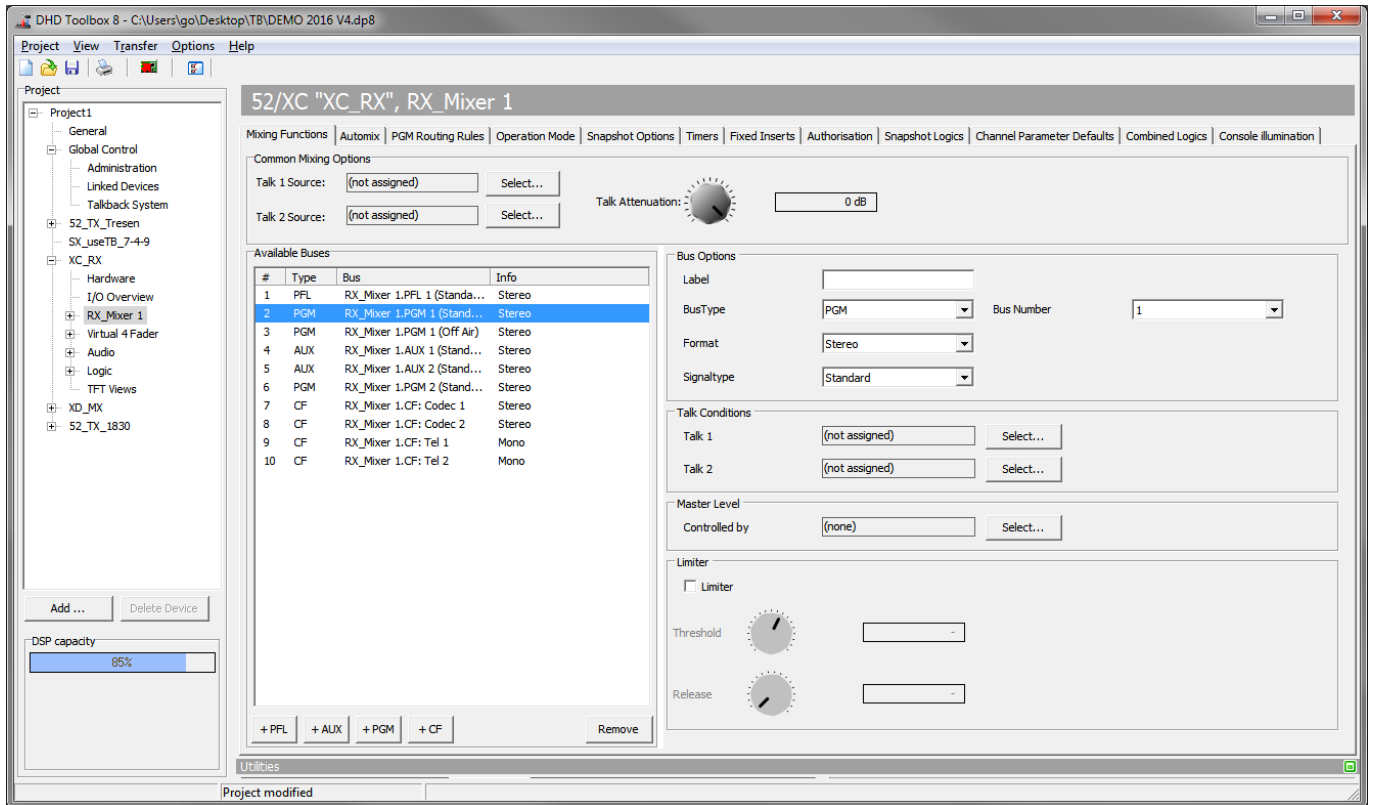


Table of Contents

Mixing Functions	1
Mixing System	1
Stereo / Mono	2
Summing Bus Configuration	2
Summing Busses with certain Signal Types	3
Voice / Music / Off Air Switching	3
Talk Conditions	4
Clean Feed Options	6
Fader Channel	6
Output Selector Source List	6
Limiter	7

Mixing Functions

You can configure the internal busses for each **virtual mixer** separately. To do this, select the desired <mixer> from the project tree and select the **Mixing Functions** tab.



Mixing Functions tab

On this tab, you can configure the number of summing busses, Aux busses, the talk functions and special functions of the clean feed system (N-1).

Mixing System

The configuration software TB8 offers simple opportunities to realise complex bus structures within an Series 52 mixing device.

Busses are separated according to their Bus Type. You can create busses of the types **Program**, **Aux**, **CF** (Clean Feed) and **PFL**. Two program busses and one PFL bus are available by default. You can delete these default busses or change their settings. The total number of available busses depends on the DSP capacity of the system.



Important

When creating the busses, keep in mind that they affect the DSP load of the whole



system. Therefore, do not create more busses than necessary to spare the resources for other applications.

**Note**

All summing busses are internally regarded as stereo, by mono-summation of the left and right channel, they can also be used mono. It is not possible though to create two mono summing busses from one stereo summing bus!

Stereo / Mono

Generally, all summing busses are calculated in stereo, but by mono summation (-3 dB) of the left and right channels they can also be used as mono. In the **Edit Bus** area, select **Mono** in the **Format** box, to enable mono summation. After that, the bus appears in the selection window for audio sources under the node Mixing Functions only as one entry and without the extensions **L** or **R**.

**Note**

Clean feeds are created internally as a stereo signal, too. For this, it does not matter whether the source of the fader channel of the clean feed is mono or stereo. If necessary, enable mono summation.

If you want to use a bus mono and stereo at the same time in a configuration, or if you want to attenuate the mono summation to a different value than -3 dB, create the mono signal by using an output function. (See also [Output Functions](#))

Summing Bus Configuration

To create a summing bus, do the following:

1. In the **Available Buses** area, below the list, there are buttons for each bus type. Click **+ PFL**, **+ AUX**, **+ PGM** or **+ CF(Clean Feed / n-1)** to add one bus for the selected type.

**Note**

In the **Bus Options** area, in the **Bus Type** list, you can change the type of the bus, later on.

2. In the **Bus Options** area, you can define the properties of the created bus. To do this, select the bus from the list.

3. Insert a distinctive name in the **Label** box.
4. Select a bus type from **Bus Type** box (**Program**, **Aux**, **PFL**) and type or select a number in the **Bus Number** box.
5. In the **Format** drop-down menu, you can set if the bus is **Stereo** (default) or **Mono**.
6. If you want to change the level of a summing bus during operation, select in the **Master Level Control** box a physical element for controlling (e.g., a potentiometer on the operating desk or an external potentiometer at an ACI input).

Summing Busses with certain Signal Types

When configuring the mixing functions you can distinguish summing busses according to certain signal characteristics, for example to the type of the signal. On some mixers, busses are identified according to the type of signal. We generally distinguish between voice signals (**Voice**) and other signals (**Music**), mix them separately and route the sums to different signal processors (internal or external).

The Standard signal type is selected by default and defines a program bus which can be fed with fader signals via the key function Program Bus Nr. On/Off. The configured program busses are separated using the serial bus number.

Within the system, depending on the DSP core hardware type, up to 48 program busses can be configured.

Apart from this, there is an opportunity to change the type of signal, despite using busses with different serial numbers. The integrated additional functions influence the signalisation in the system and can be misunderstood. Therefore, this mode makes sense only in special applications.

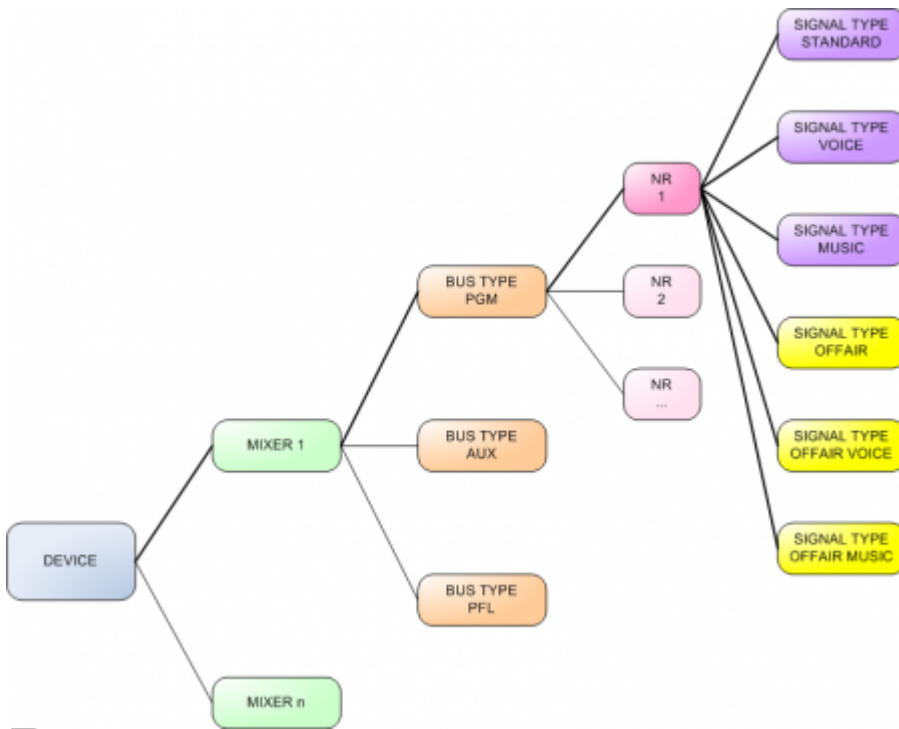
Voice / Music / Off Air Switching



Important


To use the bus types **Voice** and **Music** (also **Off Air Voice** and **Off Air Music**) the [52-8581 Enhanced DSP Processing license](#) is required in the DSP core.

In broadcast mixers, program busses are often distinguished by the kind of signal they are fed with. The signals are separated into voice and music that are mixed on different busses and processed differently, before they go On Air. In addition, mostly there is a third so called recording bus (**Recording** or **Off Air**). Two additional bus types exist, **Off Air Voice** and **Off Air Music**. Busses with the **Voice**, **Music**, **Off Air**, **Off Air Voice** and **Off Air Music** signal types are fully featured sums, onto signals can be switched on exclusively. This means that fader signals can be fed either on **Voice**, **Music**, **Off Air**, **Off Air Voice** and **Off Air Music**.



 On Air bus structure, example for a broadcasting structure.

Important




Using summing busses with different signal types is a special kind of usage in a mixer and directly influences certain system functions. In order to achieve an easy operation, already at the configuration you should define how many busses are needed in a system and in which way they should be used.

To assign a signal to one of the described busses, you have to configure a fader key function for each bus type in the fader channel, on a TFT view or in the central section of your mixer.

Talk Conditions

It is possible to talk into each summing bus via two signal paths. On the **Mixing Functions** tab, in the **Common Mixing Options** area, you can select these two signals in **Talk 1 Source** and **Talk 2 Source**. You can use any available signal on the TDM bus as a source for the talk function, but mostly this is a microphone signal routed over a Fixed Processing (with compressor and limiter). Both Talk Sources are summed up on the signal of the summing bus. The busses can be attenuated between 0 dB and **Off** in steps of 1 dB. Use the **Talk Attenuation** selector to change the attenuation value.

To select a talk signal source, click **Select** next to the desired **Talk Source** box. The **Audio Sources** window opens. Select the desired audio source. Click **Assign**, or double-click on the source or use drag & drop.

 **Note**
The signals for **Talk Source 1** and **Talk Source 2** are used for all summing busses,



also the setting **Talk Attenuation**.

For every configured bus, you can assign two logic sources **Talk 1 Condition** and **Talk 2 Condition**, which trigger the talk function. By default, the default talk condition for all busses is **not assigned**. If no condition is assigned, you can't talk into the bus.

To select the logic sources, select the desired bus in the list and click **Select** next to one of the **Talk Condition** boxes in the **Talk Condition** area. The **Logic Sources** window opens. Select the desired logic source. Click **Assign**, or double-click on the source or use drag & drop.



Note

If this talk function is not flexible enough for your application, you can program further talk functions using **Outputs Functions** either in addition or independently. (See also [Output Functions](#))

You can use any logic source available in the system as a talk condition, as shown in the following examples:

logic source	example of application
<ul style="list-style-type: none"> • Clean Feed/CF Talk CF <name> • Triggered by the key function Talk CF in the fader strip. 	<ul style="list-style-type: none"> • If a Talk key is defined in the fader strip, that is only to talk into clean feed return lines. • Useful if you work with many lines, codecs and phones.
<ul style="list-style-type: none"> • Fader Function/FF <Faderchannelname> • Triggered by the key function Fader Function in the fader strip. 	<ul style="list-style-type: none"> • If the Fader Function key is defined in the fader strip that is to talk into Clean Feed return lines and if a fader channel with active clean feed is fed into the fader. • With microphones, this key can be used for talking into the corresponding headphones. (Programming via Output Function) • For playout devices, this key can be used for starting them up or for other applications. (Routing the Fader Function on a GPO.)
<ul style="list-style-type: none"> • KEY<n> <name> • Triggered by any key of a Control Module. 	<ul style="list-style-type: none"> • Useful if working with few lines, codecs and phones. • For talking into program busses and Aux busses.
<ul style="list-style-type: none"> • Logic Functions/LF <name> 	<ul style="list-style-type: none"> • A key of a fader module is linked to the on-air status of the mixer so that talking into the program busses is only possible if the mixer is not on-air.
<ul style="list-style-type: none"> • PFL/PFL <Faderchannelname> • Triggered by the key function PFL in the fader channel. 	<ul style="list-style-type: none"> • If you want to use just the PFL-key to talk back into the return signal of incoming lines.



Note

The key function **Clean Feed Cut** which can be configured in a fader module, acts before the talk function. This means that talking is possible also with the clean feed signal switched off.

Clean Feed Options

When a Clean Feed Bus is selected in the **Available Buses** area, a **Clean Feed Options** area will be shown.

Fader Channel

You can select a Fader Channel from the **Fader Channel** drop-down menu. The selected fader channel will be assigned to the selected Clean Feed Bus. The source of the fader channel will be set as **CF Source** too. (See [Fader Channels – Configuring Signal Sources](#))

Output Selector Source List

A flexible opportunity to supply a return line with a signal different from the clean feed is offered by the **Output Select** function. It can feed an alternative signal to the return line instead of the Clean Feed. The signal is fed into the signal path before the functions **Clean Feed Cut** and **Talk** are processed.

The selection of the alternative signal is based on a list of audio sources. You can define from which list of signals the alternative signals for a certain clean feed shall be taken. Therefore, select the desired bus in the Available Busses list and then select the desired signal list from the **Output Selector Source List** box.

If you activate the **CF Out Gain Disabled** check box, you can not influence the output level of the clean feed.

There is a total of 10 different signal lists (**Source Lists**), from which you can choose a maximum of 150 sources. These 10 lists are also used for the **Rotary Monitor Selectors**. Which signals are used in which list can be defined under **Audio/Selector Source Lists**. (See [Selector Source Lists](#))

To use an alternative return signal, the following steps are necessary:

- 1. Toggling between clean feed and alternative signal:** Configure a key with the function **Output Select** in the fader strip. This toggles between the clean feed signal and the signal list (**Output Selector Source List**) and shows the status of the function to the user. If the key can not be supplied in the fader module, the toggling has to be done using the **Access key** and a control module key **On/Off Functions/CF Output Select**.
- 2. Selecting the alternative signal:** Configure an encoder function **CF Output Select**. Name the sources of the assigned signal list accordingly (**Selector Source List**). If no separate encoders are available for this function, you can access them via **Access** and a corresponding key on a control module.



Tip

If the assigned list of signals contains only one signal, the configuration of the second step can be dropped. You can then carry out the toggling between the clean feed and the alternative signal in the first step.

Examples

- With this function, you can toggle between a signal and its clean feed version. To do this, for the alternative signal (the non-clean-feed signal) you have to define the source **Mixing Functions/Program Bus 1** in the assigned list of signals.
- A tone sound can be routed. Therefore, you have to define a **Fixed Processing** using a sine generator (**Sine**) and register it in the assigned list of signals. (See also [Fixed Processing](#))
- The clean feed of another fader channel can be put out. To do this, you have to assign this clean feed or the clean feeds of all fader channels to the list of signals.
- If you assign a clean feed to a recording device like DAT, Tape or MD, you can make an output routing with an appropriate list of signals, for example to record a source directly during a production. One summing bus is occupied by this. Alternatively, for this application the rotary monitor selectors, the PC routing software or the routing functions via keys are available.



Note

Sources are always selected from a signal list (**Output Selector Source List**) using a **Rotary Control** of the fader module selected via **Access** or using a rotary control assigned to a fader channel. Alternatively, you can use a TFT for your selector.

Limiter

In each summing bus, a simple limiter can be integrated that does not need additional DSP resources. For this function, select the **Limiter** check box.

You can set the **Threshold** of the limiter between **-30 dBint** and **+20 dBint**, the **Release** between **3 dB/s** and **20 dB/s**. The attack time can not be adjusted, it is always set to **quick**.



Note

This limiter is part of the summing bus system and can not be adjusted by an external application. This is not a **Fixed Processing**!

If other limiters become necessary (e.g., a transient limiter), you can insert them as separate fixed processing after the summation. In this case, you better deactivate the limiter in the bus. (See also [Fixed Processing](#))

Page Title: Mixing Functions

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