

Home

Welcome to the **Cinamate** documentation.

 July 16, 2025

Overview

Overview

TBA

 July 16, 2025

CineMate `settings.json` User Guide

This file controls how the camera behaves and how your buttons, switches and displays are mapped. It lives in `~/cinemate/src/settings.json` on the Raspberry Pi. You can edit it with any text editor; the settings take effect the next time you start CineMate.

The configuration is structured as JSON. Each top-level key describes a feature area of the system. Below is a tour of every section and what the options do.

1. `welcome_message` and `welcome_image`

Text or image displayed briefly when Cinemate starts.

```
"welcome_image": null
"welcome_message": "THIS IS A COOL MACHINE",
```

Set `welcome_image` to the path of a bitmap file to show a logo instead of text.

Example path: `/home/pi/welcome_image.bmp`.

If `welcome_image` path is set, this will override the text message.

2. `system`

```
"system": {
  "wifi_hotspot": {
    "name": "CinePi",
    "password": "11111111",
    "enabled": false
  }
}
```

- **name** – the Wi-Fi network name (SSID) broadcast by the Pi when hotspot mode is enabled.
- **password** – password for joining the hotspot.
- **enabled** – set to `true` to start the hotspot automatically on boot. If set to `false`, CineMate will still start its web ui but stream it on whatever network the Pi is connected to.

How Cinemate launches cinepi-raw

`cinemate/src/module/cinepi_multi.py` starts one `cinepi-raw` process per connected camera. It takes user settings from `sensor_detect.py` and `settings.json` to influence the command-line flags passed to `cinepi-raw`.

Here it how it works:

1. Detecting Cameras

When CineMate starts, `CinePiManager` runs `cinepi-raw --list-cameras`. Each line of output describes a connected sensor. The manager parses this output and stores basic information about every camera:

- **index** – numeric index passed to `--camera`
- **model** – sensor model name (e.g. `imx477`)
- **mono** – whether the camera is monochrome

This information is kept in the `CameraInfo` class and written to Redis under the `cam_info` keys so that other modules know which sensors are present.

2. Loading Resolution Data

`cinepi_multi.py` relies on `sensor_detect.py` to look up valid resolutions and frame rates for each sensor. The mapping lives in `src/module/sensor_detect.py` and is organised like this:

```
sensor_resolutions = {
    'imx477': {
        0: {'width': 2028, 'height': 1080, 'bit_depth': 12, 'fps_max': 50},
        1: {'width': 2028, 'height': 1520, 'bit_depth': 12, 'fps_max': 40},
        # ...
    },
    'imx585_mono': {
        0: {'width': 1928, 'height': 1090, 'bit_depth': 12, 'fps_max': 87},
    }
}
```

If you add support for a new sensor or want to tweak maximum frame rates, modify this dictionary. `cinepi_multi` calls `get_resolution_info()` to fetch the entry for the detected model and sensor mode (stored in Redis as `sensor_mode`).

CinePi Controller Methods

CineMate exposes most of its runtime features through the `CinePiController` class in `src/module/cinepi_controller.py`. Buttons, the pseudo-CLI and the web UI all call these methods. Below is an overview of the most useful ones and what they do.

Recording

- `rec()` – Toggle recording on or off depending on the current state.
- `start_recording()` – Begin recording if storage is mounted and space is available.
- `stop_recording()` – Stop the current recording.

Exposure settings

These methods adjust ISO, shutter angle and frame rate. Increment/decrement helpers step through the arrays defined in `settings.json` unless free mode is active.

- `set_iso(value)` – Set ISO to a specific value.
- `inc_iso()` / `dec_iso()` – Step ISO up or down.
- `set_shutter_a(value)` – Set the *actual* shutter angle. In normal mode the value snaps to the nearest valid angle.
- `inc_shutter_a()` / `dec_shutter_a()` – Cycle through shutter angles.
- `set_shutter_a_nom(value)` – Set the *nominal* shutter angle used for motion-blur calculations.
- `inc_shutter_a_nom()` / `dec_shutter_a_nom()` – Step the nominal shutter angle.
- `set_fps(value)` – Apply a new frame rate while respecting locks and sync mode.
- `inc_fps()` / `dec_fps()` – Step through the configured FPS list.

White balance

- `set_wb(kelvin=None, direction='next')` – Set white balance to a specific Kelvin temperature or cycle through presets if no value is given.
- `inc_wb()` / `dec_wb()` – Move to the next or previous white balance preset.

Redis API quick start

Cinamate talks to the [cinepi-raw](#) recorder through a local Redis server. Parameters such as ISO, FPS or the recording state are stored as simple keys. Two pub-sub channels (`cp_controls` and `cp_stats`) carry notifications and status updates.

Here is an overview of how the pieces fit together and how you can experiment with them using `redis-cli` or your own Python scripts.

How CineMate and cinepi-raw interact

Cinepi-raw exposes an API over Redis. Cinamate acts as the user interface. When you change a value in Cinamate (for example by pressing a button or turning a rotary encoder) it writes the new value to Redis and publishes the key name on the `cp_controls` channel. `cinepi-raw` subscribes to this channel and reacts to changes.

Conversely, cinepi-raw periodically publishes camera statistics on the `cp_stats` channel. Cinamate listens and updates the on-screen GUI.

The `cp_controls` channel

CineMate writes values and immediately publishes the key name. The recorder only reacts when it receives that publish event.

Any key may be sent this way. For example, to adjust the preview zoom:

```
# Set preview zoom level

redis-cli SET zoom 1.5
redis-cli PUBLISH cp_controls zoom
```

Execpt for the recording trigger **is_recording**. Here, the Cinamate cinepi-raw fork *immediately* starts and stops recording upon edge detection (the variable changes from 0 to 1 or vice versa). The reason for this exception has to do with how the cinepi-raw fork handles recording with multiple cameras

```
# Start recording
redis-cli SET is_recording 1                # triggers 0 → 1 edge

# Stop recording
redis-cli SET is_recording 0                # triggers 1 → 0 edge
```


Redis key reference

This page lists all Redis keys used by Cinemate and cinepi-raw. Values are simple strings so you can read or write them with `redis-cli`.

Each entry explains which component normally writes the key and what happens when you change it manually.

Key	Written by	Description	Safe to change manually?
anamorphic_factor	Cinemate	Preview squeeze for anamorphic lenses	Yes (publish key to apply)
iso	Cinemate → cinepi-raw	Sensor gain in ISO	Yes
shutter_a	Cinemate → cinepi-raw	Actual shutter angle in degrees	Yes
shutter_angle_nom	Cinemate	Desired shutter angle before sync/free adjustments	Yes
shutter_a_sync_mode	Cinemate	Keep exposure constant when changing FPS	Yes
fps	Cinemate → cinepi-raw	Target frames per second	Yes
sensor_mode	Cinemate → cinepi-raw startup	Active sensor resolution/mode	Yes (causes pipeline restart)
wb	Cinemate → cinepi-raw	White-balance temperature (Kelvin)	Yes