Interfacing of

MAGIC AE1 DAB+ Go

and ODR DAB Multiplexer

High quality Audio encoding for the Open Source DAB Multiplexer

Audio
Video
Technologies

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Release date: April 18
Version: 1.1

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1 OVERVIEW

The open digital radio multiplexer has been enhanced to be compatible with AVT DAB Audio encoders.

This document explains how to interface the AVT devices with an ODR Multiplexer.

In this document, the AVT ***MAGIC AE1 DAB+ Go*** is used as example, the same setup can be applied on AVT ***MAGIC AE1 DAB+*** Audio encoder and ***AVT MAGIC AE4 DAB/DAB+*** Audio encoder.

Further information about our DAB Audio Encoders can be found here:

http://avt-nbg.de/index.php/en/products/dab/encoders

2 ODR ARCHITECTURE

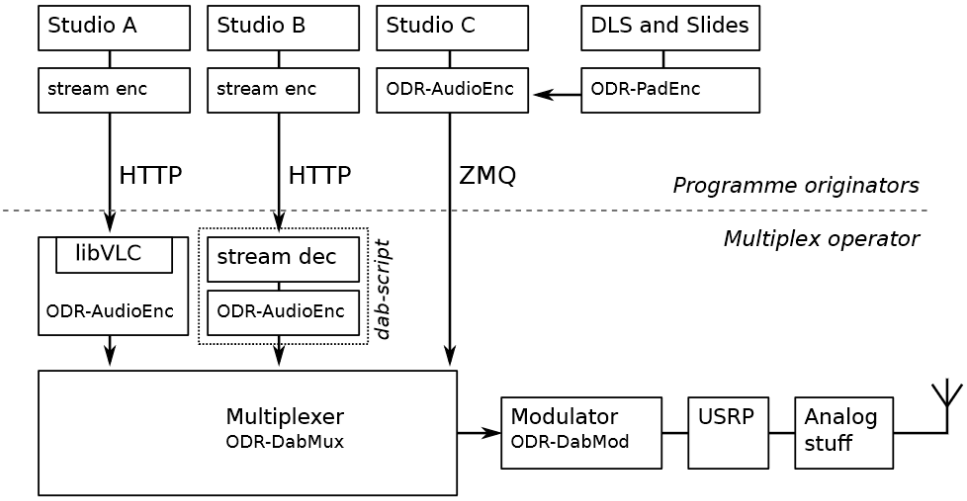

Figure 1: General ODR architecture

The modification has been made on the program **ODR-SourceCompanion** to make it possible to connect and control the AVT encoders.

This document will explain how to configure the **ODR-SourceCompanion** with AVT devices, assuming that the other programs (**ODR-DabMux** and **ODR-PadEnc**) are correctly setup.

3 COMMUNICATION STREAMS

Three different streams are used to interface the AVT MAGIC AE1 DAB+ Go:

(A) Encoded audio is sent by the encoder to one or more multiplexers

(B) Control messages are received by the encoder to set the audio parameters

(C) PAD Frames are requested and received by the encoder.

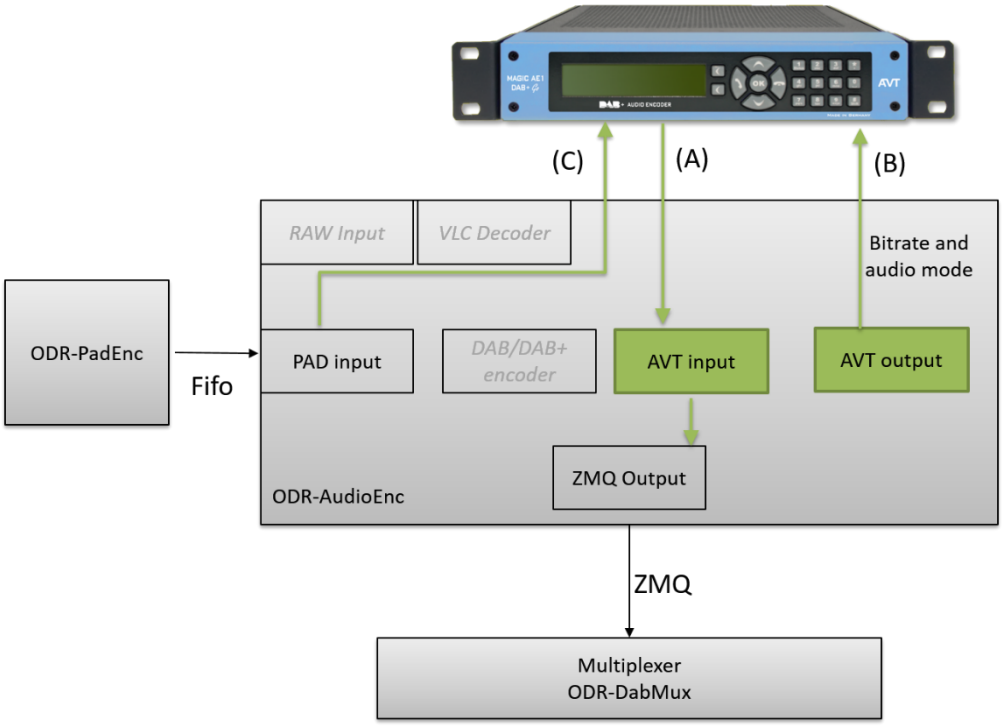

Figure 2: Communication Streams

3.1 Stream (A): Encoded Audio

3.1.1 MAGIC DAB+ Go Audio Encoder: Audio Stream Configuration

- **Streaming Mode**
  - *UDP Stream*, *UDP stream using RTP* or *EDI*

- **IP Address 1**
  - The address of the PC running the **OODR-SourceCompanion** program (*192.168.27.110* in this example)

- **Audio Port 1**
  - The port dedicated to this stream (*7000* in this example)

- If *EDI* is selected (see Figure 4) additionally the *DCP Parameters* for an optimised transmission via wide area networks can be configured
  - *PFT*
  - *Spread Interval*
  - *FEC Strength*
  - *MTU Size*

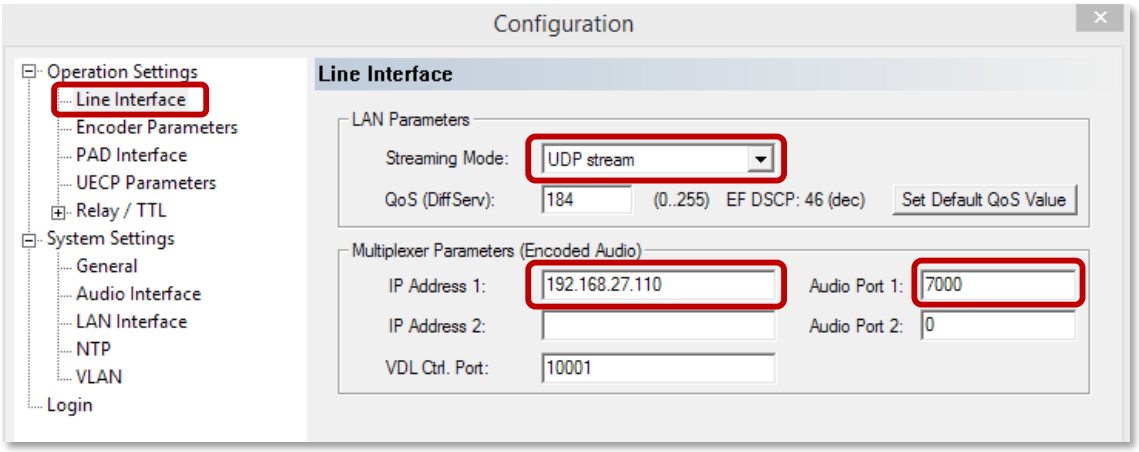

Figure 3: UDP Audio Stream Configuration on MAGIC DAB+ Go

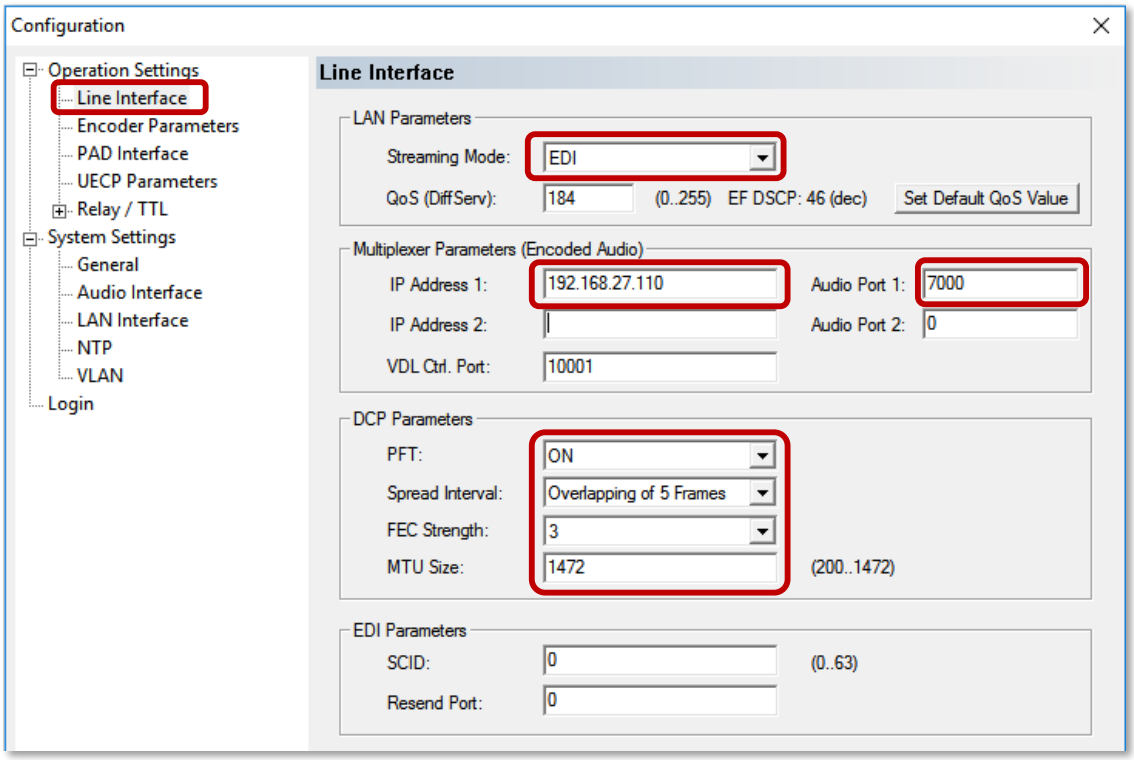

Figure 4: EDI Audio Stream Configuration on MAGIC DAB+ Go

3.1.2 ODR-SourceCompanion: Audio Stream Configuration

The corresponding parameter in the **ODR-SourceCompanion** program is

```
--input-uri=udp://:7000
```

There is no need to configure the ***Streaming Mode***. The mode of the incoming stream is automatically detected.

The ODR-SourceCompanion parameter `--jitter-size` (see also chaper 5, List of Parameters dedicated to AVT Encoders) is a further possibility to adapt the buffer on the multiplexer site in case of a wide area network transmission to reduce the influence of network jitter.

3.2 Stream (B): Control channel (optional)

3.2.1 MAGIC DAB+ Go Audio Encoder: Control Channel Configuration

- A remote control is possible via the parameter **VDL Ctrl. Port**
  - Set to the desired control port
    (*10001* in this example)

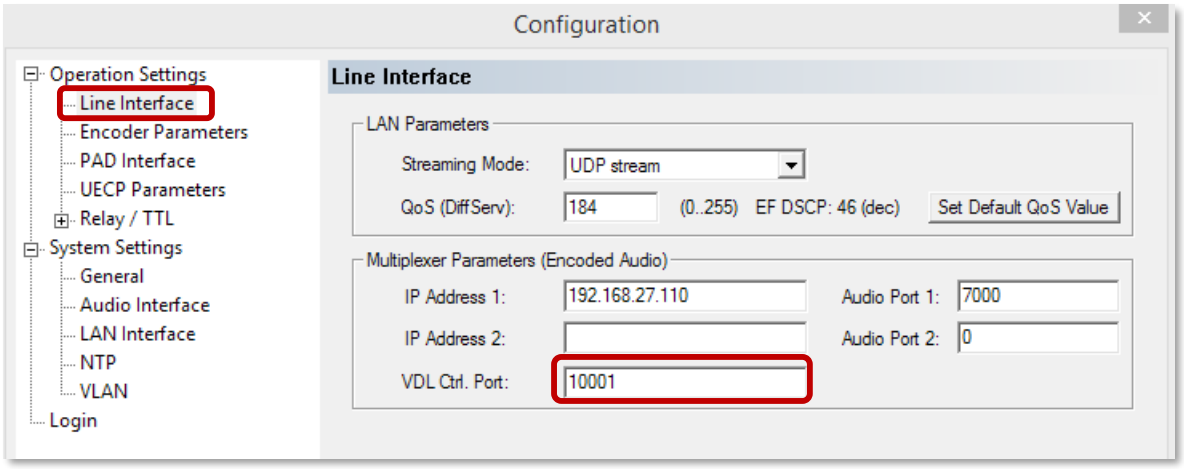

Figure 5: Control Channel Configuration on MAGIC DAB+ Go

3.2.2 ODR-SourceCompanionc: Control Channel Configuration

The corresponding parameter in the **ODR-SourceCompanion** program is

```
--control-uri=udp://192.168.27.112:10001
```

Note: 192.168.27.112 is the IP address of the MAGIC DAB+ Go Encoder

3.3 Stream (C): PAD Frames

3.3.1 MAGIC DAB+ Go Audio Encoder: PAD Frames Configuration

To feed into the MAGIC DAB+ Go Encoder the following settings are necessary:

- **PAD Interface**
  - Select ***ON – using UDP***
- **PAD Inserter IP Address 1**
  - The address of the PC running the ODR-SourceCompanion program (***192.168.27.110*** in this example)
- **PAD Inserter UDP Port 1**
  - Dedicated port number (***9900*** in this example)

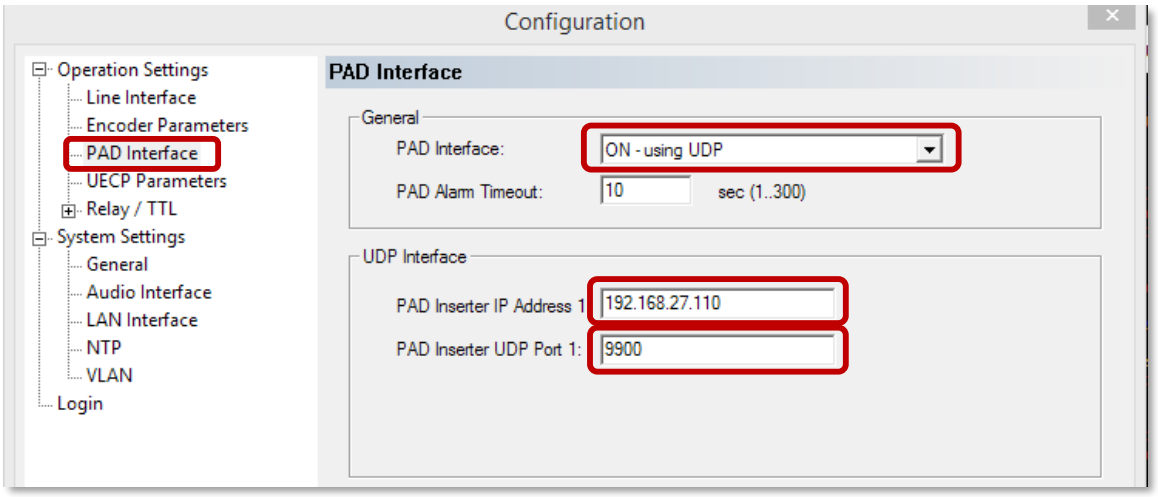

Figure 6: PAD Frames Configuration on MAGIC DAB+ Go

3.3.2 ODR-SourceCompanion: PAD Frames Configuration

The corresponding parameter in the **ODR-SourceCompanion** program is

```
--pad-port=9900
```

Assuming that the PAD are correctly set on the ODR machine, with the options

`-pad` (or `-p`) and `--pad-fifo` (or `-P`)

4 EXAMPLE

With the previously given examples, the **ODR-SourceCompanion** command parameters are correspondingly:

```
odr-sourcecompanion --input-uri=udp://:7000 --
control-uri=udp://192.168.27.112:10001 --pad-
port=9900
-b 96 --sbr -c 2 -p 50 -P /tmp/pad.fifo -o
tcp://localhost:9000
```

`-b 96`	Sets the bitrate 96 kbps
`--sbr`	Enables SBR on the encoder
`-c 2`	Sets to mode to Stereo
`-p 50`	Sets the PAD frame size to 50 bytes in the PadEnc program
`-P /tmp/pad/fifo`	Sets the path to get the PAD Frames, identical to the configuration in the PadEnc program
`-o tcp://….`	The destination to which the ZMQ output is sent

5 LIST OF PARAMETERS DEDICATED TO AVT ENCODERS

`-I or --input-uri=URI`	Input URI *Supported: 'udp://...'*
`--control-uri=URI`	Output control URI *Supported: 'udp://...'*
`--timeout=ms`	Maximum waiting time for a frame in milliseconds *Default=2000*
`--pad-port=port`	Port for PAD Frame requests *Default=0 (not opened)*
`--jitter-size=nbFrames`	Jitter buffer size in 24ms frames *Default=40*

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