

## HYDRA Z Owner's Manual



Thank you for buying the Audiobyte Technologies Hydra Z digital to digital converter. You have now one of the finest USB audio interfaces available on the market. The Hydra Z was designed to give you countless hours of musical enjoyment.

### Safety Precautions:

- 1) This device is meant for indoor use only.
- 2) Protect device from excessive heat, humidity and liquid filled objects, such as vases.
- 3) Clean only with dry cloth.
- 4) Use earth grounded outlet if applicable.
- 5) Do not move the device while operational.
- 6) Lightning or static electricity can affect normal operation of the apparatus. Make sure that it is unplugged during a thunderstorm. If the device is affected by one of these conditions and stops behaving as it should, a power reset usually resumes it's normal operation.

PRODUCT DESCRIPTION :

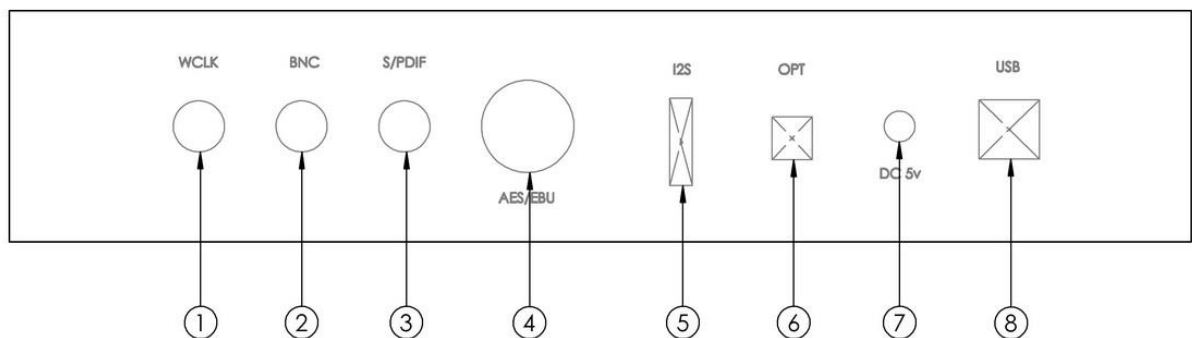
USB to digital audio converter (one input, 6 outputs) and clock generator. Outputs are : S/PDIF RCA, S/PDIF BNC , AES/EBU, Toslink, I2S (LVDS), BNC Wordclock or Masterclock.

FRONT VIEW DIAGRAM:



- 1) LED signaling that external power is present
- 2) LED signaling that usb power is present (no external power)
- 3) LED signaling that PCM audio data is detected
- 4) LED signaling that DSD audio data is detected

BACK VIEW DIAGRAM:



- 1) WORDCLOCK or MASTERCLOCK output BNC (see special settings section)
- 2) S/PDIF BNC output

- 3) S/PDIF RCA output
- 4) AES/EBU output
- 5) I2S/LVDS output (HDMI connector, see next section for settings)
- 6) TOSLINK output
- 7) DC power input (5v dc, do not exceed 6v dc)
- 8) USB input (USB 2.0, type B)

Supported sample rates/clocks :

SPDIF & AES/EBU outputs : 44.1KHz – 192 KHz PCM, DSD64 via DoP

I2S output : 44.1 KHz – 384 KHz PCM , DSD64-256 native

TOSLINK output : 44.1KHz – 96 KHz PCM

WORDCLOCK : 44.1KHz – 384 KHz (depending on the sample clock of the played material)

MASTERCLOCK : 22.5792 or 24.576 MHz (idem with the above statement)

PHASE NOISE , WORDCLOCK : - 114 dBc/Hz @ 10 Hz

Note : all outputs are active simultaneously. Masterclock available on the I2S output can be set with internal jumper J22. BNC wordclock or masterclock output setting can be altered with internal jumper J23. DSD to PCM conversion can be enabled with jumper J21 assuming you have firmware 1.06 or more. See section “HYDRA Z special settings”.

## POWERING UP

1) In order to use Hydra Z, installation of drivers is necessary in Windows environment. Please choose from the driver package available for download what fits your version of Windows. ASIO package is available. For Mac and Linux users, the device is recognized natively (no drivers are needed).

2) Connect your Hydra Z to a computer using a proper USB cable. The power USB led (“2” from the front view diagram) will turn on. The default data led (“3” from the front view diagram) will turn on. You are now ready to use your unit, after you will make the proper settings in your playback software or OS environment.

3) You can optionally connect a external power supply to the DC input socket (“7” from the back view diagram). It can be either Hydra Z-PM (Z Power Module, recommended) or any low noise 5Vdc power supply, minimum 0.5A. The DC socket center pin is 2.35 mm type. When external power is applied, the power USB led (“2” from the front view diagram) will turn off and the EXT power led (“1” from the front view diagram) will turn on.

## SPECIFICATIONS, SOFTWARE

Hydra Z will support currently maximum sample rates of 384 KHz on PCM and 11.2 MHz (DSD256) on DSD. On DSD material, both native DSD stream and encoded over PCM (DoP) are available. The native DSD stream is available over I2S output, while DoP is available over S/PDIF (RCA or BNC) and AES/EBU outputs. DSD over PCM (DoP) available rates are DSD64 and DSD128.

Recommended software player list :

- 1) Foobar2000
- 2) Jriver18+
- 3) Jplay
- 4) Audiogate
- 5) Audirvana Plus

Under **WinXP** environment, kernel streaming (KS) is recommended for PCM, and ASIO (native or ASIO4ALL) for DSD playback. Under **W7/8** environment, WASAPI or ASIO mode is recommended for both PCM and DSD playback.

For **MacOS**, first set your output sound device as Hydra Z (in System Preferences – Sound – Output). In Audio MIDI setup - Hydra Z device, set oversampling ratio at maximum 192 KHz.

#### HYDRA Z special SETTINGS\*

For extended compatibility with the dacs available, there are some hardware settings that can be altered via the internal jumpers. In order to reach the jumpers, top cover must be removed. Please use appropriate screwdriver (cross type) to remove the 4 top screws. After you removed the top cover, you can find on the right of the board a set of jumpers noted J21....J26.



For jumper settings, see below. Make sure that you have the latest firmware uploaded in your Hydra Z. Present settings are for firmware 1.06. If you have no sound or distorted sound over the I2S output, alter J22 or J24..26 setting.

- J21 – enables DSD to PCM conversion on all outputs except I2S
- J22 – I2S output masterclock (MCLK) frequency : open 45.1584/49.152 MHz, closed 22.5792/24.576 MHz
- J23 – WCLK BNC output setting (back view diagram “1”): open for WCLK output ; closed for MCLK output
- J24 – I2S output serial data polarity (SDATA)
- J25 – I2S output wordclock polarity (WCLK)
- J26 - I2S output bitclock polarity (BCLK)

\*Special Note : by opening the Hydra the owner takes full responsibility for any possible damages caused.

### HYDRA Z UPDATE PROCEDURE

The Hydra Z can be easily updated via the it's usb input. All that is needed is to play bitperfect the special wav update track , provided on the product page. First , go to <http://audiobyte.net/products/hydra-z> and download the file under the "Latest Firmware". Extract the wav file from the zip. You need to play the file bitperfect (without any fade-in or fade out, or any kind of volume processing). A reliable way to do it is via Foobar2000, via Kernel Streaming or WASAPI. The volume on Foobar must be set at maximum (0 dB), and recommended bit depth is 24 bits. The update will not happen in 2 conditions :

- 1) If playback is not bitperfect
- 2) If the internal version of the Hydra Z is the same with the version of the wav file.

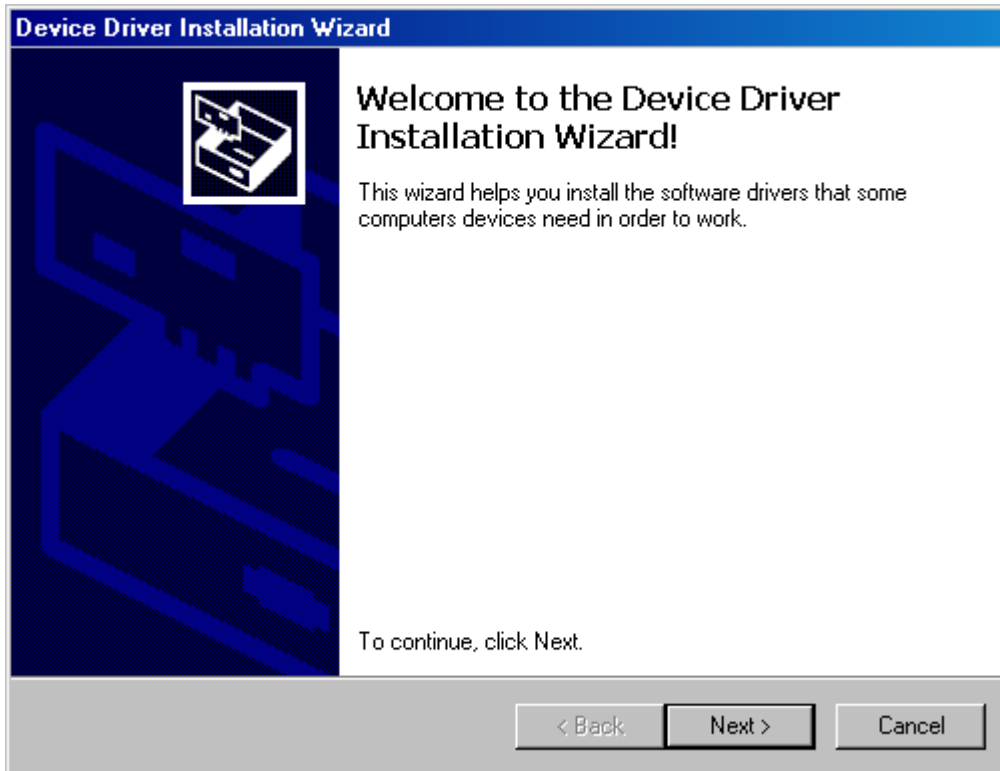
Assuming that version is different and playback is bitperfect, when the file is played, the update will start and the pcm and dsd leds from the front panel will start to flash alternatively during the procedure. When update is done, both leds will remain on. The Hydra must be manually restarted to initialize with the new firmware.

Note : in case the update starts (pcm and dsd leds will flash alternatively) but in the end they will not remain on, but will continue to flash even if the update track is terminated, the update is not successful. This means probably your playback software is fading out the volume, not allowing the confirmation marker to pass through. You need to change your playback setup or settings of your player.

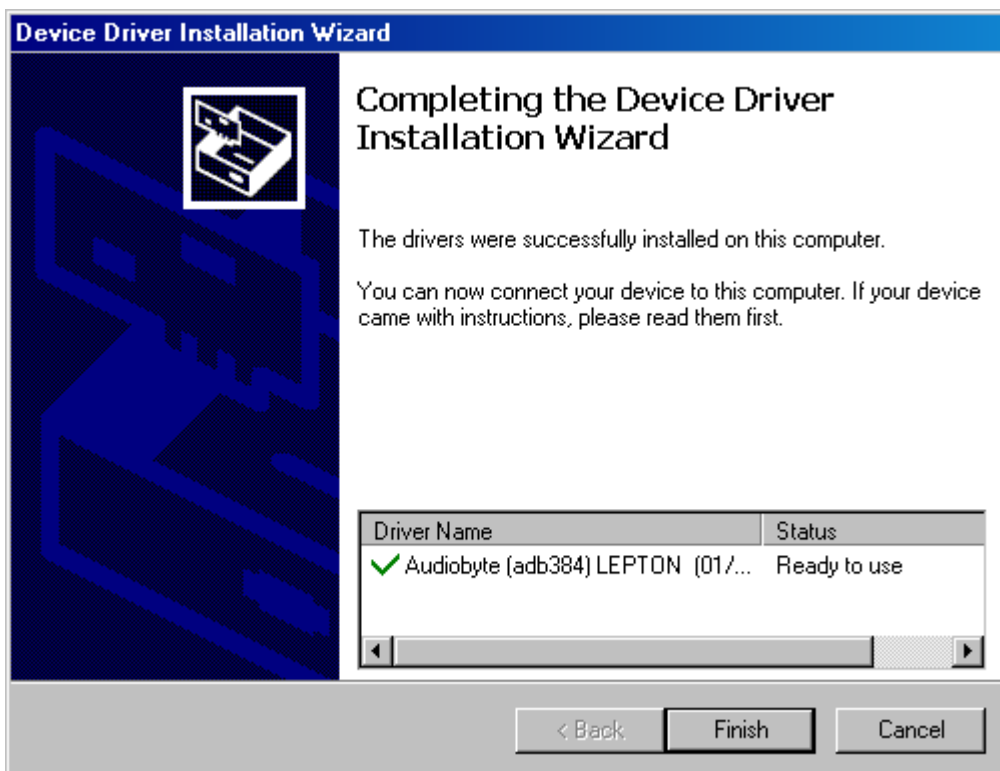
### USB Driver Installation Details (Windows XP 32/64, Windows 7 32/64)

**Do not** connect the USB cable to the computer before driver installation. If you have already connected the board to the PC, click Cancel on the screen that has showed up and remove the USB cable.

1. Go to product's page : <http://audiobyte.net/products/hydra-z>
2. Download the Hydra Z Win XP, W7, W8, Vista compatible drivers.
3. Unpack zip archive.
4. Enter your OS folder.
5. Launch Setup32.exe for 32bit OS or Setup64.exe for 64bit OS.
6. After the application launches, click Next:



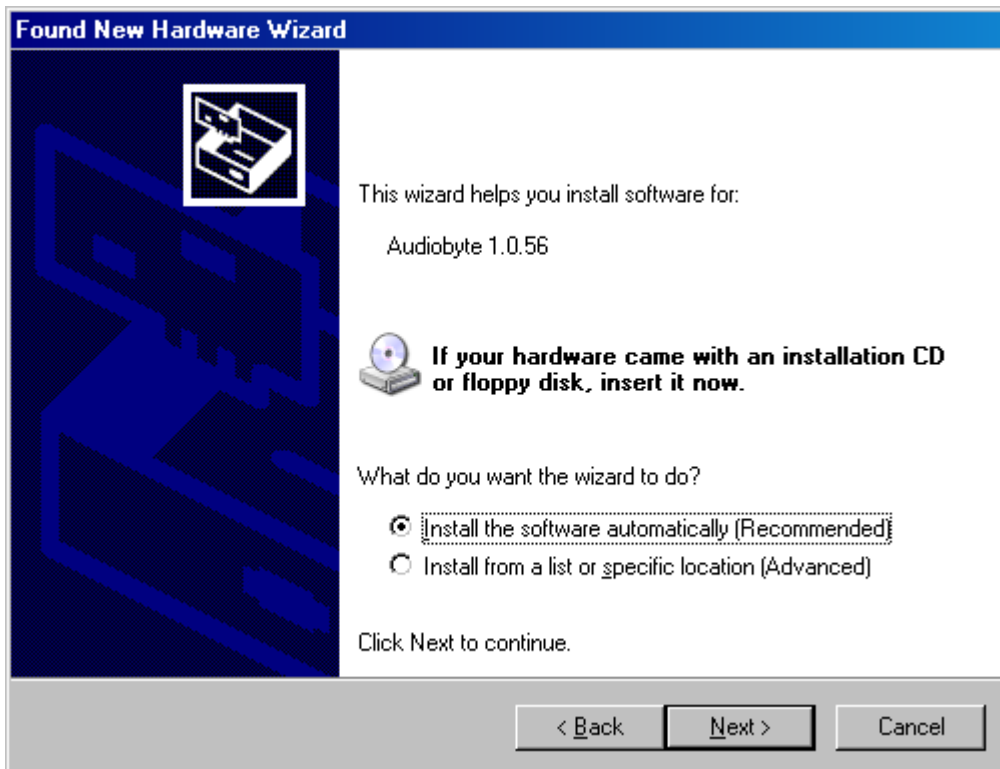
7. Wait for the driver to be copied and then click Finish:



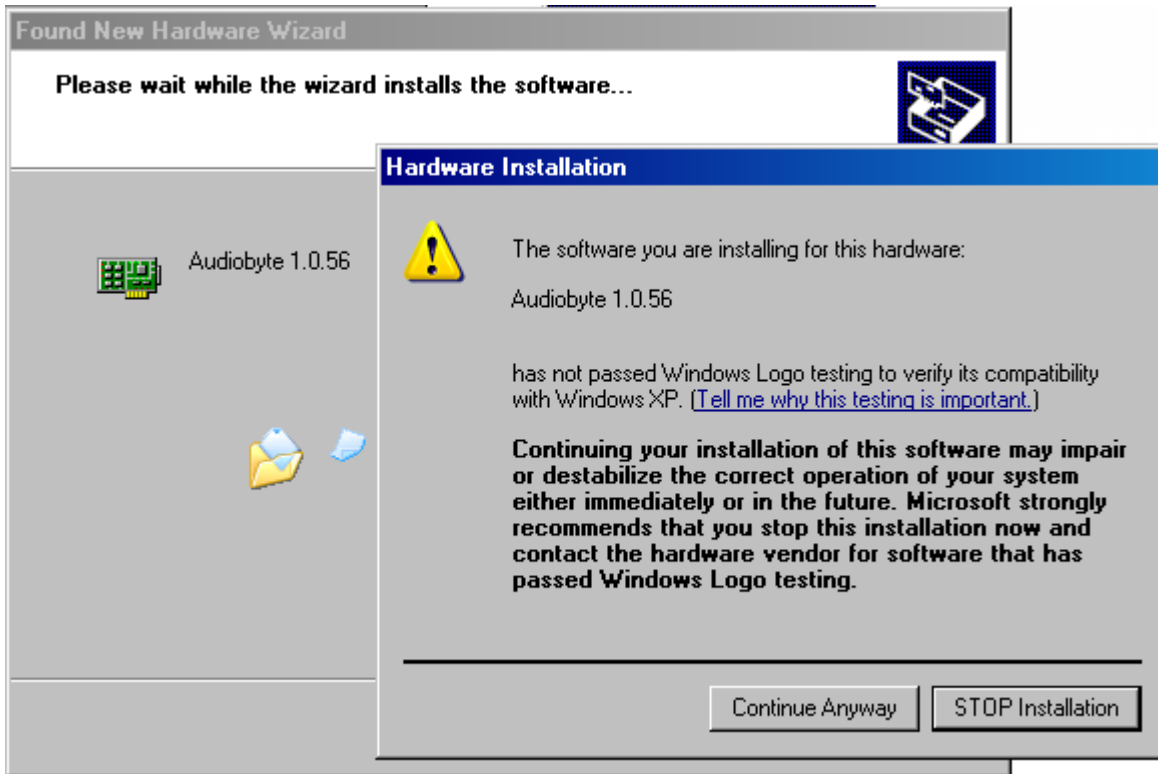
8. Connect the USB to I2S adapter to the PC. In the dialog below, select “No, not this time” and then click “Next”.



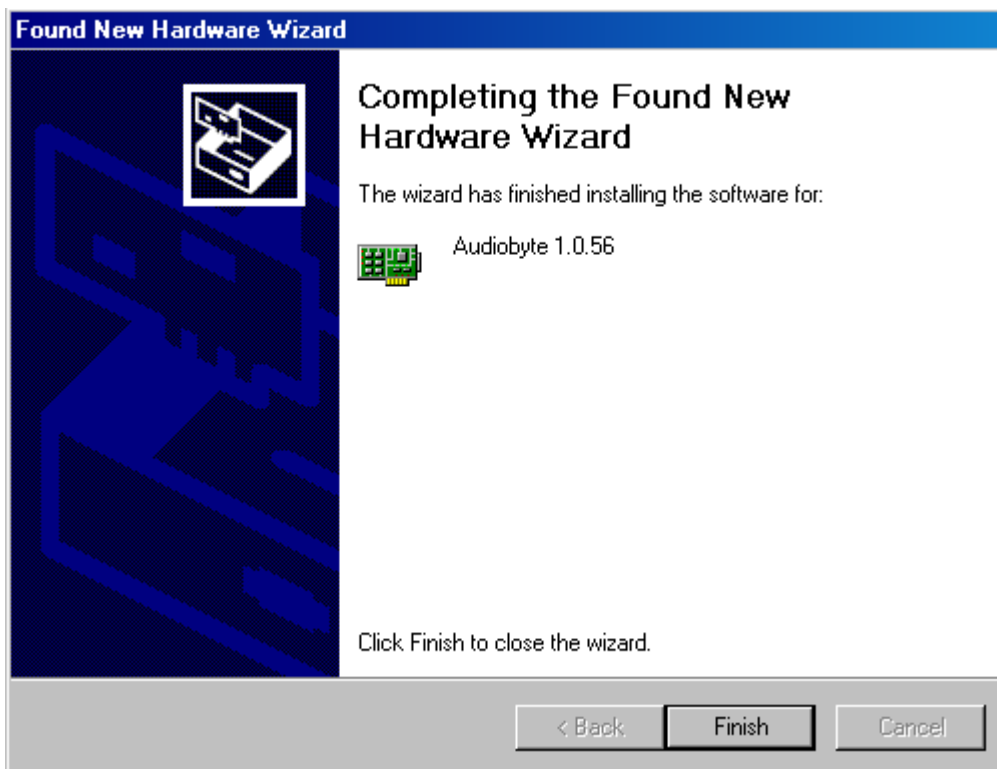
9. In the new window select “Install the software automatically” and click “Next”.



10. Click the “Continue Anyway” button.



11. Wait for the files to be copied and click “Finish”.





## AUDIOBYTE LIMITED WARRANTY

### TWO (2) YEARS

**WARRANTY COVERAGE:**

AUDIOBYTE warranty obligation is limited to the terms set forth below.

**WHO IS COVERED:**

Audiobyte warrants the product to the original purchaser or the person receiving the product as a gift against defects in materials and workmanship as based on the date of original purchase ("Warranty Period") from an Authorized Dealer. The original sales receipt showing the product name and the purchase date from an authorized retailer is considered such proof.

**WHAT IS COVERED:**

The Audiobyte warranty covers new products if a defect arises and a valid claim is received by Audiobyte within the Warranty Period. At its option, Audiobyte will either (1) repair the product at no charge, using new or refurbished replacement parts, or (2) exchange the product with a product that is new or which has been manufactured from new, or serviceable used parts and is at least functionally equivalent or most comparable to the original product in Audiobyte current inventory, or (3) refund the original purchase price of the product. Audiobyte warrants replacement products or parts provided under this warranty against defects in materials and workmanship from the date of the replacement or repair for ninety (90) days or for the remaining portion of the original product's warranty, whichever provides longer coverage for you. When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes Audiobyte's property. When a refund is given, your product becomes Audiobyte's property.

Note: Any product sold and identified as refurbished or renewed carries a ninety (90) day limited warranty. Replacement product can only be sent if all warranty requirements are

met. Failure to follow all requirements can result in delay.

**WHAT IS NOT COVERED - EXCLUSIONS AND LIMITATIONS:**

This Limited Warranty applies only to the new products manufactured by or for Audiobyte that can be identified by the trade-mark, trade name, or logo affixed to it. This Limited Warranty does not apply to any non-Audiobyte hardware product or any software, even if packaged or sold with the product. Non-Audiobyte manufacturers, suppliers, or publishers may provide a separate warranty for their own products packaged with the bundled product. Audiobyte is not liable for any damage to or loss of any programs, data, or other information stored on any media contained within the product, or any non-Audiobyte product or part not covered by this warranty. Recovery or reinstallation of programs, data or other information is not covered under this Limited Warranty.

This warranty does not apply (a) to damage caused by accident, abuse, misuse, misapplication, or non-Audiobyte product, (b) to damage caused by service performed by anyone other than Audiobyte or Audiobyte Authorized Service Location, (c) to a product or a part that has been modified without the written permission of Audiobyte, or (d) if any Audiobyte serial number has been removed or defaced, or (e) product, accessories or consumables sold "AS IS" without warranty of any kind by including refurbished Audiobyte product sold "AS IS" by some retailers.

**This Limited Warranty does not cover:**

- Shipping charges to return defective product to Audiobyte.
- Labor charges for installation or setup of the product, adjustment of customer controls on the product, and installation or repair of antenna systems outside of the product.

- Product repair and/or part replacement because of improper installation, connections to improper voltage supply, abuse, neglect, misuse, accident, unauthorized repair or other cause not within the control of Audiobyte.
- Damage or claims for products not being available for use, or for lost data or lost software.
- Damage occurring to product during shipping.
- A product that requires modification or adaptation to enable it to operate in any country other than the country for which it was designed, manufactured, approved and/or authorized, or repair of products damaged by these modifications.
- A product used for commercial or institutional purposes (including but not limited to rental purposes).
- Product lost in shipment and no signature verification receipt can be provided.
- Failure to operate per Owner's Manual.

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Document version and performed modifications:

Version	Date	Description
1.00	02-01-2015	Initial release