

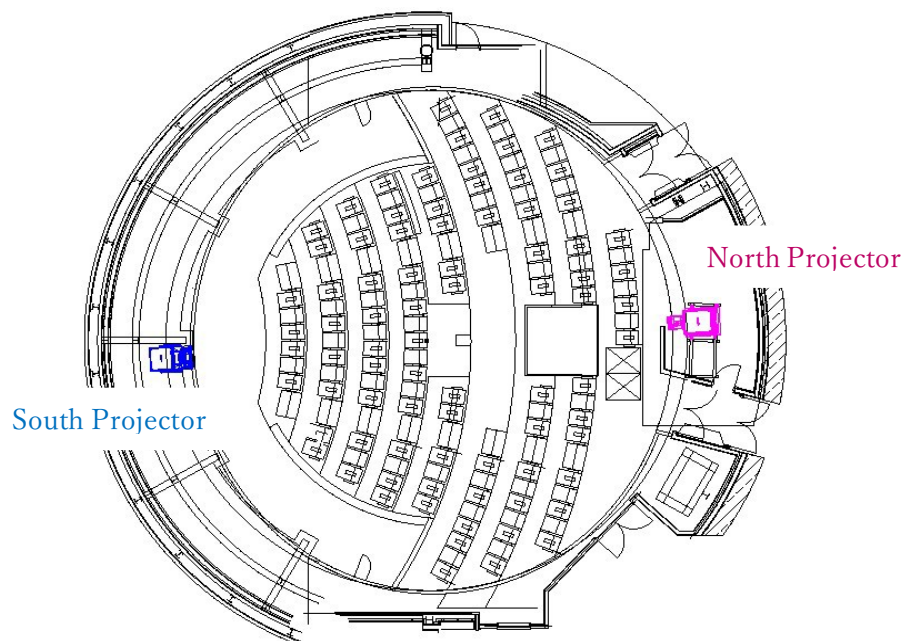
■ Introduction

The Dome Theater at the National Museum of Emerging Science and Innovation (Miraikan) has two ultra-bright projectors with 40,000 lumens and 3D glasses to project bright and vivid images. The dome is also equipped with an 8.1-channel sound system that supports simultaneous playback of multiple sources (with picture-in-picture functionality) and video input via HDMI.

■ Detailed Specifications

[Theater Specifications]

Dome diameter	15.24m	
Dome tilt angle	23.4 degrees.	
Number of seats	121 seats (reclining seats)	
projector	Christie D4K40-RGB x 2 projectors	
	projector specifications (per unit)	
	resolution	4096 x 2160
	refresh rate	60 Hz
	brightness	Up to 40000 lumens
	Contrast Ratio	5000:1
stereopsis	Time-resolved shutter *With 3D glasses	
acoustics	8.1 channel	



[Data specification]

● Video

supported formats	Dome Master (1:1 aspect ratio) Equirectangular (2:1 aspect ratio) Other aspect ratio 16:10 16:9 4:3 etc.		
color gamut	Rec.709 or Rec.2020 *1		
still image (2D)	resolution (e.g. of a lens)	Up to 16384 x 16384	
	file format	BMP, TIF, PNG, JPEG, GIF	
still Image (3D)	resolution	Up to 16384 x 16384	
	file format	BMP, TIF, PNG, JPEG, GIF	
	3D Format	Side by side, top and bottom.	
movie (2D)	resolution	Dome master format Other general format	Up to 4096 x 4096
	frame rate	120fps, 60fps, 30fps, 29.97fps, 24fps *2	
movie (3D)	resolution	Dome master format	Up to 4096 x 4096
		Side-by-side format	Up to 7680 x 3840
		Top-and-bottom Format	Max 3840 x 7680
	frame rate	60fps, 30fps, 29.97fps, 24fps	
360 degrees (2D)	resolution	Equirectangular format	Up to 7680 x 3840
	frame rate	60fps, 30fps, 29.97fps, 24fps	
360 degrees (3D)	resolution	Equirectangular format	Up to 7680 x 7680
	frame rate	30fps, 29.97fps, 24fps	

\*1 Corresponds to the generation of more than 90% in Rec. 2020

\*2 For 120 frames per second, you need two videos, one for odd frames and one for even frames. Please refer to the "Notes on 3D Video Files" section below for more information on creating files.

○ Notes on 3D video files

- In the case of the dome master format

1. Please prepare data for right eye and left eye separately.
2. Add @right and @left at the end of the file name.
3. add @left at the end of the file name to add audio.

File name sample

for the left eye: sample@right.mp4

for the right eye: sample@left.mp4

for the sound: sample@left.wav

- Side-by-side, top-and-bottom, and equirectangular formats

1. Lined up dome masters in each model, or the file of the equirectangular

○ About file creation

Use the Amateras Encoder for final processing of your video files.

The Amateras Encoder is included in the Amateras Dome Player, which is distributed below and can be used free of charge.

Japanese version <https://www.orihalcon.co.jp/amateras/domeplayer/>

English version: <https://www.orihalcon.co.jp/amateras/domeplayer/en/>

\*For the encoding profile, use "High Quality No Resize" or "H.265 10-bit High Quality".

● Audio

Supported formats	WAV
sampling rate	48kHz, 44.1kHz
quantization bit	24-bit, 16-bit

○ Notes on audio files

1) The file name must be the same as the image data except for the extension.

File name sample (When the video data is sample.mp4)

sample.wav

2) It supports multi-channel WAV, which combines multiple channels into a single file.

3)The output destinations (speakers, etc.) for each channel are as follows:

Ch 1: L

Ch 2: R

Ch 3: C

Ch 4: SW

Ch 5: RL

Ch 6: RR

Ch 7: SL

Ch 8: SR

Ch 9: TOP

Ch 10: Other language receiver 1

Ch 11: Other language receiver 2

Ch 12: Other language receiver 3

Ch 13: Other language receiver 4

4) Sound embedded in video files cannot be played.

\*The Amateras Encoder can be used to separate audio into WAV files.

■ External Video Input

By connecting an HDMI-equipped device, you can project the image of the connected device at any location on the dome. It is also possible to input video in the Dome Master format and to project other videos at the same time.

[Video Input Specifications]

Input Terminal	HDMI2.0 x 2 *1
Resolution and frame rate	3840 x 2160@60p, 3840 x 3840@30p, 2800 x 2800@60p 2048 x 2048@60p, 1920 x 1080@60p *2
Sound	Stereo *3

\*1 There is one input port on the console and one in the southwest corner of the dome.

It is also possible to connect directly from the server room.

\*2 Resolution @ Frame Rate

For special resolutions such as 3840 x 3840, 2800 x 2800, etc., you will need a computer with a graphics board as Geforce etc.

\*3 If you want to play back multi-channel audio in stereo or above, see "External Audio Input" in the next section.

If you have two ports of simultaneous audio inputs, both will be played back.

■ External Audio Input

As of April 2020, the mixer has two stereo ports and two mono ports for a total of six channels. There is also an 8-channel input rack, which provides 8 channels of input.

The inputs to the mixer and the 8-channel input rack are the XLR male connectors (on the cable side).

■ Supplementary material  
[Simplified System Diagram]

