

public technical information
3D Global MPV-Player
documentation, information and HowTos (Rev. 3.0)

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1. Scope

1.1 Purpose of this document

This document represents a documentation for 3D Global's MPV videoplayer software in order to give a overview of its features and functionalities and to provide background and HowTo information. The document will steadily be reworked and updated, so regularly check the latest document version to ensure that you are familiar with the latest information.

In this document each chapter starts on a separate page, so each chapter could be used separately, e.g. for printing or exporting.

2. General

2.1 License information

The 3D Global 3D media player is a special, extended version that is based on the free, open source, cross-platform media player “MPV”. Please refer to the website <https://mpv.io/> for any further information or support issues concerning general player features.

2.2 Installation

The original MPV installers that are available on the MPV website, do not contain the features required for your 3D display, so any other installer than provided by 3D Global, will not work properly with your 3D display.

2.2.1 Version

It is essential, to use **V2.39** or higher of 3D Global MPV-Player (version dated 18-03-2020 or newer). All versions prior to V2.39 will not work properly and/or according to this documentation!

The main difference compared to Versions 1.x is, that besides Mosaic content, also SingleStream and MultiStream-Content can be played back and therefore a newer version of underlying MPV player is used.



Check your version in the player’s title bar or if the 3D Global icon is used. If not, download the latest version installer from our website.

2.2.2 Change log

player version (officially released)	release date	history
2.52	2020-05-05	<ul style="list-style-type: none"> new options for blanking & fading views new number range for blanking views
2.39	2020-03-18	<ul style="list-style-type: none"> support for 3 digits view numbers corrected order of subviews in HQ-mode
2.21	2019-10-11	<ul style="list-style-type: none"> support for SingleStream Content support for MultiStream Content
1.60	2019-05-10	<ul style="list-style-type: none"> new requirements for content arrangement in mosaic content
all prior to 1.60	-	-

2.2.3 Installation process

Install the player Software as any other usual application to your system.

2.2.4 Display type

Depending on the 3D display type that you’re using, a specific configuration needs to be set. As default, the configuration for our 12,5” Display type is preset if the player is installed for the first time.

Please refer to chapter 4.2 for details and further information, e.g. how to change the configuration.

3. Content

3.1 Definitions

It's essential to define the terms and phrases used in this document to avoid misunderstandings.

3.1.1 Sides

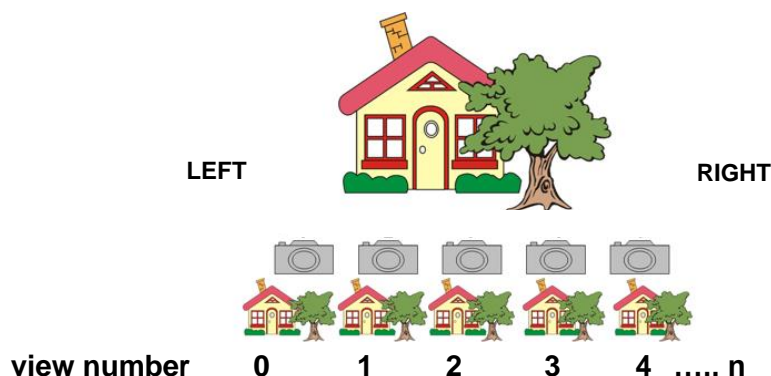
The both "sides" LEFT and RIGHT are defined from the "users perspective", looking towards the scene/display.

3.1.2 Views

Each 3D content consists of several views of the scene that is shown on the screen. These views are generated with virtual or real cameras.

Underlying the Central-European reading direction for counting and numbering the views, the **first view** is at the **leftmost** side (called view 0) and to the **last view** at the **rightmost** side (called view n) .

The value for "n" depends on the number of views available and might be e.g. 4 (for 5 view content), 7 (for 8 view content) or 8 (for 9 view content),.....



All available views need to be arranged in one of the following formats:

3.2 Matrix or Mosaic format: standard arrangements

Within the mosaic, the available views must be arranged in an increasing order (“from left to right”), starting at upper left side with view 0, ending at lower right side with view n.

Depending on the number of available views, there are several standard mosaic formats possible. If there are less views than mosaic areas available, the remaining mosaic area(s) leave blank (e.g view 7 in the 3x2 mosaic will be blank if only 7 views will be available)

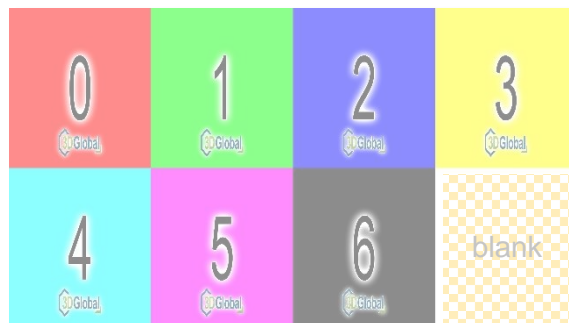
The size of the complete frame should always be at least UHD-Resolution (3840 x 2160).

⇒ Details on how to generate content and how to create matrixes are described in separate documents (currently to be created!).

3.2.1 Mosaic for 6 views (3x2 Matrix)



3.2.2 Mosaic for 8 views (4x2 Matrix)



3.2.3 Mosaic for 9 views (3x3 Matrix)



3.2.4 Mosaic for 16 views (4x4 Matrix)



3.2.5 name convention “mosaic standard”

Any content needs to be named according to the name convention
name.mosaic.size.format

For the upper listed standard mosaic arrangements, the file names must be e.g.

“testmovie.mosaic.3x2.mp4”

“testmovie.mosaic.4x2.mp4”

“testmovie.mosaic.3x3.mp4”

“testmovie.mosaic.4x4.mp4”

3.3 Matrix or Mosaic format: inverted arrangements

Maybe you want to play content that is arranged in a different way. If the views of your content are arranged in a decreasing order ("from right to left", starting at upper left side with view n, ending at lower right side with view 0), the content arrangement is called "inverted"

3.3.1 Inverted Mosaic for 16 views (4x4 Matrix)



3.3.2 name convention "mosaic inverted"

Any inverted content files need to be named according to the name convention "name.**r**mosaic.size.format"

File names for inverted mosaic arrangements could be e.g.

"testmovie.**r**mosaic.3x2.mp4"

"testmovie.**r**mosaic.4x2.mp4"

"testmovie.**r**mosaic.3x3.mp4"

"testmovie.**r**mosaic.4x4.mp4"

3.4 foreign mosaics

There is also content for several other mosaic arrangements available, some of this special formats are already implemented to be played with this player, other could be implemented upon request.

3.5 Stereo Content

For stereo content with just 2 views, there are different supported matrixes available

3.5.1 Side-by-Side (SBS) with 2 views



3.5.2 name convention “side-by-side”

Any content files in this special format need to be named according to the name convention “name.sbs.format”

File names side-by-side arrangements could be e.g. “testmovie.sbs.mp4”

3.5.3 Top/Bottom with 2 views



3.5.4 name convention “Top/Bottom”

Any content files in this special format need to be named according to the name convention “name.topbottom.format”

File names for top/bottom arrangements could be e.g. “testmovie.topbottom.mp4”

3.6 SingleStream Content

Contrary to the upper mentioned mosaic files (all views arranged in one common file), it is also possible, to provide each view of the scene as a separate file. This format allows a much higher 3D quality since all views are available in full resolution.

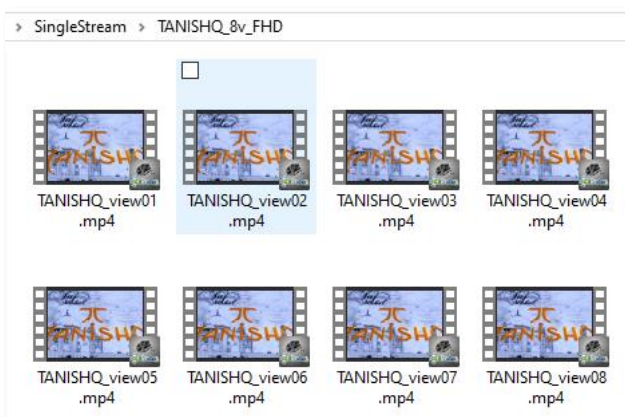
Therefore, it is required that:

- all files (with separate views) are located in one common directory
- no other files within this directory
- all files within one directory have the same resolution (e.g. 3840 x 2160)
- all files within one directory have the same filename + a special suffix (see 3.6.1)
- the leftmost view (view 0) has to be defined as **view01** (not view00 !!), followed by the other views with increasing order in direction to the rightmost view (view n).

3.6.1 name convention “SingleStream content”

Each file in its directory has to be specially named according to the name convention “filename_**viewXY**.format”

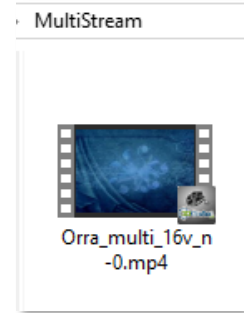
See example content below:



3.7 MultiStream Content

Another supported high quality file format is “MultiStream”, which is quite similar to the “SingleStream” format, just with the difference, that all separate views are encoded as separate channels (“streams”) within one single video file.

Similar to an audio file (which contains separate left & right audio channels), MultiStream video file contains 2, 3, 5, 8 or 16 (or even more) separate views of the scene, each of them in full video resolution.



In the free VLC-Player you can check the streams of a video file via “tools -> codec information“



MultiStream files therefore are multiple bigger sized than “normal” video files. A simple trailer with 2:30 minutes with 16views, each in FullHD resolution can be approx. 1GB large.

4. Player-Features

4.1 General

For general information on the features and the usage of the 3D media player, please refer to the website of the basic MPV-Player <https://mpv.io/>

The player uses a special configuration file that consists all relevant settings for the player in general and the required settings for the specific 3D display. The configuration file is named “*mpv.conf*” and is located at “*C:\Users\you-user-name\AppData\Roaming\mpv*”

4.2 Detecting correct settings via Config-Code

Due to several different configuration options of the different 3D display models, it is required to set the player with adequate settings for the specific display model. To provide the correct settings, each 3D Global display device is marked with a “Mediaplayer Config-Code”, printed on the type plate. The display’s article number contains this “Config-Code” as well (e.g. *D125UHDLM05N070A-RAA*).



4.3 Selecting and using correct configuration file

For each “Config-Code” there is a specific “*mpv.conf*” file with standard settings available, which enables the media player to show 3D content in adequate format for your 3D display.

- download the “*mpv.conf*” file that is marked with the same config-code as your display (e.g. 05N) from our website
- paste the downloaded “*mpv.conf*” file to your PC under “*C:\Users\you-user-name\AppData\Roaming\mpv*” and replace the original file that is located there

filename MUST remain “mpv.conf” and might not be changed!

Your player will now use the standard settings for your 3D display.

Experienced users might be able to change the settings within this config-file to achieve more advanced or special representations of provided content and to tweak the functionality of the mediaplayer enormously. Please contact our support in order to get desired information.

5. Normal usage

5.1 Single video files

To run single video or image file, simply double click the desired file (in case of SingleStream use view01) or paste it into the player window.

5.2 creating & playing playlists

To run playlists, you need to create two different files and store them on the PC. Be aware that only one kind of the upper mentioned formats can be used within one playlist.

You can not mix different formats (such as Mosaic / SingleStream / MultiStream) in one playlist!

5.2.1 playlist data file

This is a simple text file that contains all the content you want to play. To create such a playlist data file, use your standard text editor (such as C:\Windows\System32\notepad.exe) and generate a new text file. This playlist data file could be named like “**playlist_demo01.txt**”

For a playlist with Mosaic content, just list the files you want to play, each in a separate line. Within a playlist you can mix different mosaic formats (3x3 / 4x4 / ...) and different mosaic arrangements (mosaic / rmosaic / ...) but not Mosaic content with SingleStream content.

- If the desired content file is stored in the same directory as this playlist data file, you just need to list the file name.
- If the desired content file is stored in a different directory, you need to quote the entire path.

```
testmovie.mosaic.4x4.mp4
testtrailer.mosaic.3x3.mp4
signagecontent.mosaic.4x4.mp4
C:\Users\user-name\Documents\Content\Test-Content\Testmovie.mosaic.4x2.mp4
E:\MPV-Playlists\Content\another-movie.mosaic.3x2.mp4
```

For a playlist with SingleStream files, you have to name the directory as part of the path and always have to choose “view01” to be listed in the playlist. Each position must be listed in a separate line.

```
C:\Users\user-name\Documents\Content\Test-Content\SingleStream\Testmovie_signage\Testmovie_view01.mp4
C:\Users\user-name\Documents\Content\Test-Content\SingleStream\RedBull\Trailer2019_view01.mp4
E:\MPV-Playlists\Content\MUX_Logos\BMW_view01.mp4
```

All files are played in the sequential order as they are listed in this text file.

5.2.2 playlist control file

This is a simple batch file that starts the player and loads the desired playlist data file to run it. To create such a playlist control file, use your standard text editor (such as `C:\Windows\System32\notepad.exe`) and generate a new text file and rename it from `*.txt` to `*.bat`. This playlist control file could be named like `"start-my-playlist.bat"`

Within this file, simply quote the path to your player application (`mpv.exe`) and the path where your playlist data file is stored, including its correct file name. You can copy & paste the sample code mentioned below and **adapt the two mentioned paths** and the **name of the playlist data file** which you created according to chapter 5.2.1

```
@echo off
start "" "C:\Program Files (x86)\mp3Dplay\mpv.exe" --playlist="E:\MPV-Playlists\Content\playlist_demo01.txt"
:exit
```

To automatically start a playlist when booting the PC, you can add the control file to the PC's startup sequence.

For further information, details and tweaks, please refer to the website of the basic MPV-Player <https://mpv.io/>

5.3 special features / shortcuts

besides all the features and shortcuts that are available for the standard MPV-player, there are several 3D related shortcuts set to the F-keys.

In normal usage these features are not required, they are intended more for testing and presentation purposes.

Q	<i>quit MPV player (and save temporary settings)</i>
F	<i>toggle full screen mode</i>
F1	<i>side-by-side mode for SBS Stereo content</i>
F2	<i>top/bottom mode for SBS Stereo content</i>
F3	<i>non rendered 2D mode (all currently used views are displayed in a matrix)</i>
F4	<i>multiview mode (autodetection) => DEFAULT setting</i>
F5	<i>3D testmode with red-black image (1 view red, all other views black)</i>
F6	<i>shift 3D image horizontally by 1 view (to left)</i>
F7	<i>shift 3D image horizontally by 1 view (to right)</i>
F8-F11	<i>not used</i>
F12	<i>2D visualization of view 0 (no 3D)</i>

⇒ **toggle F12 <-> F4 to present the difference of 2D<->3D on MultiView displays**

Inverting views

"Shift+F1"	<i>correct view SP arrangement (not inverted)</i>
"Shift+F2"	<i>inverted view SP arrangement (spatially inverted) by using <u>different views</u> (e.g. views 15-11 instead of views 0-4 in case of 16 views content on a 5 view display)</i>

special settings

- "Shift+F9" *standard viewmapping defined in parameters of mpv.conf*
- "Shift+F10" *special viewmapping defined in "secmapf10=xxxx" (only mosaic content)*
- "Shift+F11" *special viewmapping defined in "secmapf11=xxxx" (only mosaic content)*
- "Shift+F12" *special viewmapping defined in "secmapf12=xxxx" (only mosaic content)*

After reloading content (image or video file), e.g. when playing it in a loop, most of the "special settings" are reset to default.