay unit (e.g. milliseconds as shown in the graphic opposite) is saved with the Project file. When you load the respective project file, the delay unit saved with this file (in this case milliseconds) is set automatically.

Detail view

Enables or disables two more tab windows in the Detail view of the devices. These tabs contain the controls and indicators for the d&b Load and Input monitoring functions of the Device.

Note: For further information on the d&b Load and Input monitoring function, please refer to the respective amplifier software manuals.

Start mode

Select the mode to be activated when a project file is opened. This setting is used if the 'Use project setting' option is set in Extras – Options – General – Start mode (see also Extras – Options – General).

Fig. 19: Password

Extras - Password

In the Extras – Password menu, R1 can be protected against access by unauthorized persons. If a password is assigned, it is not possible to enter Edit mode without the password. The password also applies to the Pages which are assigned to be protected.

In protected mode, only controls of unprotected workspace pages can be operated by the user. The Detail view of the amplifier channel cannot be accessed.

A password relates to a project and is only valid for its particular *.rop" file. If password protection has been set, it is always active when you load the project. When having access, you can reset the password protection by setting a blank password.

Extras - Send initialization
When you enter RUN mode, R1 initializes the controller configurations and their output routing according to the settings in the Device list. This can also be done manually at any time during operation using Extras – Send initialization.

CAUTION!

Before applying any signal to the system, make sure that all amplifiers are configured correctly; in particular a wrong output routing or controller setup may damage the loudspeaker components. Make sure that the Device list entries match the actual system configuration and that an initialization has been sent out.

The following data will be sent to the amplifiers by the initialization procedure:

- Lock command to disable local operation
- Speaker type
- Device name
- Output configuration (D12)

In addition, a Group initialization will be executed.

Extras - System check
The system check is implemented as an additional module to check the condition of the loudspeakers connected to the system. For details on this module, please refer to the technical information TI 360 System check (d&b code: D5360.E.).

Extras - Edit Device List...
In Edit mode select Extras – Edit Device List... to generate or modify the list of d&b amplifiers for remote control. For detailed description, see chapter 3.7 Device list and editor on page 30.

Note: Before using the network, make sure that all amplifiers are set to Remote ⇒ dbCAN and have a unique dbCAN-ID (see respective amplifier software manual for configuration).

3.3.4. Layout menu

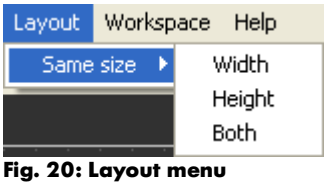


Fig. 20: Layout menu

Layout - Same Size
The size of Workspace elements can be defined uniformly for a group of elements. First select the group by pressing Ctrl and clicking on an element. When you select Layout – Same Size, all elements of the selection are adjusted to the same size (width, height or both) as the last element selected (marked by a black frame).

Note: In Edit mode, a group of workspace elements can be joined and moved as a block.

3.4. Insert menu (Workspace elements)

3.4.1. Operating and graphic elements

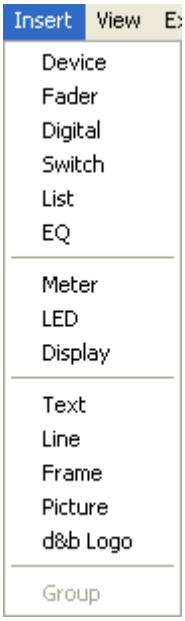


Fig. 21: Insert menu

The Workspace is designed in Edit mode by adding operating and graphic elements to the respective Pages.

You can find the elements in the Insert menu or place them directly on the page by simple drag and drop from the Edit bar at the right-hand side of the screen.

Operating elements can control a single device or a whole group of devices. After placing an element, set its properties by right-clicking on the element and opening the Properties screen.

Symbol	Type	Control	Display	Graphics
	Device	X	X	
	Fader	X	X	
	Digital	X	X	
	Switch	X	X	
	List	X	X	
	EQ	X	X	
	Meter		X	
	LED		X	
	Display		X	
	Text			X
	Line			X
	Frame			X
	Picture			X
	d&b Logo			X

Tab. 2: R1 operating and graphic elements

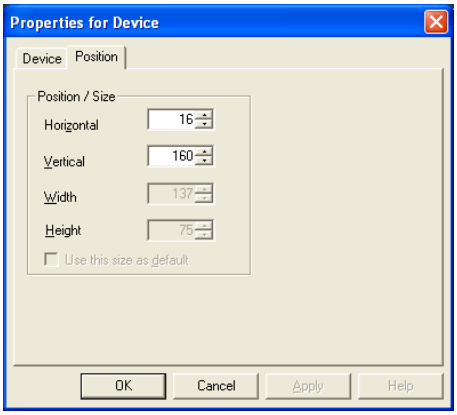


Fig. 22: Properties - Position

Properties

Depending on the element type, the Properties page contains several options defining the functionality and layout of the element.

Position

Position/Size: Position and size of the selected element can be edited (units: display pixels). The option "Use this size as default" enables you to set the size of the current element as a default value for the insertion of new elements of this type.

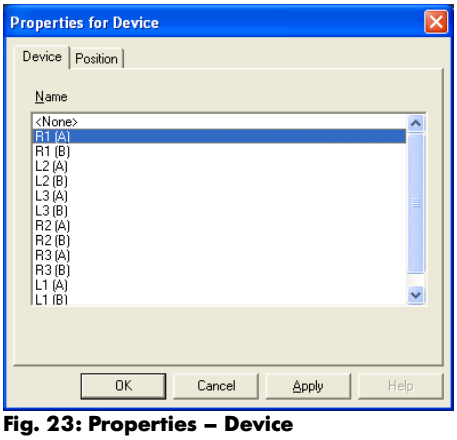


Fig. 23: Properties – Device

Device

A Device represents an amplifier channel and its selected loudspeaker setup. In the case of 2-Way active systems, it refers to the complete amplifier. In the Workspace, a Device is illustrated as shown in the following examples:

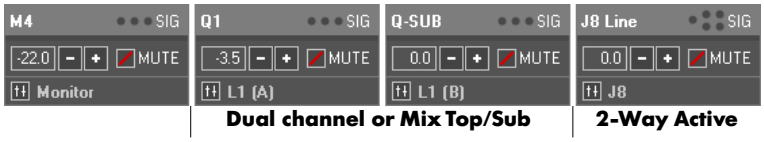


Fig. 24: Device

LED bar (Color)	Description
	Power off/Standby/no response (Gray)
	Powered (Green), no error.
	Error/General error (Red)
General Channel	Channel status (Red/green): With a D12 in Dual channel or Mix-TOP/SUB mode, the LED bar is split into two sections indicating a general error of the amplifier and the status of the particular channel.
General Ch. A Ch. B	With a D12 in 2-Way Active mode, the LED is split into three sections indicating a general error and the status of both channels.

There are three different ways to create a new Device in the Workspace:

- Drag and drop a Device element from the Edit bar into the Workspace and select an entry from the Properties window (right click inside the frame).
- Select one or more entries in the Device list and drag the amplifier channels into the Workspace.

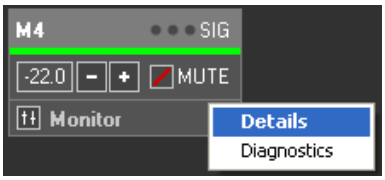


Fig. 25: Context menu of an operating element (Run mode)

When you right-click on a Control element (Run mode only) which is directly assigned to a device (no group controls), a context menu pops up.

Details: All controls and indicators of the respective Device.

Diagnostics: All error objects of the Device and their status.

This context menu is also accessible in the Device list and in the Group tree.

The Device details can also be accessed directly from the Device view by clicking the fader icon in the lower left-hand corner.

Fig. 26: Device - Detail view (Run mode)

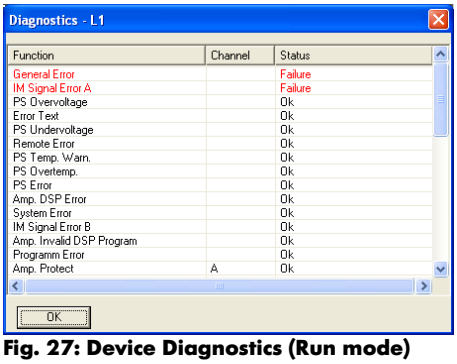


Fig. 27: Device Diagnostics (Run mode)

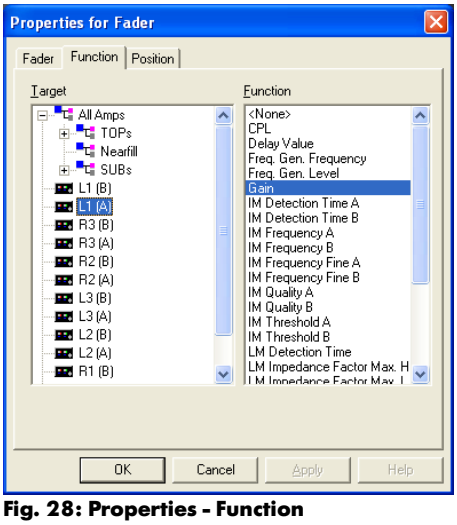


Fig. 28: Properties - Function

Detail view of a Device

The Detail view shows all the controls and indicators available for the particular system depending on the amplifier and loudspeaker type. The elements of the Detail view are clearly arranged on Tabs.

The functions available in the Detail view of a Device can be assigned to controls in the Workspace. In the Properties window of the operating elements Fader, Digital, Meter, Switch and LED in the Function tag, the available functions are listed and can be assigned (Target) to a single amplifier channel or one of the groups defined in the Group view.

Tabs

General: Main controls

EQ: Four way parametric equalizer section

Levels: Input and output levels

Freq.Gen: Frequency Generator

Info: Device information

LM: Controls of the Load monitoring section.
To enable/disable this tab, refer to section 3.3.3 Detail view on page 15.

IM: Controls of the Input monitoring section.
To enable/disable this tab, refer to section 3.3.3 Detail view on page 15.

Diagnostics view of a Device

This window is used to display error objects of the Device and their status.

In case of a general error (status LED of the Device lights up red) this list provides detailed information about the type of error. Objects with a status other than OK will appear at the top of the list.

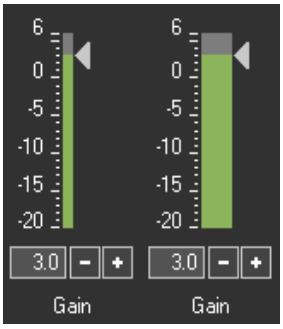
Assigning a Device function to an operating element of the Workspace

The Function tab of all control elements defines the assignment to particular devices or groups and the available Device functions.
First select a Target within the group tree.

The Function list now shows only the entries available for the combination of selected target and element type.

Select the desired function.

Note: When you select a group as target, only functions are available which are supported by all the group members. Display-only elements (Meter, LED) cannot be assigned to groups.



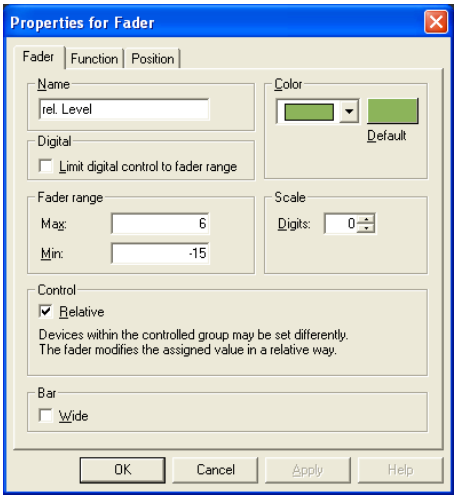


Fig. 29: Properties – Fader

Fader

The Fader element is used to control parameters such as input gain, Coupling or delay time.

The fader element has a dynamic scaling. If the actual value of the element is outside the defined range of the fader, the scale of the fader is expanded automatically to cover this value. As soon as the value is back in the nominal range, the original scaling is restored.

Name: Labeling below the element.

Limit digital control to fader range:

The range of the digital control is limited to the minimum / maximum value set in 'Fader range'.

Color: Color of fader.

Fader range: Minimum / maximum value of the scale.

Scale/Digits: Number of decimal digits.

Relative: Can only be used to control groups. The individual amplifier channels are adjusted relatively to their actual settings.
Note: To suppress a change of the objects associated with a relative Fader, operate the Fader while pressing the Ctrl-key on the keyboard. This is useful to adjust master objects to a desired value or position without triggering any functions.

Bar: Width of the bar (see picture).

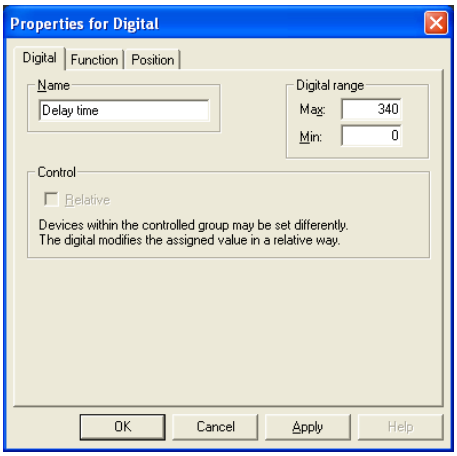


Fig. 30: Properties - Digital

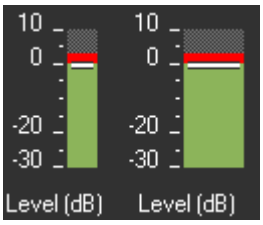
Digital

The Digital element is used to control the same parameters as a Fader.

Name: Labeling below the element.

Digital range: Minimum / maximum value of the control.

Relative: Can only be used to control groups. The individual amplifier channels are adjusted corresponding to their actual setting.



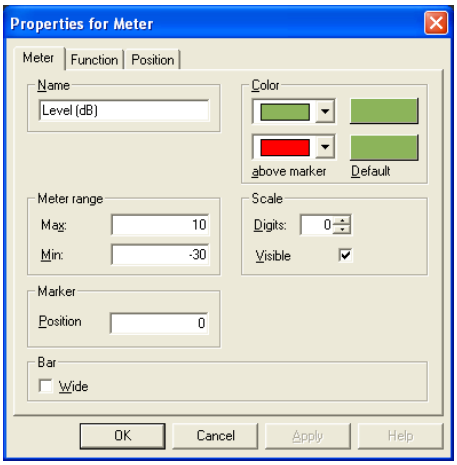


Fig. 31: Properties – Meter

Meter

The Meter element displays a read-only parameter of an amplifier such as Level or Temperature. When the Level of an amplifier channel is displayed, 0 dB represents full output level, negative values indicate available headroom, and values above 0 dB represent the actual gain reduction in dB.

Name: Labeling below the element.

Color: Color of the level bar below and above the defined marker.

Meter range: Minimum / maximum value of the scale range.

Scale/Digits: Number of decimal places.

Scale/Visible: Visible or hidden scale.

Marker Position: Start of the second color. This can also be set in RUN mode by dragging it.

Bar: Width of the bar.

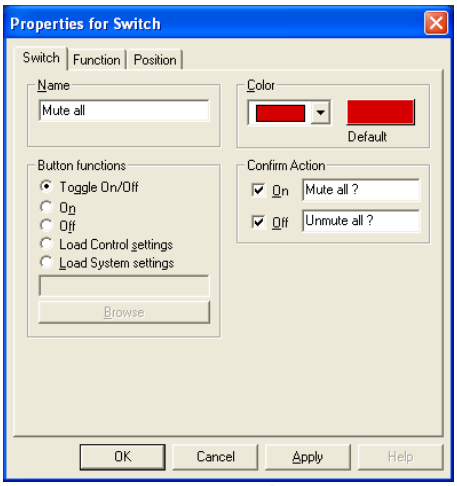
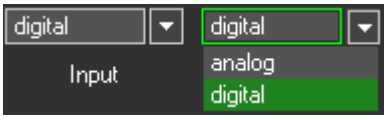


Fig. 32: Properties - Switch



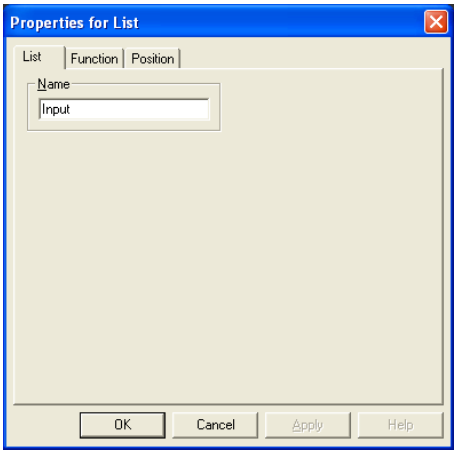


Fig. 33: Properties - List

Switch

A Switch can be assigned to parameters with two states (like Power, CUT, MUTE etc.) or to load an R1 Control settings file. Toggle switches and push-buttons are displayed differently - see picture on the left. After a function has been assigned, the color of a switch is automatically set to the respective default value (e.g. Mute = red). It can however be modified.

Name: Labeling below the element.

Color: Color for the two switch states can be set.

Button functions: Toggle On/Off.
Push button On.
Push button Off.

Load Control settings:
Opens a stored Control settings file and uploads data to d&b amplifiers (refer to section 3.5.1 Load R1 Control settings ... on page 28).

Load System settings:
Opens a stored System settings file and uploads data to d&b amplifiers (refer to section 3.5.1 Load R1 Control settings ... on page 29).

Confirm Action: A message pops up before the action is executed.

List

A List can be assigned to parameters with multiple states (such as Input (D6/D12) or Input Source (D6/D12)).

Name: Labeling below the element.

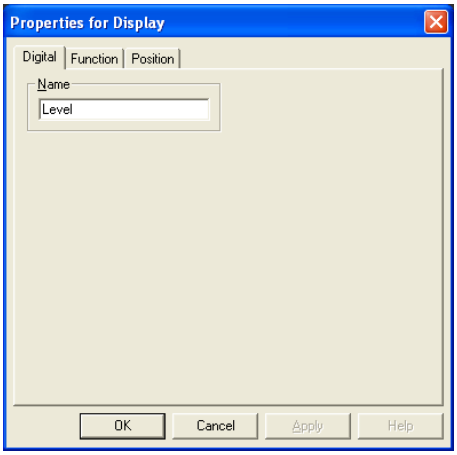


Fig. 34: Properties - Display

Display

A Display element can be assigned to numerical values such as Input gain, delay or temperature.

Name: Labeling below the element

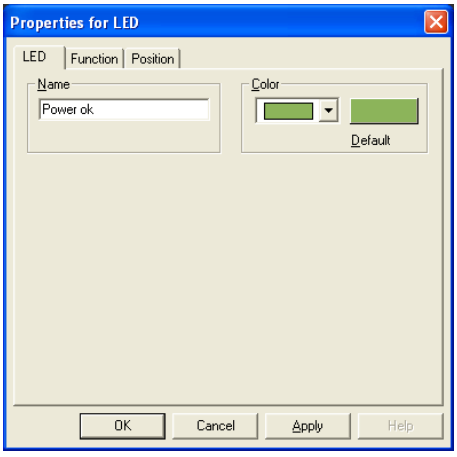


Fig. 35: Properties - LED

LED

The LED element displays a two state parameter of an amplifier such as GR, OVL, MUTE or POWER ON.

Name: Labeling below the element.

Color: Color of the LED in on state.

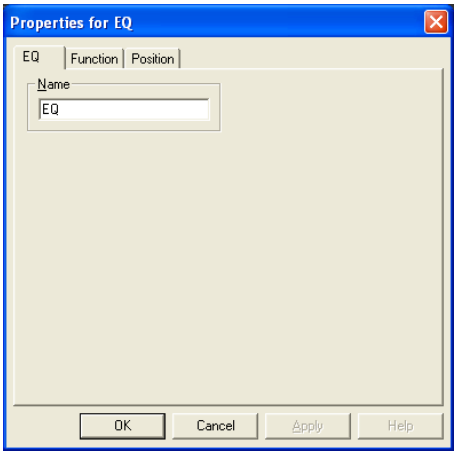


Fig. 36: Properties – EQ

Equalizer (EQ)

The EQ element controls the four way parametric equalizer section of an amplifier channel or a group of channels. Equalizer settings can be stored and restored.

Name: Labeling below the element.

The operation and view of the EQ flag in the Detail view of a single Device are identical to the EQ control in the "Workspace". Therefore this description also applies to the EQ Device.

Note: Assigning an EQ control to a group of devices disables the EQ controls in the Detail view of the devices. As a result, all devices of the group have identical EQ settings and relative operation of EQ parameters is not possible.

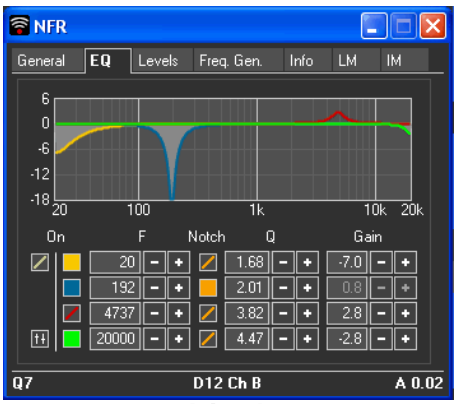


Fig. 37: EQ control detail view

Operation of the EQ control

In RUN mode the graph in the upper part shows the actual transfer function of the enabled filters. The curve is filled when the respective EQ is active (ON) and transparent when it is disabled.

The EQ section consists of four independent filters which are marked by different colors.

Filter 1: yellow
Filter 2: blue
Filter 3: red
Filter 4: green

The transfer function of the currently edited filter section is displayed by an additional curve in the respective color.

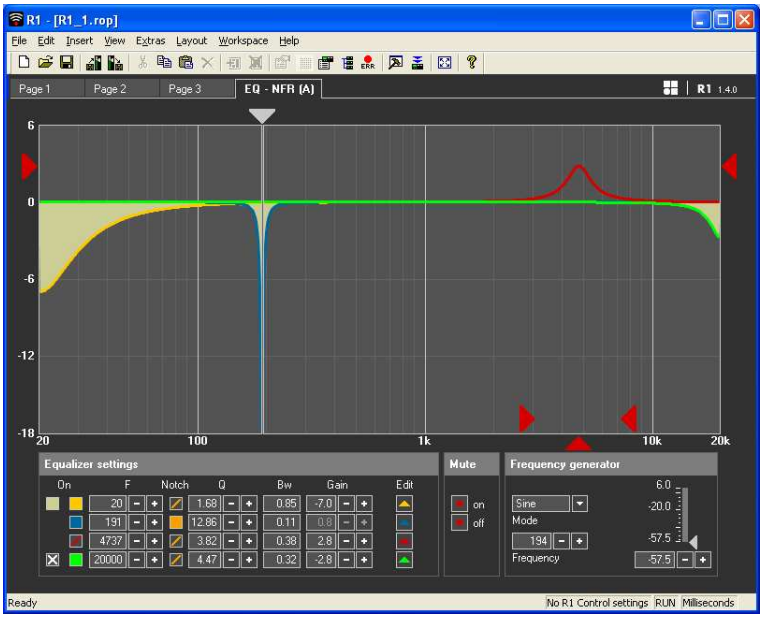
Equalizer parameters

ON:	The button on the left enables/disables the whole EQ section (Master on/off) while the four colored buttons activate the individual EQ bands.
F:	Center frequency in Hz
Notch:	On: Notch filter Off: Peak filter
Q/Bw:	Quality factor/calculated bandwidth
Gain:	In dB

Extended EQ control

In RUN mode an extended EQ control page can be accessed by clicking the details button on the left-hand side of a standard EQ control. If the page has already been opened, it will be replaced by the new one.

To close the EQ page, click on the close button on the left-hand side at the bottom of the page.



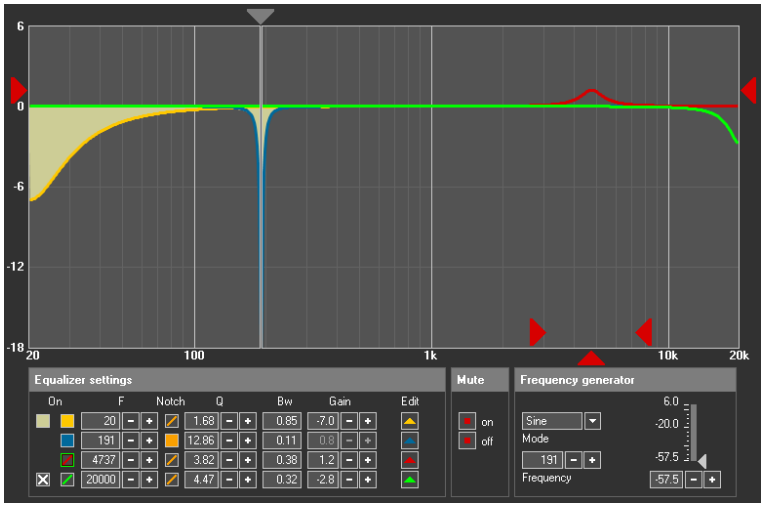
Equalizer settings

The EQ settings can be edited in two ways:

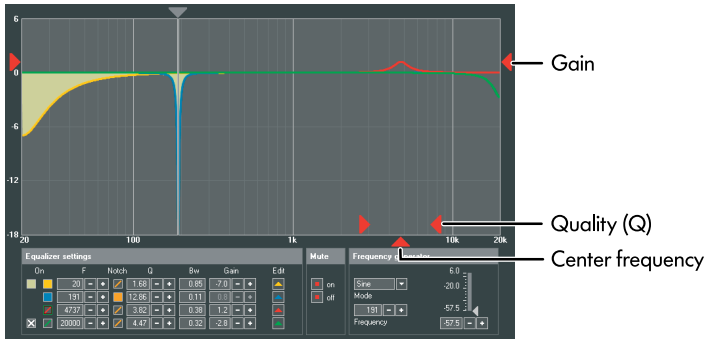
Equalizer settings panel

Provides access to the EQ bands and the master on/off function.

Using the mouse



1. Select the band by clicking on the curve or the Edit arrow in the appropriate color in the Equalizer settings panel.
2. Use the slider at the bottom to set the center frequency, the two opposite sliders within the graph to set the EQ quality (Q) and the sliders on the left or right sides to set the EQ gain.



Saving and copying equalizer settings

When you right-click on the EQ control, a pop-up window with the following commands opens:

Copy: Copies settings of the EQ control into the clipboard.

Paste: Pastes EQ settings from the clipboard into the EQ control.

Save: Stores settings of the EQ control into a file (*.rpc).

Load: Restores settings of the EQ control from a file (*.rpc).

All operations refer to the complete set of parameters of all four equalizer bands.

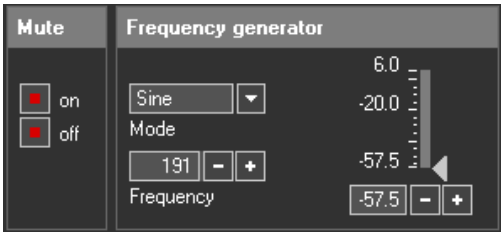
Frequency generator and MUTE function

Note: The Frequency generator is not available when Load monitoring is active.

The extended EQ control offers access to the frequency generator and the MUTE on/off function.

The generator settings can be edited in two ways:

Frequency generator panel



MUTE on: Mutes the respective amplifier channel or group.

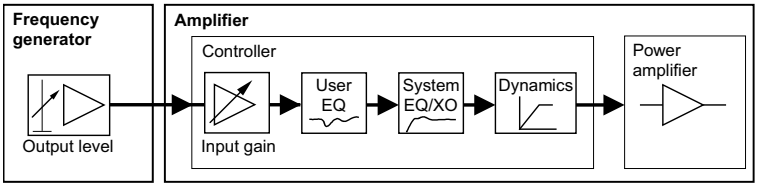
MUTE off: Unmutes the respective channel or group.

Mode: The Frequency generator can be set to off, Sine or Pink noise signal.

Frequency: Frequency of the sine wave generator.

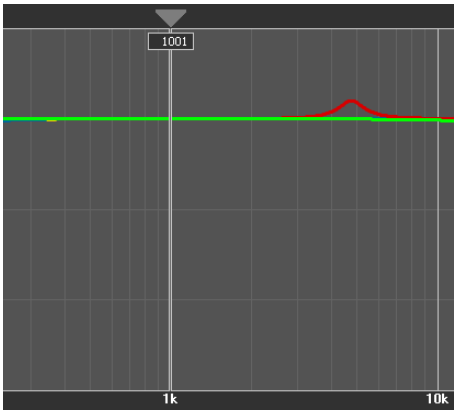
Level: Level of the Frequency generator in dBu.

Note: The level value corresponds to a level at the controller signal input. The actual output voltage depends on the channel input gain, the frequency-dependent gain of the selected loudspeaker configuration, and EQ settings if used. The graphic below is a schematic diagram of the signal path.

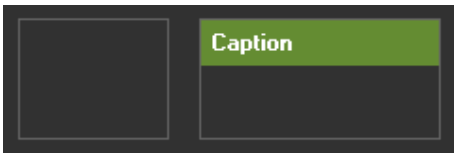


Using the mouse

Alternatively, the slider on top of the graph can be used to switch the Frequency generator on or off (double click) and to set the sine wave frequency of the generator (move the slider to the left or right).



Text **Line**



Frame

Picture , d&b Logo

Fig. 38: Text, Line, Frame and Picture

Graphic elements

Apart from the operating elements, R1 includes a couple of graphic elements which allow the user to design and structure the "Workspace" in order to create an easy-to-operate user interface. These elements can be configured by right-clicking and selecting "Properties".

Text

Creates a single line text element.

Font: Sets font and font size.
Transparent: Transparent background of text area.

Line

Draws a line with arbitrary starting and end point. Thickness and color can be selected.

Frame

Draws a thin rectangular frame, for example around functional groups of elements. An optional colored caption can be enabled.

Picture

A logo or pictograph can be inserted in the Workspace. File format must be bitmap (*.BMP).

d&b Logo

The d&b logo can be inserted in the Workspace.

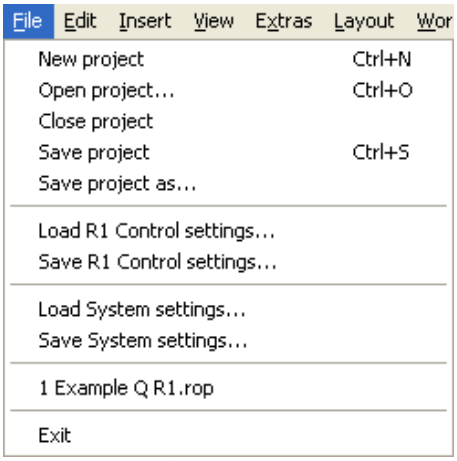


Fig. 39: Menu File

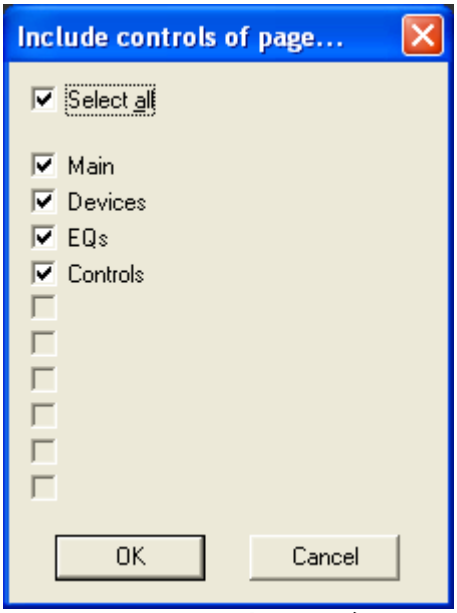


Fig. 40: Save R1 Control settings (in RUN mode only)

3.5. File menu

New
The current project is closed and a new empty project is opened in Edit mode.

Open
An existing project file (*.rop) is opened. R1 enters Run mode (refer to section 3.9 Run mode on page 39).

Close
Closes the project.

Save
The following data are saved:

- Workspace layout.
- Device list and groups.

Save As...
Same as above but with a new file name.

3.5.1. R1 Control settings / System settings

Load R1 Control settings ...
Loads and sends a file which was saved using Save R1 Control settings...

Save R1 Control settings ...
An R1 Control settings file contains all controls of the selected Pages of the Workspace (see graphic opposite).

R1 Control settings files are considerably smaller than a System setting file and therefore quicker to recall and download to the system.

As an R1 Control settings file only contains the content (information) of the Workspace, it can be created without a connection to the network.

Load System settings ...
Loads and sends a file which was saved using Save System settings...

Note: Ensure that only System/R1 Control settings files which were created with the current R1 file are loaded.

Save System settings ...

Note: It is only possible to save System settings when the network is connected and R1 is in Run mode. Make sure that all devices are connected, powered and set up properly before saving the System settings.

A System settings file contains all amplifier data objects which can be controlled from the Workspace plus all R1 group controls. It is therefore a complete snapshot of all amplifiers listed in the Device list and connected to the network.

As defined in the R1 file, the contents of the Device list are not stored in a System settings file.

When saving a System settings file, you can add a description. This helps to identify the file for later recall.

If at least one amplifier does not respond while R1 reads the current settings, an error message appears. Click OK to save the settings or click Cancel to abort the Save System settings process.

3.6. Edit menu

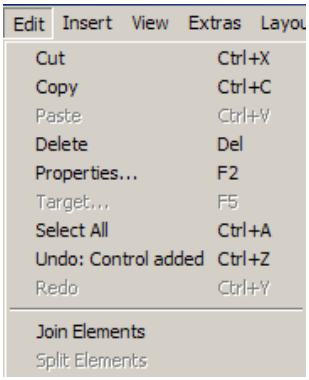


Fig. 41: Menu Edit

Cut: Cuts marked object to clipboard.

Copy: Copies marked object to clipboard.

Paste: Pastes clipboard.

Delete: Deletes marked object.

Properties...: Opens the properties window.

Select all: Selects all elements in the Workspace.

Undo: Control added Performs an undo operation.

Redo: Performs a redo operation.

Join Elements: Joins selected elements in a group

Split Elements: Splits the group of joined elements

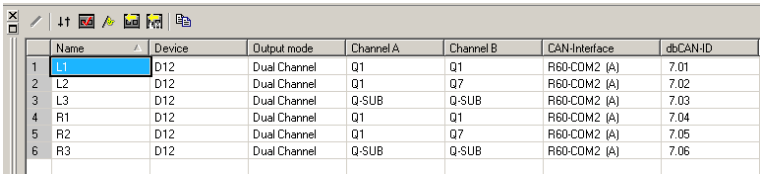
Both the Undo and Redo functions are related to the control elements in the workspace and can be executed in Edit mode only.

3.7. Device list and editor

3.7.1. Device list

The Device list can be accessed from the "View menu – Device list" or by pressing Ctrl+L.

Each entry in the list defines a complete amplifier (Ch A and Ch B).



	Name	Device	Output mode	Channel A	Channel B	CAN-Interface	dbCAN-ID
1	L1	D12	Dual Channel	Q1	Q1	R60-COM2 (A)	7.01
2	L2	D12	Dual Channel	Q1	Q7	R60-COM2 (A)	7.02
3	L3	D12	Dual Channel	Q-SUB	Q-SUB	R60-COM2 (A)	7.03
4	R1	D12	Dual Channel	Q1	Q1	R60-COM2 (A)	7.04
5	R2	D12	Dual Channel	Q1	Q7	R60-COM2 (A)	7.05
6	R3	D12	Dual Channel	Q-SUB	Q-SUB	R60-COM2 (A)	7.06

Device list toolbar

The Device list provides its own toolbar.

Depending on Run or Edit mode the following functions are accessible from the toolbar:

In Run Mode

	**Details:** Opens Detail view of the selected Device(s).
	**Diagnostics:** Displays diagnostics info of the selected device.
	**Wink:** The display of the selected Device(s) flashes and the dbCAN-ID is displayed. Optionally, an audible signal is given out.
	**Clear all settings:** Resets the selected Device(s) to factory default settings.
	**Clear LM settings:** Resets Load Monitoring of the selected Device(s) to factory default settings.
	**Copy (Ctrl+C):** Copies the selected Device(s) to the clipboard to insert them as printable text into a text file.

In Edit Mode

	**Edit Device list:** Opens the Device list editor.
	**Copy (Ctrl+C):** Copies the selected Device(s) to the clipboard to insert them as printable text into a text file.

Creating a new Device list or editing a Device list within an existing R1 project file is carried out in the Device list editor, as described in the following section.

3.7.2. Device list editor

The Device list editor is used to create new Device lists or add, remove and/or change amplifier settings.

To access the Device list editor, R1 must be switched to Edit mode:

- go to "View menu – Edit" or press Ctrl+E.

The Device list editor can then be accessed using one of the following methods:

- From the Extras menu: Select Edit Device list.
- From the Device list: Right-click on the Device list and select Edit Device list.
- From the Device list toolbar: Click on the Edit Device list button ( ).

Device list Editor toolbar

The Device list editor provides its own toolbar.

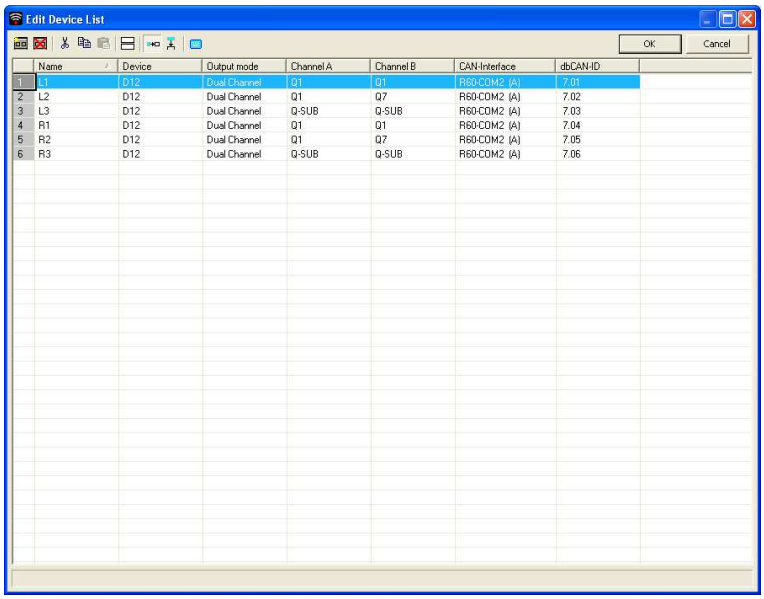
Depending on the selected entries or items, the following functions are accessible from the toolbar:

Symbol	Shortcut	Description
		New amplifier: Adds an amplifier at the end of the list. R1 increments the dbCAN-ID for each new amplifier. **Note:** A new amplifier entry is used as template for the next new amplifier.
	DEL	Erases selected amplifier(s).
	Ctrl+X	Cuts selected amplifier(s) to the clipboard.
	Ctrl+C	Copies selected item(s) or amplifier(s) to the clipboard.
	Ctrl+V	Pastes from clipboard. **Notes:** The clipboard content must match the selected item (column). Amplifier entries are always inserted at the end of the list.
		Scans the d&b Remote network for connected devices. After the scan, the window will be split into the current R1 project Device list in its upper part and the actual devices present on the network in the lower part.
		Moves input box to the right.
		Moves input box downwards.
		Opens on-screen keyboard.

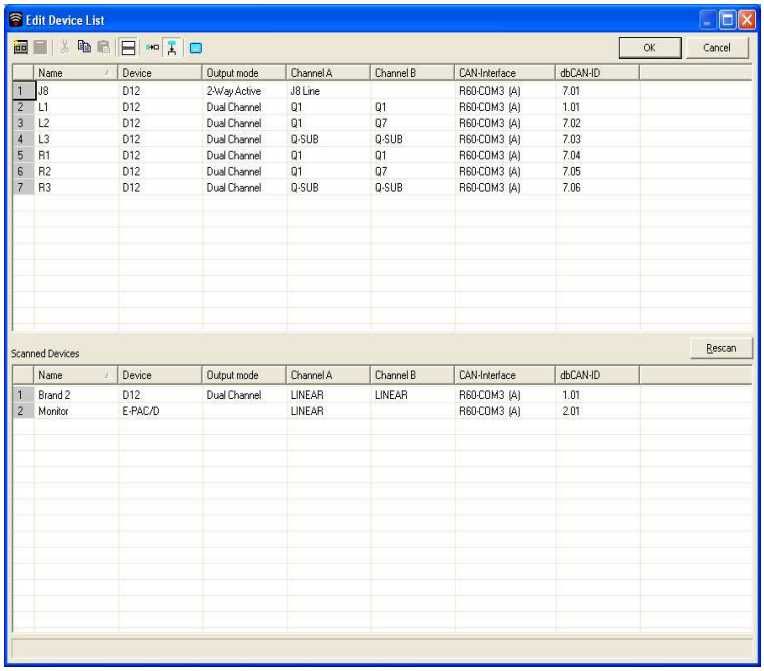
Notes: To access amplifier entries the complete row must be selected. Refer to Selecting items, Complete amplifier entry (table row) on page 34. All functions are also accessible via a context menu through a right click.

An R1 project may be designed with a sound system online or offline without a connection to the d&b Remote network or a system present.

However, when you work offline, the editor window appears (as shown below) ready to modify an existing Device list or create a Device list from scratch.



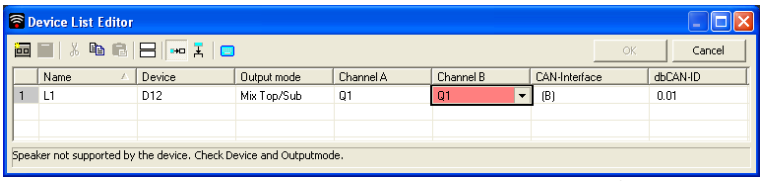
With the d&b Remote network connected or a system present, select Scanned devices () from the toolbar in the editor window. The editor window is split into the current R1 project Device list in its upper part and the actual devices present on the network in the lower part as shown below.



Copy and paste the scanned devices from the lower part of the window into the Device list in the upper part or use the scanned ID settings to adapt the entries of an existing Device list.

3.7.3. Functionality of the Device list and Editor

Note: A red item indicates a mismatch of the settings.

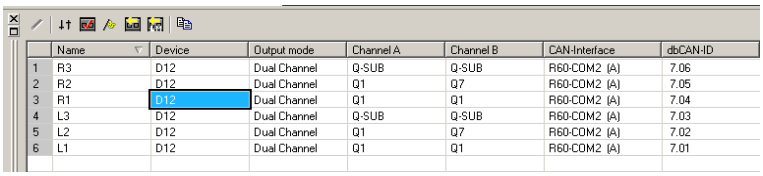


When you click into the red item a detailed description of the problem will be displayed at the bottom of the Device List Editor.

Selecting items

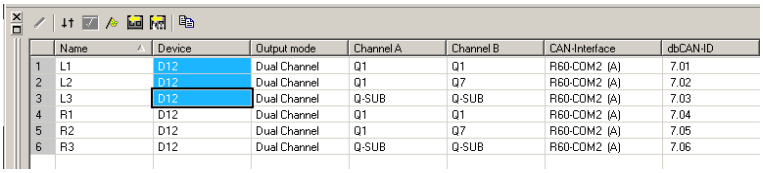
For most actions it is necessary to select one or more items. The following methods apply to both the Device list and the Editor window.

Single item



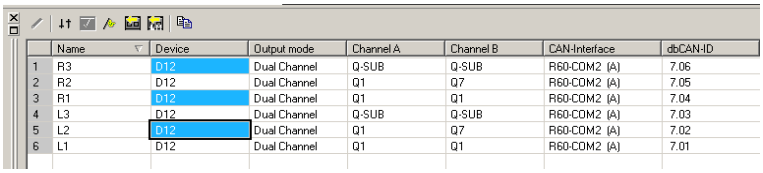
Mouse	- Click on the desired item.
Keyboard	- Move the input box to the item to be selected. - Press the Ctrl key and Space bar.

Multiple items



Mouse	- Select one item and drag downwards to select multiple items. or ... - Click on the first item to be selected. Press and hold the Shift key and click on the last item to be selected.
Keyboard	- Move the input box to the first item to be selected. - While pressing the Shift key, move the input box to the last item to be selected.

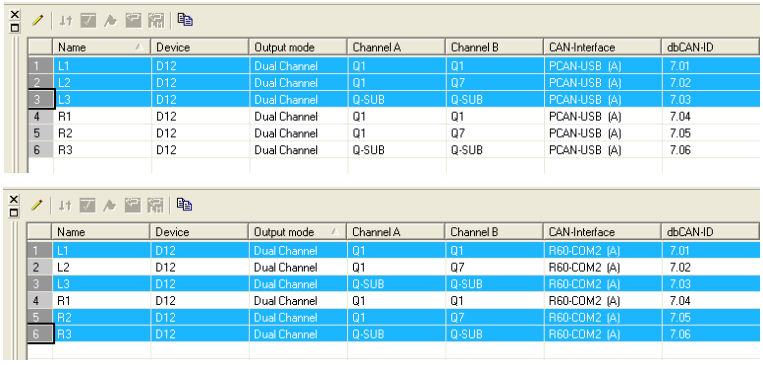
Independent items



	Name	Device	Output mode	Channel A	Channel B	CAN-Interface	dbCAN-ID
1	R3	D12	Dual Channel	Q-SUB	Q-SUB	R60-COM2 (A)	7.06
2	R2	D12	Dual Channel	Q1	Q7	R60-COM2 (A)	7.05
3	R1	D12	Dual Channel	Q1	Q1	R60-COM2 (A)	7.04
4	L3	D12	Dual Channel	Q-SUB	Q-SUB	R60-COM2 (A)	7.03
5	L2	D12	Dual Channel	Q1	Q7	R60-COM2 (A)	7.02
6	L1	D12	Dual Channel	Q1	Q1	R60-COM2 (A)	7.01

Mouse	- Click on the first item to be selected. - Press and hold the Ctrl key and click on all items to be selected. - To clear the selection of an item, click again on the item in question while keeping the Ctrl key pressed.
Keyboard	- Move the input box to the first item to be selected. - Press the Ctrl key and Space bar to select the item. - Repeat this for each item you want to select while keeping the Ctrl key pressed. - To clear the selection of an item, press the Space bar again while keeping the Ctrl key pressed.

Complete amplifier entry (table row)

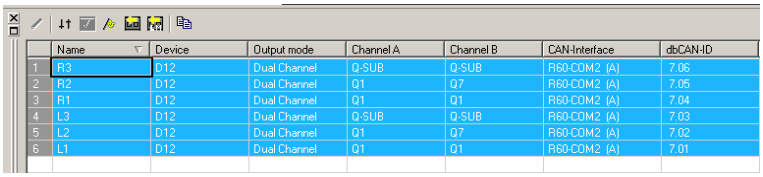


	Name	Device	Output mode	Channel A	Channel B	CAN-Interface	dbCAN-ID
1	L1	D12	Dual Channel	Q1	Q1	PCAN-USB (A)	7.01
2	L2	D12	Dual Channel	Q1	Q7	PCAN-USB (A)	7.02
3	L3	D12	Dual Channel	Q-SUB	Q-SUB	PCAN-USB (A)	7.03
4	R1	D12	Dual Channel	Q1	Q1	PCAN-USB (A)	7.04
5	R2	D12	Dual Channel	Q1	Q7	PCAN-USB (A)	7.05
6	R3	D12	Dual Channel	Q-SUB	Q-SUB	PCAN-USB (A)	7.06

	Name	Device	Output mode	Channel A	Channel B	CAN-Interface	dbCAN-ID
1	L1	D12	Dual Channel	Q1	Q1	R60-COM2 (A)	7.01
2	L2	D12	Dual Channel	Q1	Q7	R60-COM2 (A)	7.02
3	L3	D12	Dual Channel	Q-SUB	Q-SUB	R60-COM2 (A)	7.03
4	R1	D12	Dual Channel	Q1	Q1	R60-COM2 (A)	7.04
5	R2	D12	Dual Channel	Q1	Q7	R60-COM2 (A)	7.05
6	R3	D12	Dual Channel	Q-SUB	Q-SUB	R60-COM2 (A)	7.06

Mouse	- Click on the index in the left-hand column. - To select further rows, press and hold the Shift key and click on the following index or click on the last index to be selected. - To select the rows in a specific order, press and hold the Ctrl key and click the respective index.
Keyboard	- Move the input box to the index in the left-hand column. - Press and hold the Shift key followed by the cursor down key. - To clear the selection of an item, press the Space bar again while keeping the Ctrl key pressed.

All items



		Name	Device	Output mode	Channel A	Channel B	CAN-Interface	dbCAN-ID
1	R3	D12	Dual Channel	Q-SUB	Q-SUB	R60-COM2 (A)	7.06
2	R2	D12	Dual Channel	Q1	Q7	R60-COM2 (A)	7.05
3	R1	D12	Dual Channel	Q1	Q1	R60-COM2 (A)	7.04
4	L3	D12	Dual Channel	Q-SUB	Q-SUB	R60-COM2 (A)	7.03
5	L2	D12	Dual Channel	Q1	Q7	R60-COM2 (A)	7.02
6	L1	D12	Dual Channel	Q1	Q1	R60-COM2 (A)	7.01

Mouse	- Click on the item on the far left of the Device list header.  - To clear the selection, click on empty space somewhere in the table.
Keyboard	- Press Ctrl + A. - To clear the selection, press the Escape key.

Copy and paste items / drag and drop
Copying one item

- You can mark multiple items by clicking on an item and dragging downwards. The marked items can then be dragged and dropped or copied and pasted using CTRL+C/CTRL+V. Use the amplifier index in the first column to mark complete amplifiers.
- Clicking an item and dragging upwards directly switches to drag&drop mode, for example to drag channels or complete amplifiers into the workspace.
- Use the cursor keys to move the input box to the item to be copied. Press Ctrl + C to copy the item's value into the clipboard. Move the input box to the target item and press Ctrl+V to replace the item's value by the previously copied value.
  To replace more than one item at the same time, select the desired items and press Ctrl+V.

Copying multiple items

- Select the items to be copied. Click on a selected item while keeping the mouse button pressed and moving the mouse to the desired item.
- Select the items to be copied. Press Ctrl+C to copy them into the clipboard. Move the input box to the first item you want to replace by the clipboards contents. Press Ctrl+V.

3.8. R1 Templates

3.8.1. R1 Template explorer

In Edit mode, open the R1 Template explorer by selecting "Templates" from the "View menu" or click on the template icon ( ) in the R1 toolbar.

3.8.2. d&b Templates

The "d&b Templates" section provides a d&b templates collection that matches the groups of controls in the R1 example files. These example files can be downloaded from the d&b website at www.dbaudio.com.

The "d&b Templates" explorer section is write protected.

3.8.3. Using templates

R1 templates are not allocated to any device or group of devices by default. Before using R1 templates in an R1 project define your device list and groups of devices (group tree).

To use templates within an R1 project proceed as follows:

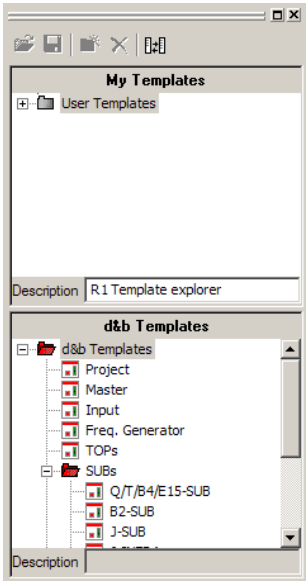


Fig. 42: R1 Template explorer

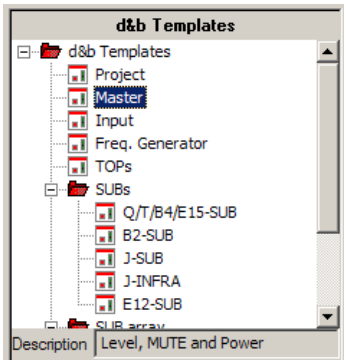


Fig. 43: Using templates

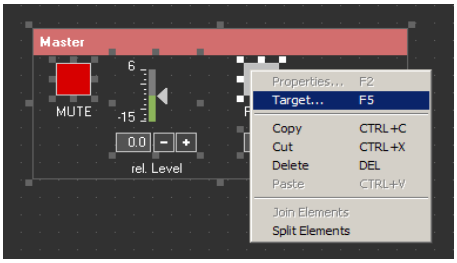


Fig. 44: R1 Template – Target

1. Simply drag and drop the desired template onto the R1 workspace.
2. Right click on the template and select "Target" from the context menu to open the Target dialog.
3. In the left column of the Target dialog, assign the template to the desired group or device and confirm by clicking OK.

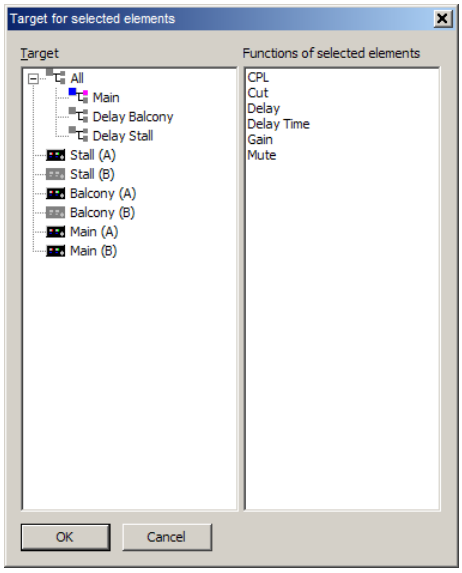


Fig. 45: R1 Template – assign Target

In the right column of the Target dialog the functions of the selected elements of the template are listed as additional information. Groups or devices that do not support all functions are disabled.

3.8.4. My Templates

In addition to the d&b templates collection this section allows you to create and file your own templates within your desired structure by adding folders.

Notes: The templates collection is automatically saved after any addition or change. The control or the group of controls is saved including all property settings but without any targets.
The templates collection is user-specific.

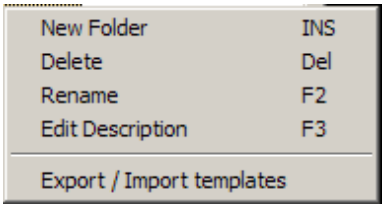


Fig. 46: R1 template explorer context menu

Template explorer context menu
Right click on any item in the explorer window to open the context menu.

New Folder:	Adds a new folder to the explorer tree.
Delete:	Deletes the selected item.
Rename:	Allows you to rename the selected folder or template.
Edit Description:	Places the cursor into the description field.
Export/Import templates:	Opens the Export/Import explorer.

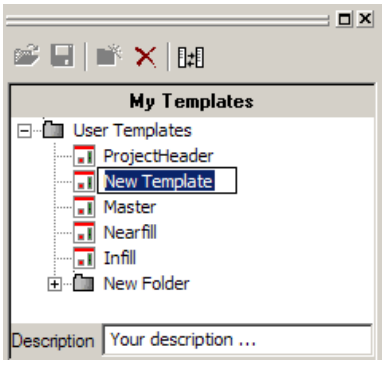
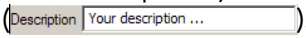


Fig. 47: R1 User Templates

Creating a template
To create a template simply drag and drop a control or a group of controls into the desired folder of the "My Templates" explorer.

The new template appears (

).

At the bottom of the explorer you can enter additional descriptive information (

). This descriptive text will appear as a tool tip when you move the mouse cursor over the corresponding item in the explorer tree.

3.8.5. Export/Import R1 templates

R1 provides a dialog to export and/or import R1 templates collections or individual templates. This feature is mainly intended ... :

- For backup purposes
- To share templates on a multi user PC/laptop
- To share templates with other R1 users

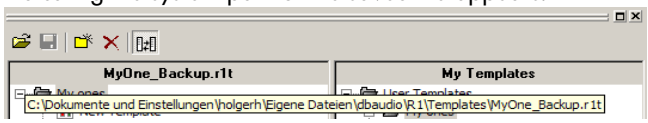
Template explorer toolbar

	Open: Opens the import dialog.
	Save as: Saves (exports) the template / templates collection as an R1 template file (*.r1t)
	New Folder: Adds a new folder to the explorer tree.
	Delete: Deletes the selected item
	Export/Import: Opens/Closes the Export/Import explorer.

Exporting templates

1. Click on the Export/Import icon ( ) to open the Import/Export explorer.
2. Select the desired template or folder or the entire R1 templates collection from your template tree and drag and drop the selected items to the explorer window on the left.
3. Click on the "Save as" icon ( ) to export (save) the template or templates collection to your desired directory.

   Note: After the export the entered file name is displayed at the top of the extended explorer window and a tool tip indicating the system path of the saved file appears.



4. Click on the Export/Import icon ( ) to close the extended explorer window.

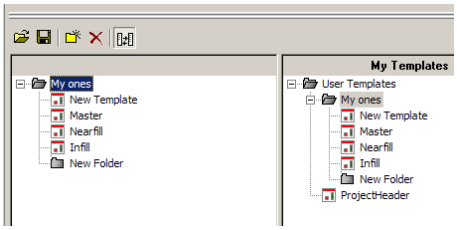


Fig. 48: Export templates

Importing templates

1. Click on the Export/Import icon ( ) to open the Import/Export explorer.
2. Click on the "Open" icon ( ) and import (load) the template or templates collection from the respective directory.
3. Drag and drop the imported template or templates collection to your desired folder in the "My Templates" explorer.
4. Click on the Export/Import icon ( ) to close the extended explorer window.

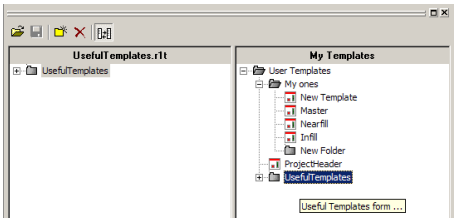


Fig. 49: Import templates

3.9. Run mode

When connected to the d&b Remote network and CAN communication is enabled (refer to section 3.3.3 ⇒ Extras - Options - CAN on page 14), all controls and indicators visible in the Workspace show the current statuses of the connected amplifiers.

When you enter Run mode, the following tasks are executed by R1:

- All entries of the Device list are compared with the connected devices.
- Amplifiers are configured according to the content of the Device list (refer to section 3.3.3 ⇒ Extras - Send initialization on page 16)

  Note: The Settings of amplifiers connected to the remote network while R1 is in Run mode are not verified. These devices may therefore not work properly.
- All control values are read from the amplifiers and set correspondingly.

In RUN mode, colored markings of the frame or its corners indicate the condition of a control element.

- A green frame highlights the active control element. The Tab key skips to the next control. Digital controls and Fader controls can be operated using the cursor up/down keys when highlighted.
- A dark gray frame indicates that the operation is locked.
- Yellow corners: R1 is waiting for the amplifier to respond.
- Red corners: The values of all devices in an absolute group control do not match.
- Blue corners: Timeout - the amplifier does not respond.
- Magenta corners: The control is not connected to a function.

3.10. Group initialization

Group initialization ensures that group controls and their respective objects in the assigned devices are set to the same value. This is done when the Send initialization function is executed.

During the initialization procedure the setting of the grouped object is read from one device within the group. The value and the group control and all the other members of the group are set correspondingly.

Note: When the parameter controlled by a group control has been modified on the individual devices, for example gain settings -20 dB, +3 dB and 0 dB within one group, an initialization unifies all settings. The resulting value could be any of the three.

Relative group controls and switches with a push button On/Off function are not initialized.

If the group initialization fails, a list of the groups and the corresponding functions will be displayed as shown in the graphic below.

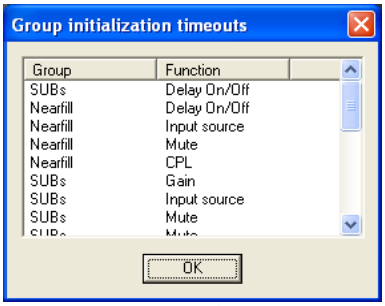


Fig. 50: Group initialization timeout

3.11. Tool tips

If you stay with the mouse cursor on a Workspace operating element in Run mode for more than 1 second, a small window appears and provides information about the assignment and function of the element. If a switch is assigned to a settings file, its path and description will be displayed.

d&b audiotechnik GmbH, Eugen-Adolff-Str. 134, D-71522 Backnang, Germany, Phone +49-7191-9669-0, Fax +49-7191-95 00 00