

## Introduction

This document informs about the firmware version 1.3 for the EXBOX.MD.

### NOTE

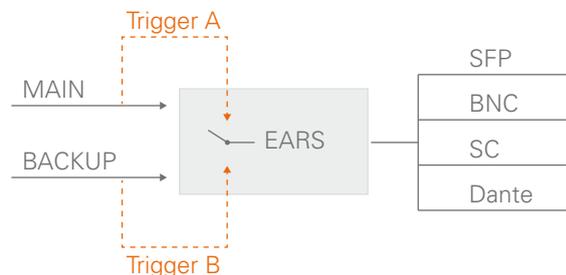
After performing the firmware update a power cycle of the device will be necessary to program the device's internal flash. This process is indicated by the LED STATE at the front panel- blinking rainbow pattern. It takes about 60 seconds and must not be interrupted. When finished all LEDs will go dark while the device is rebooting. To ensure proper operation another power cycle is recommended. Please note that the port routing will not be preserved throughout the firmware update.

## New Features

- EARS- Enhanced Automatic Redundancy Switching
- MADI Formats: 56 / 57 / 64 channel modes
- Channel based routing matrix

## EARS - Enhanced Automatic Redundancy Switching

EARS is a combination of DirectOut's successful BLDS technology and pilot-tone based switching. A logic monitors a trigger signal contained in certain audio channels of the Dante and MADI input.



There are 5 different EARS modes available:

- 1 off
- 2 Dante > SFP
- 3 Dante > BNC
- 4 Dante > SC
- 5 Dante > Dante

## EARS - Routing

With EARS activated the routing matrix is ignored. Main source is always the Dante input. In Modes 2-4 all 64 channels of the Dante input are routed onto all outputs (1:1). If the Dante input fails, the Backup MADI port is taken according to the mode (either SFP, BNC or SC) and also routed onto all outputs. In Mode 5 Dante input channels 1-32 are used as MAIN source and channels 33-64 are used as BACKUP source. Depending on the trigger state MAIN or BACKUP are routed onto all outputs.

### EARS - Triggering

The EXBOX.MD supports two kinds of trigger signals:

- BLDS (generated by the BLDS Generator)
- Pilot tone (audio signal with a level higher than -40 dBFS).

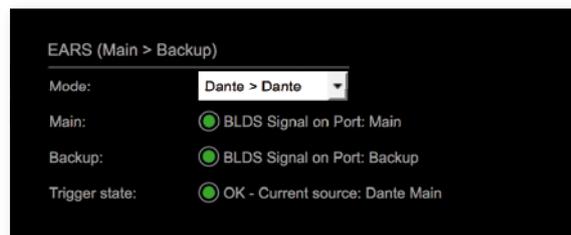
Switching by BLDS trigger is immediate (between two samples). The Pilot tone is evaluated for 10ms before switching is triggered. For modes 2-4 the trigger signal is expected on Dante input 64 and on channel 64 of the respective MAD1 input according to the selected mode. For mode 5 the trigger signals are expected on Dante input 32 (MAIN) and Dante input 64 (BACKUP).

The status of the detected trigger signals is displayed in the web interface.

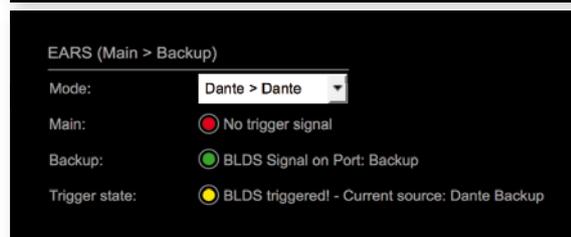
### EARS - Priorities

The Dante main input (ch 1-32 in mode 5, 1-64 in modes 2-4) has always priority. The unit will only switch onto the backup input if there is a valid trigger signal while there is none on the Dante input. BLDS has priority over pilot tone. If the main input has a valid BLDS signal a pilot tone on the backup port will not cause a switch-over. If the backup port has a valid BLDS signal while the main input has no trigger signal or pilot tone only, the unit will switch to the backup port.

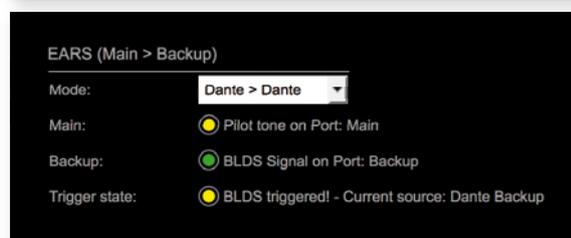
The current switching status is displayed in the web interface.



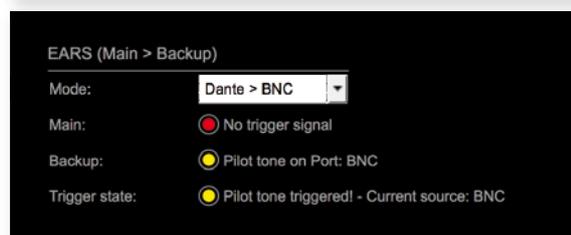
BLDS on both ports.  
MAIN has priority.



BLDS on BACKUP port only.



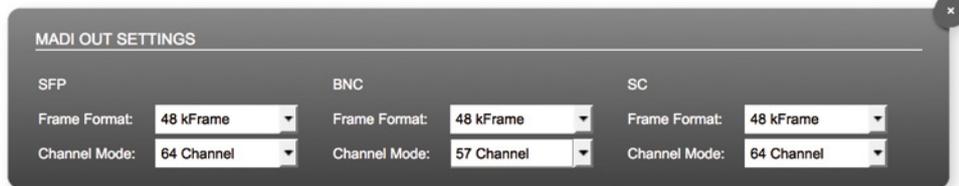
BLDS on BACKUP port overrides  
Pilot tone on MAIN port.



Pilot tone on BACKUP port only.

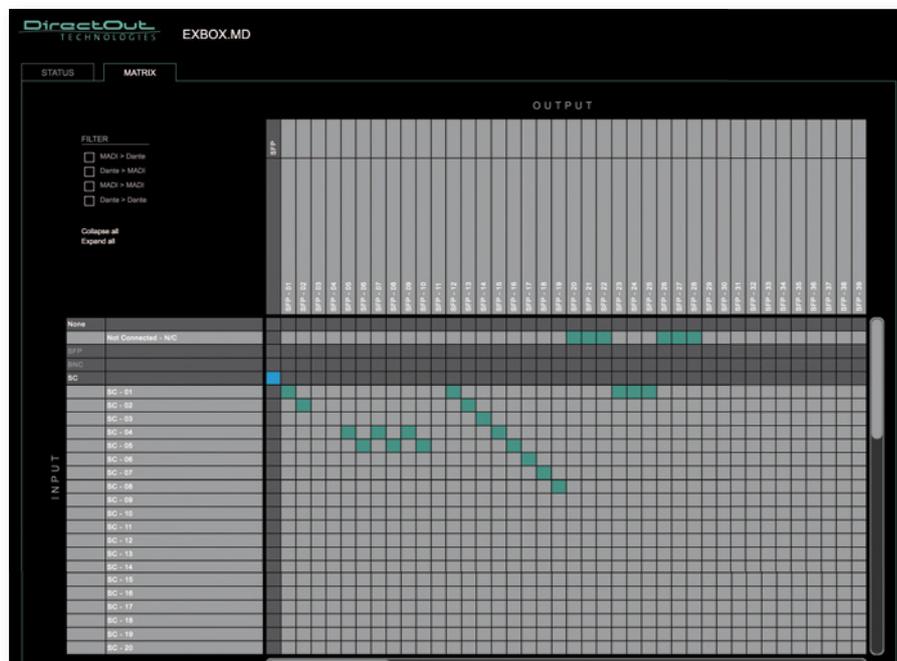
## MADI Formats

On the MADI input channel mode 56 / 57 and 64 channels are detected automatically. For the MADI output both frame format and channel mode can be set individually.



## Channel based Routing Matrix

An internal routing matrix offers channel based signal routing to assemble individual feeds.



The blue square allows for quick 1:1 patches per port using CTRL-Click and CTRL-ALT-Click to set all outputs to 'not connected'.

Viewing filters can be applied to focus on used areas for patching.