SDI Control Point
User Manual

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International Distributor

Sky Blue Microsystems GmbH
Geisenhausenerstr. 18
81379 Munich, Germany
+49 89 780 2970, info@skyblue.de
www.skyblue.de

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2 Revision History

Version	Date	Notes
2020.1	11/2020	Initial release
2020.2	12/2020	Minor corrections: styling and visual corrections
2021.1	03/2021	Added Genlock configuration in section 6.1
2021.2	05/2021	Added Region of Interest tab, section 6.7 Added RS485 interface support and Multi-Camera Mode (sections 4.2 and 4.3) Added video output time-code control support to In-Out Tab (section 6.1) Added extended auto-exposure features configurations to In-Out Tab (section 6.1)
2021.3	11/2021	Added Genlock crosslock, termination and offset feature configurations, section 6.1
2022.1	06/2022	Added Antialiasing filter and Unsharpen filter tab
2022.2	08/2022	Added Multi Matrix Color Equalizer tab
2024.1	07/2023	Major update. Mobile support. New UI. Improve stability

Table 1 – Revision History

3 Overview

3.1 Introduction

This manual describes the usage of KAYA's SDI Control Point GUI. It is used to set up and operate SDI cameras via direct connect RS232 or Optional Bluetooth adapter (sold separately). Control Point is currently available for PC (Windows) and Tablet/Smartphone (Android and iOS); the document covers the different screens and menus of SDI Control Point. Be sure to use the latest firmware and software to guarantee the best results.

3.2 Disclaimer

It is important to note that some parameters might vary slightly compared to this document or may be absent entirely, subject to the active firmware capabilities: a firmware upgrade might be needed to support complete functionality set. Please review the downloads section on the camera page for the latest firmware and software. If that does not provide resolve, please feel free to contact our team over at support@kayainstruments.com with any questions that may arise.

Please Note that KAYA will provide no warranty for SDI Control Point. It is a free software published under LGPLv3 that uses the QT framework by the QT Company and other open-source components. The software's license as well as all other third-party software licenses used in SDI Control Point can be easily accessed via the Information Tab (6.11 for a detailed explanation).

4 Connecting to the Device

4.1 Serial Port RS232

The connect dialog will open immediately after Launching SDI Control Point. The left tab is for Serial Port RS232:

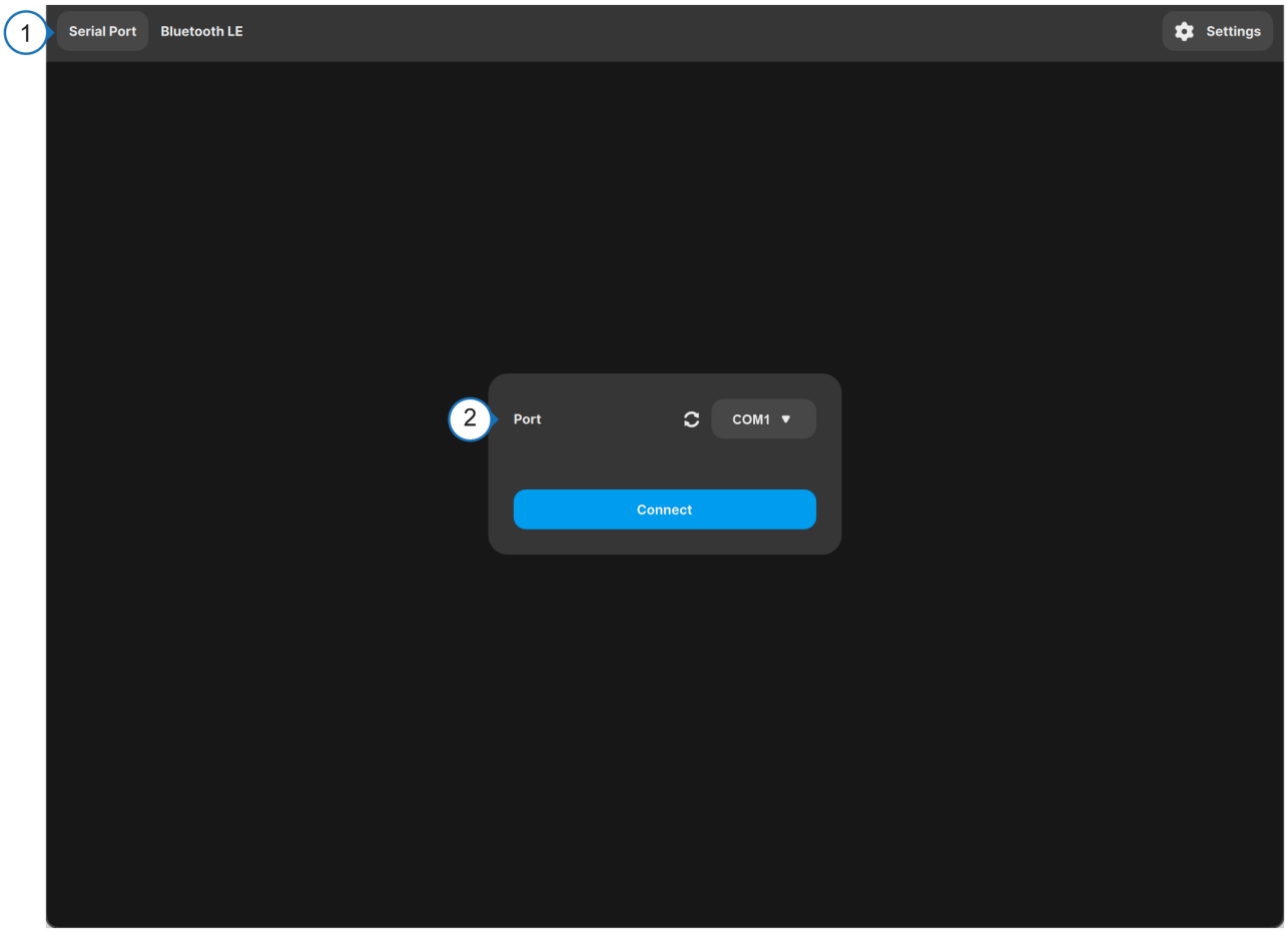


Figure 1 – Device connection process, RS232

#	Description
1	COM-Port to which the device is connected.
2	Scan for all available COM-Port and add them to the Port list

Table 2 – Connection screen GUI legend

4.2 Bluetooth connection

The connect dialog will open immediately after Launching SDI Control Point. The right tab is for Bluetooth:
For discover devices click Scan button.

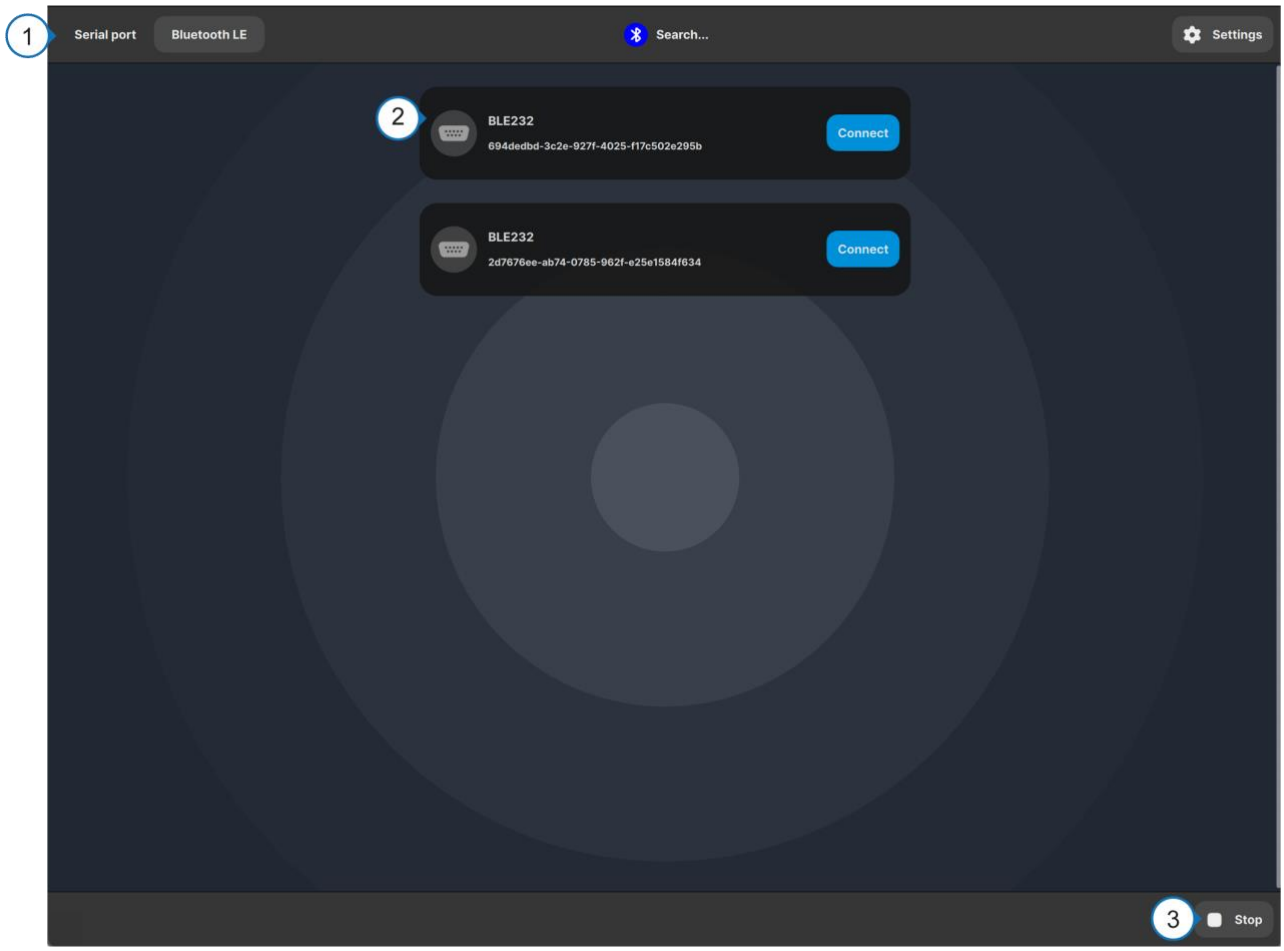


Figure 2 – Device connection process, Bluetooth

#	Description
1	COM-Port to which the device is connected.
2	Searches for all available cameras connected to a Bluetooth.
3	Stop the Connection Dialog.

Table 3 – Connection screen GUI legend

5 General Navigation

5.1 General Toolbar

After the connection was established, the main window will open. It has toolbar for general options such as save and load system settings.

Figure 3 – GUI Toolbar and Presets dialog

#	Description
1	Go back to the connection dialog.
2	Opens the Presets dialog.
3	Opens the system settings dialog.
4	A list of user-defined settings (up to 8 pre-sets). Selects the default user setting which will be applied on camera power-up. Only previously saved user settings can be set as default. [1]
5	To assign a default setting if it has not been assigned or you wish to change which setting is default: For example, to select Preset 2, utilize the dropdown (in location 4) and click "Set Default" (location 5). This will make the default (boot up) settings Preset 2.
6	The loads selected preset from camera's non-volatile memory (GUI will be updated accordingly).
7	Write current settings to selected preset of camera's non-volatile memory.
8	Exports the current camera settings to a file. [2]
9	Imports and applies camera configurations from a file. [2]

Table 4 – General Toolbar legend

Notes:

1. If no user set is selected, the camera will be loaded at factory settings. To reset the device back to its factory settings, the "Reset Settings to Defaults" located in the "Info Tab" can be applied.
2. Camera save-parameter files are generated with a custom .kyscp file extension.

5.2 Navigation Toolbar

Additional toolbar will be available on the bottom bar of the main window. This toolbar allows to navigate through the sub pages of the GUI.

Figure 4 – GUI bottom bar legend

#	Description
1	In-Out Tab: Configure exposure settings, video output and timecode features.
2	Black Level Tab: Configures black levels and flare compensation.
3	White Balance Tab: Configures white balance settings.
4	Filter Tab: Configures antialiasing and unsharpen filter settings.
5	Multi Matrix Color Tab: Configures multi matrix color settings.
6	Knee Function Tab: Configures the knee function.
7	Lookup Table Tab: Configures the gamma correction lookup table.
8	Defect Pixel Correction Tab: Sets up the automatic defect pixel correction and create a defect pixel table.
9	Statistics ROI Tab: Defines the region of interest for automatic compensation algorithms.
10	SDI Output Tab: Configures the RGB to YcbCr matrix and fine tune the SDI output range.
11	Info Tab: Display device and software status information.
12	Firmware Update Tab: Performs device updates.

Table 5 – GUI Sidebar Toolbar legend

5.3 System Setting Dialog

The settings dialog is used to configure general device and GUI settings.

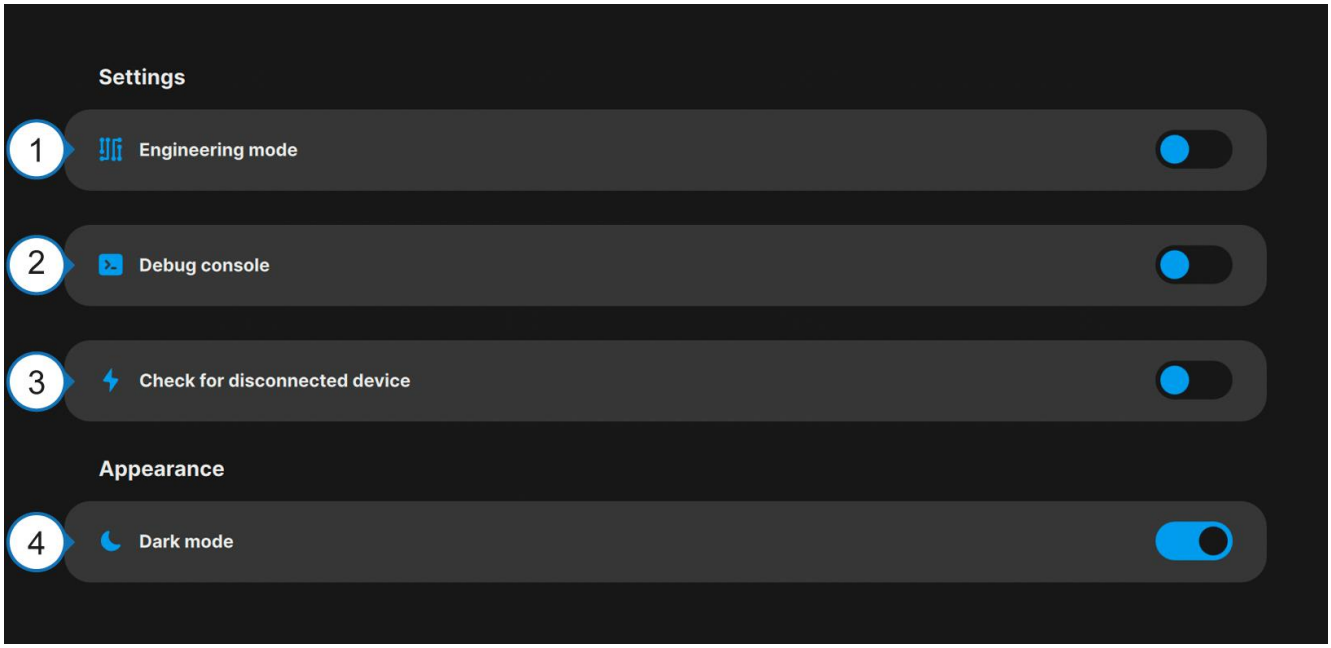


Figure 5 – System Setting

#	Description
1	Enable the engineering mode to display additional GUI features.
2	Enable the Debug Console (see section 5.4).
3	Enable a periodic connection check. If enabled the GUI will ping the connected device every 2 seconds. If device connection is lost, a dialog will be displayed.
4	Turn On and Off dark mode. By default, application uses a Dark mode.

Table 6 – GUI System Setting legend

5.4 Debug Console

The Debug Console shows all commands which are send by the GUI. It can also be used to manually send commands to the device. By default, the Debug Console opens as a docked widget of the main window.

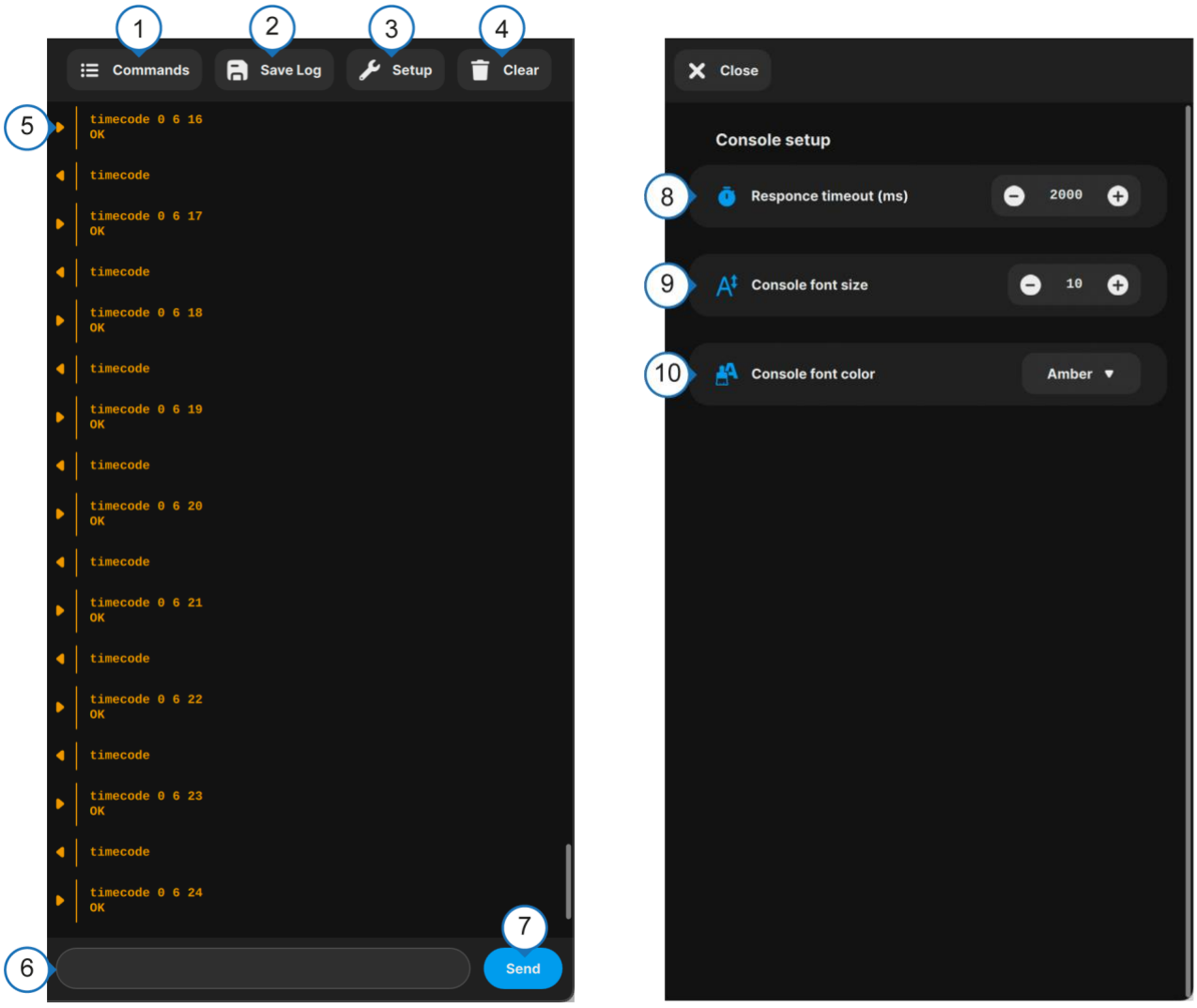


Figure 6 – Debug Console

#	Description
1	Displays a full list of supported camera commands.
2	Saves the current content of the Debug Console to a text file.
3	Opens Setup where you can customize Response timeout, Console Font size and font color.
4	Clears the content of the Debug Console. Does not delete the command history.
5	History of send / received commands. [3]
6	The command line can be used to enter commands. [4]
7	Sends command to camera.
8	Specify a maximal timeout for command response (the default is 2000 ms) [9]
9	Adjusts the console font size.
10	Adjusts the console font color.

Table 7 – Debug Console legend

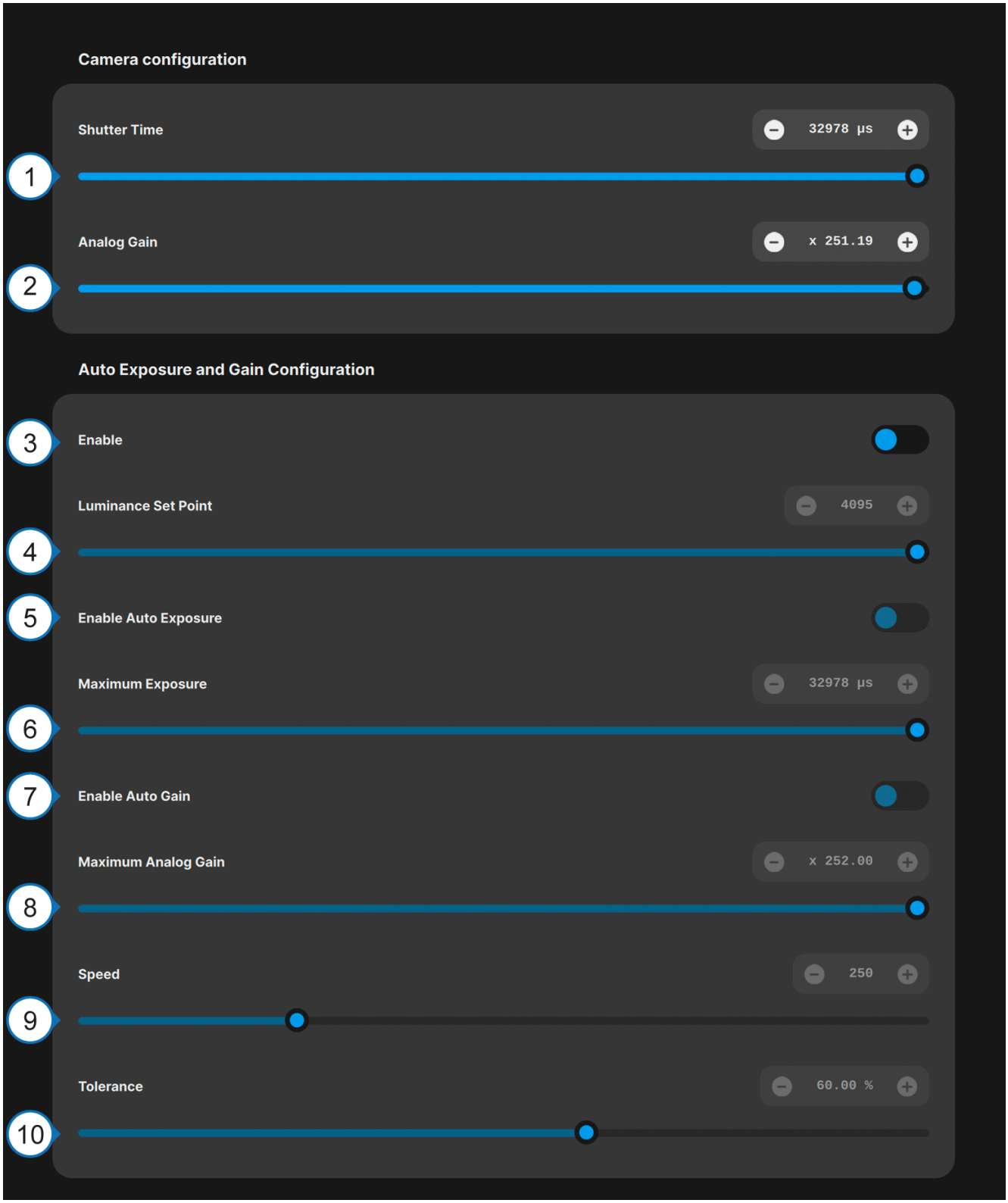
Notes:

3. The command line features a command history which can be accessed by pressing the Up and Down keys while the command line is active. Copying and pasting a list of commands is also possible. Please make sure that an appropriate command response wait time has been selected.
4. For most commands the default of 2000 ms is sufficient. For long commands like storing the DPCC table or enabling Genlock the wait time must be increased, or the device's answer won't be seen. If a script with multiple commands is run by pasting it into the command line a wait time which is long enough for the most time consuming command in the script is needed.

6 Features Toolset

Each tab focuses on a certain feature set of the device. Below is a list of all tabs currently available in the GUI.

6.1 In-Out Tab



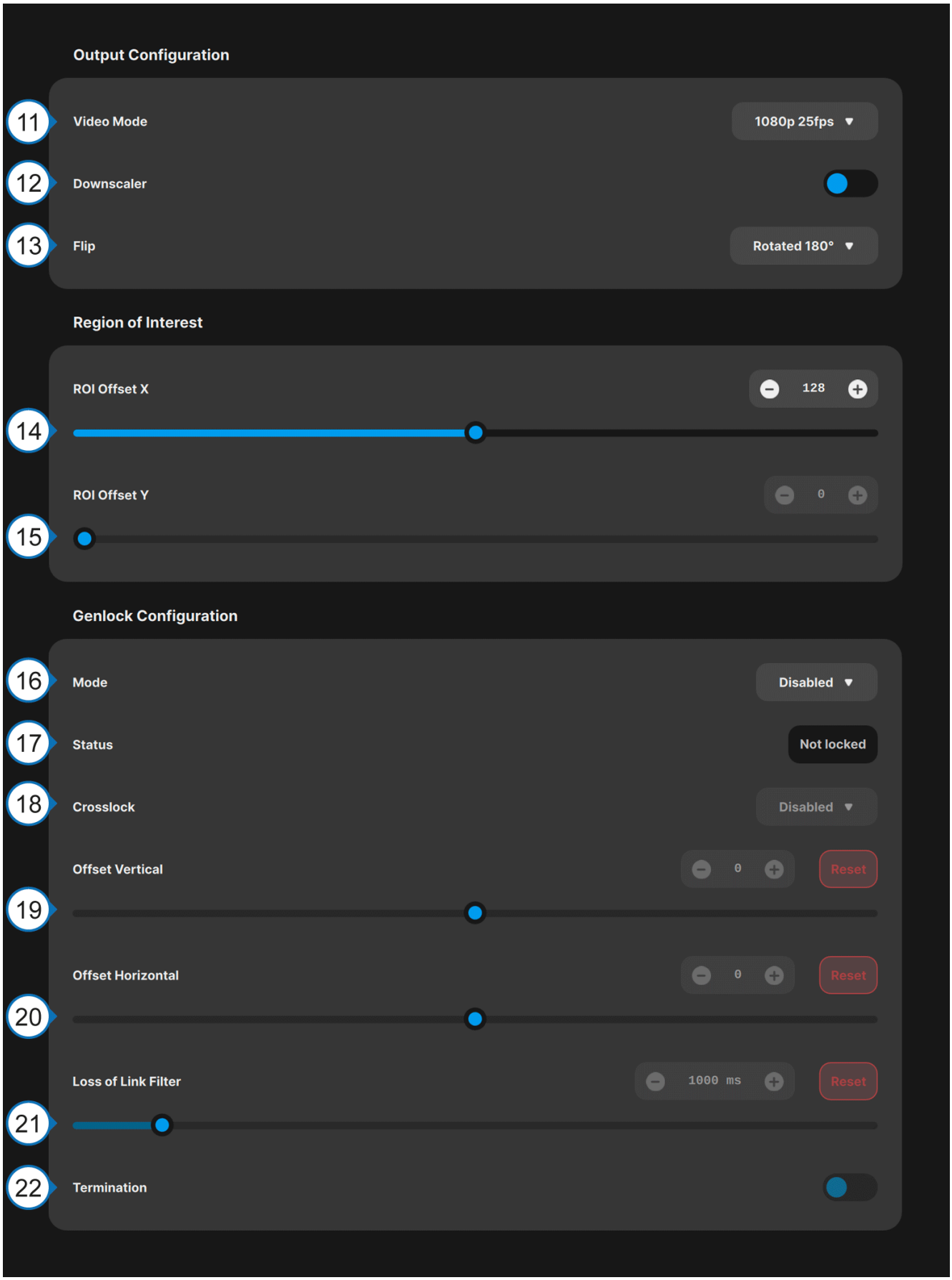

Output Configuration
11
Video Mode
1080p 25fps
12
Downscaler
13
Flip
Rotated 180°
Region of Interest
ROI Offset X
128
14
ROI Offset Y
0
15
Genlock Configuration
16
Mode
Disabled
17
Status
Not locked
18
Crosslock
Disabled
Offset Vertical
0
Reset
19
Offset Horizontal
0
Reset
20
Loss of Link Filter
1000 ms
Reset
21
22
Termination

Figure 7 – In-Out tab

#	Description
1	Manually set the shutter time in microseconds. Can only be adjusted if auto exposure is disabled. The Combo Box and the "+" and "-" buttons to the right of the slider can be used to switch between common exposure time presets.
2	Manually set the sensor gain. Warning: Higher Values will increase sensitivity but may introduce noise. Can only be adjusted if the auto-gain feature is disabled. The Combo Box and the "+" and "-" buttons to the right of the slider can be used to switch between common gain presets.
3	Enables auto exposure. This will automatically adjust shutter time and sensor gain. Can be turned off to use manual settings. Elements 4 to 10 will be available if enabled.
4	The target luminance is set by the setPoint, this will determine the target average image value. A higher setPoint results in a brighter exposed image.
5	Enables auto exposure. The algorithm calculates the average picture intensiveness inside the defined ROI and adjusts exposure to meet the targeted luminance value.
6	Sets the maximal exposure time in microseconds.
7	Enables auto gain. The algorithm calculates the average picture intensiveness inside the defined ROI and adjusts gain to meet the targeted luminance value.
8	Sets the maximal analog gain.
9	Sets the reaction time of the algorithm to changes. Acts as a low pass filter on the luminance update.
10	Sets the relative weight of the peak-brightness in setPoint calculation.
11	Sets the video mode (image resolution and video rate).
12	Set Downscaler format. Enables 4K to 2K downscaler for the first SDI output. This option is only available for 4K cameras, see the cameras reference manual for more details.
13	Sets the flip mode to mirror the image vertically, horizontally or both (rotate 180°).
14	Sets the absolute image ROI offset position across the sensor on the X axis.
15	Sets the absolute image ROI offset position across the sensor on the Y axis.
16	The genlock mechanism is used to synchronize multiple cameras video signals. The combo box allows to choose between genlock available modes.
17	Displays the current genlock status of the device.
18	Enables lock to tri-level signal source.
19	Adjust the vertical position offset which are added to the reference sync signal.
20	Adjust the horizontal position offset which are added to the reference sync signal.
21	The loss-of-link (lol) timeout can be configured to prevent glitches in the unstable genlock signal.
22	Termination of the genlock in/out.
23	Specifies new initial timecode value.
24	Holds the timecode at the same value which will result in image output with the last registered timecode. The timecode will continue to increase in the background. When hold is pressed again the new images' timecode will skip to the currently calculated timecode.

Table 8 – In-Out tab legend

6.2 Black Level Tab

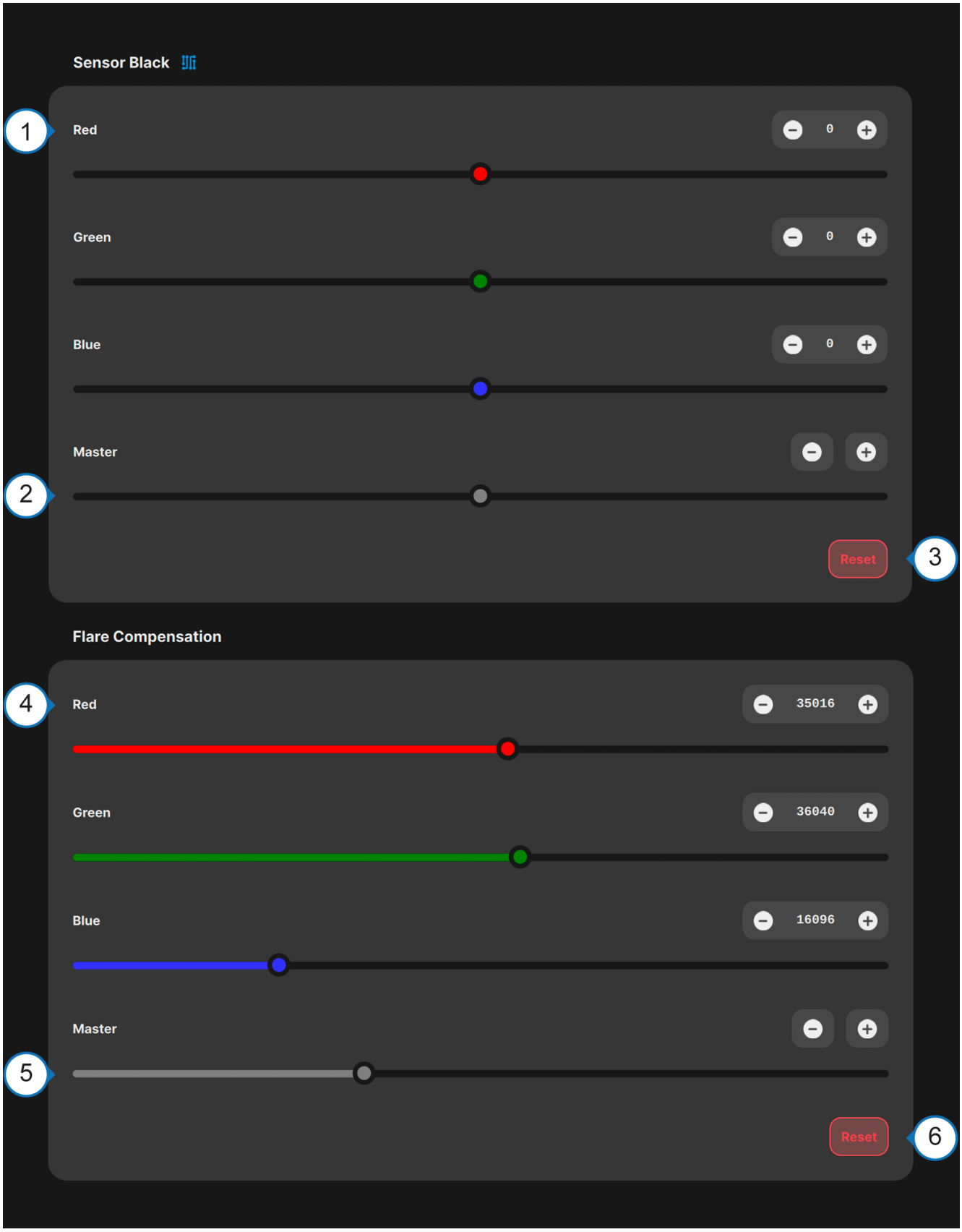
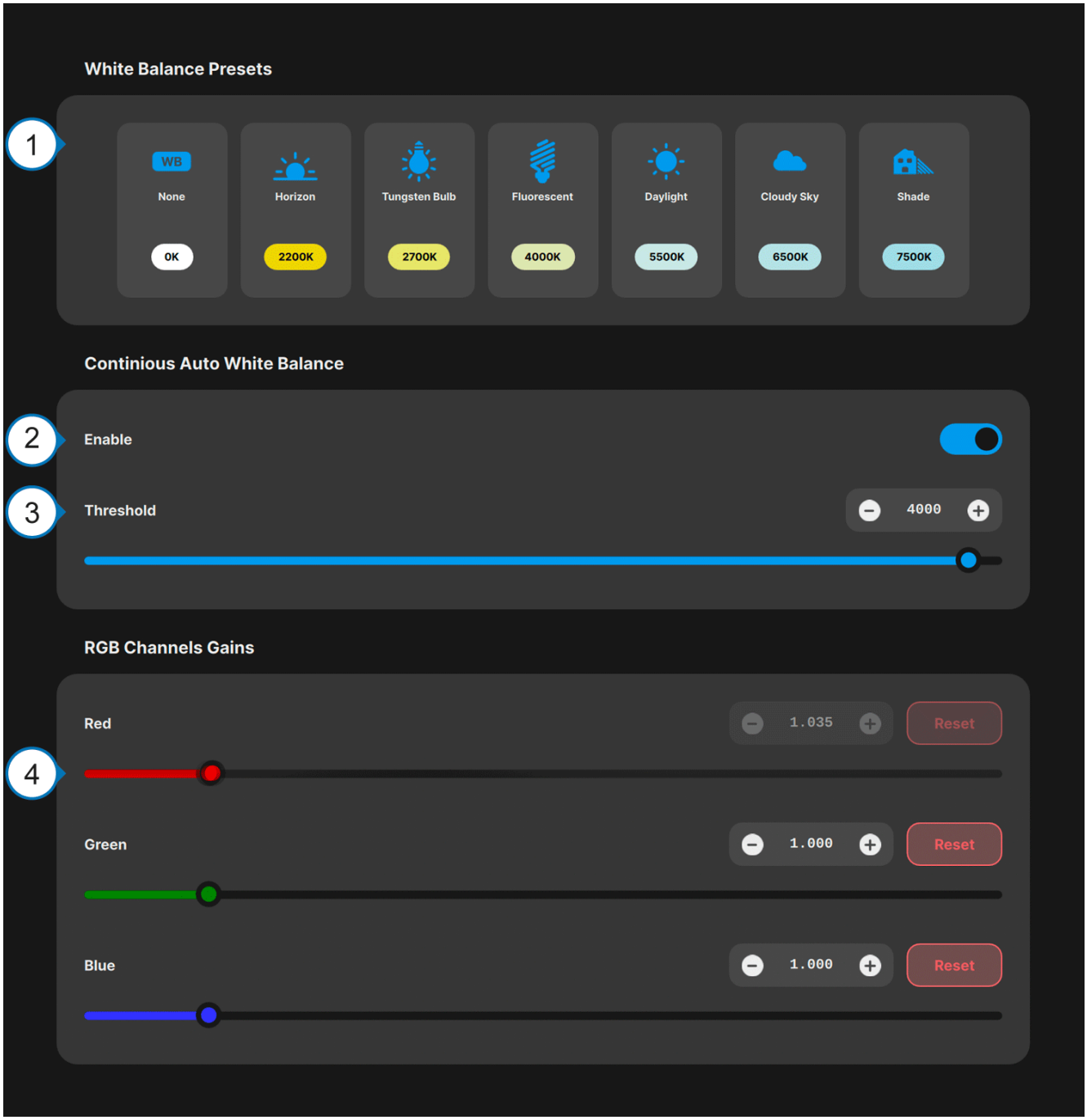


Figure 8 – Black Level tab

#	Description
1	Sensor black for each component separate.
2	Sensor black for all colors.
3	Resetting will set the Sensor black sliders to their default values.
4	Flare compensation (defog) for each component separate.
5	Flare compensation (defog) for all colors.
6	Resetting will set the Flare compensation sliders to their default values.
7	Master black for each component separate.
8	Master black for all colors.
9	Resetting will set the Master black sliders to their default values.

Table 9 – Black Level tab legend

6.3 White Balance Tab



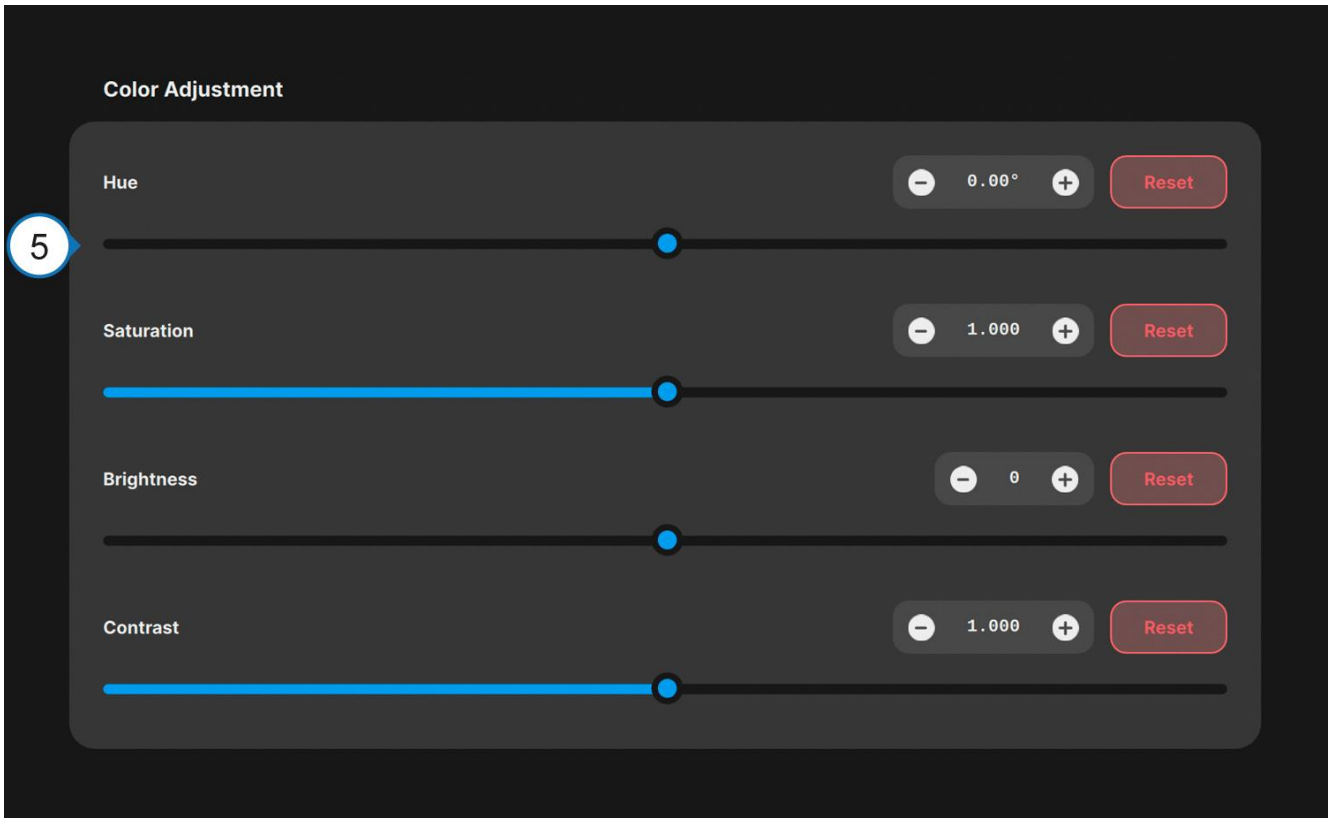


Figure 9 – White Balance tab

#	Description
1	White balance presets for different luminance scenes.
2	Enables continuous auto white balance.
3	Adds threshold maximum value configuration (0-4095) when the white balance compensation algorithm counts. Assists in calculation to omit over saturated pixels.
4	Manual red, green, blue gain.
5	Post processing: Hue, Saturation, Brightness, Contrast.

Table 10 – White Balance tab legend

6.4 Filter Tab

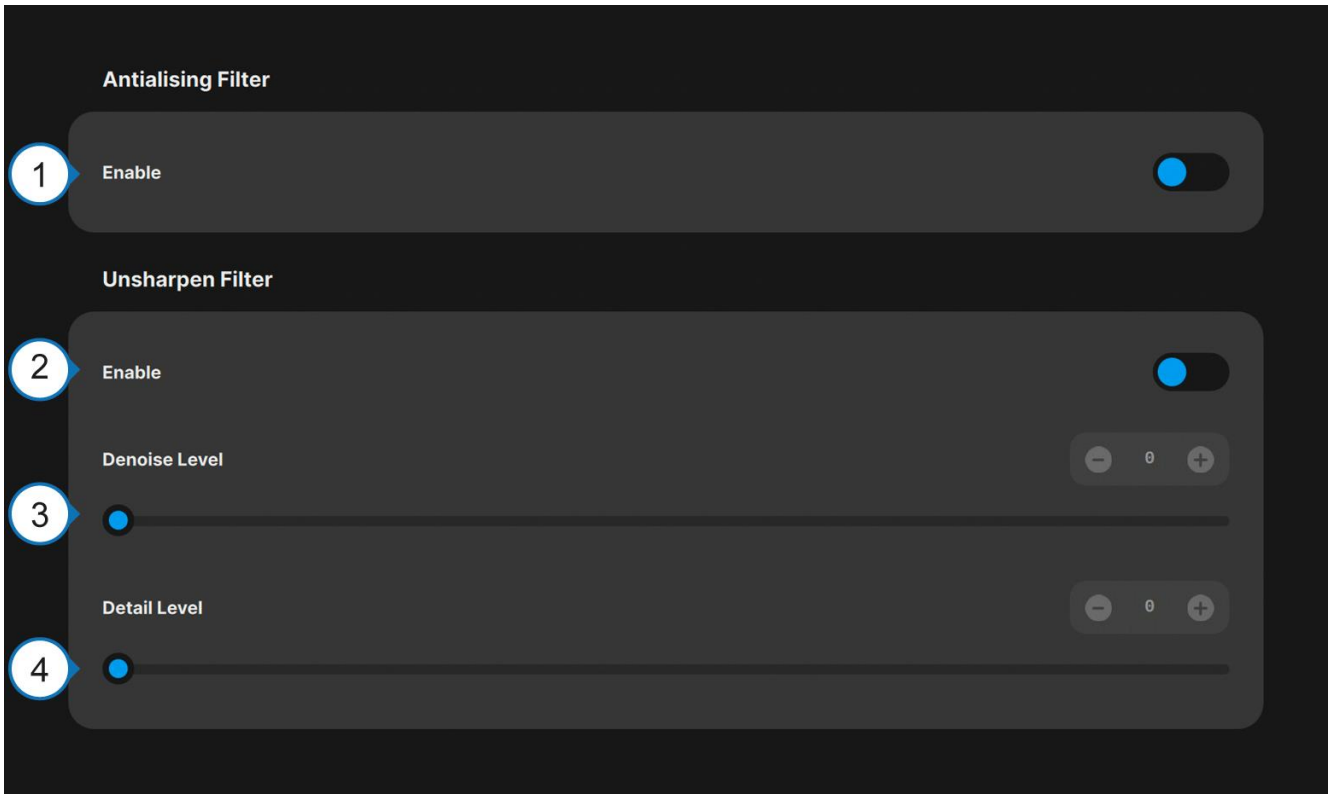


Figure 10 – Filter tab

#	Description
1	Enables Antialiasing filter.
2	Enables Denoise and Detail filters.
3	Set a higher denoise level filter for a cleaner image with less noise and detail.
4	Set a higher detail level to sharpen the image.

Table 11 – Filter tab legend

6.5 Multi Matrix Color Tab

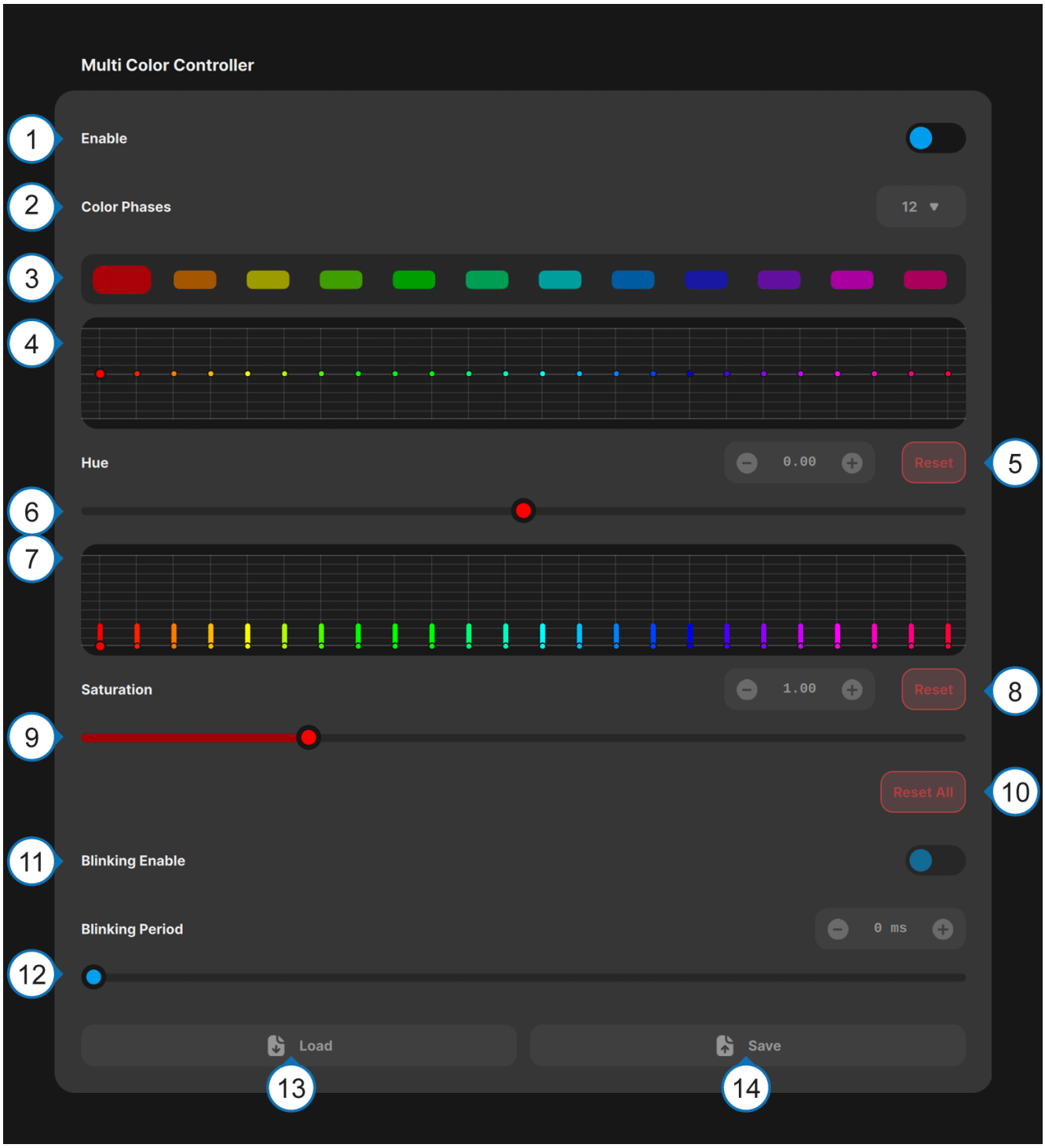


Figure 11 – Multi Matrix Color tab

#	Description
1	Enable / disable the multi matrix color controller.
2	Select the amount of phases (12, 16, 24 or 32). The more phases the finer you can tune the image color.
3	Toggle the blink button of a phase to make it blink in the output image to spot which colors the phase will effect.
4	The Hue Chart visually shows current color settings.
5	Resetting the hue will set the selected slider to its default values.
6	The hue sliders will move the color of the selected phase to the neighboring color.

7	The Saturation Chart visually shows current color settings.
8	Resetting the saturation will set the selected slider to its default values.
9	The saturation sliders make the selected phase more or less prominent.
10	Resetting the hue and the saturation will set the selected sliders to their default values.
11	Enable Blinking in the output image to spot which colors the phase will effect.
12	Set blinking period of the currently selected color phase.
13	Loads the current multi matrix color profile from a file.
14	Saves the current multi matrix color profile to a file.

Table 12 – Multi Matrix Color tab legend

6.6 Knee Function Tab

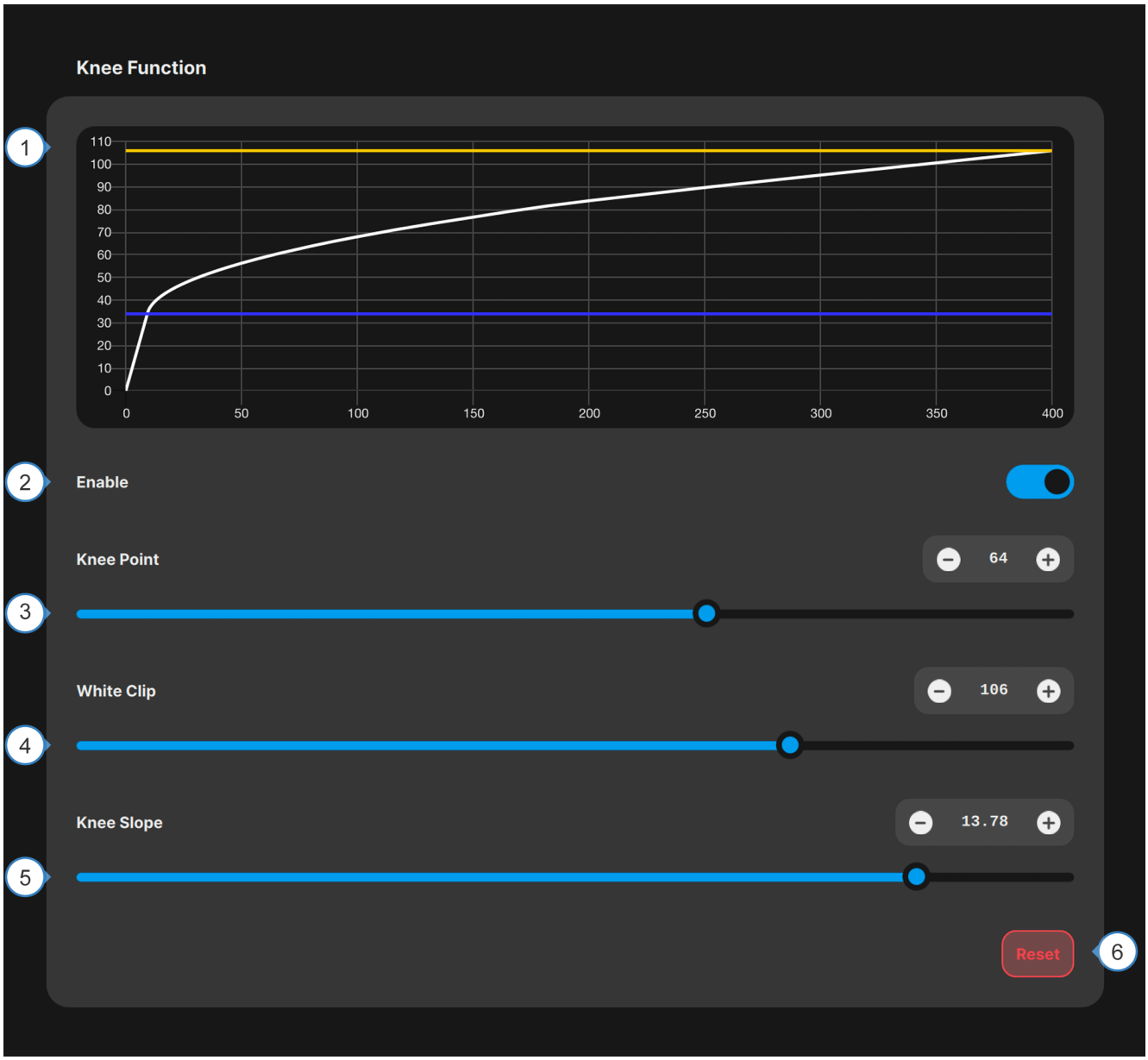


Figure 12 – Knee Function tab

#	Description
1	Graphical view of current knee settings.
2	Enable knee function.
3	Knee Point setting (point where the curve bends, indicated by the blue line in the plot).
4	White Clipping Point setting (maximum value of the knee function, indicated by the yellow line in the plot).
5	Knee Slope setting (angle of the first part of the knee function till the knee point).
6	Resetting will set the selected sliders to its default values.

Table 13 – Knee Function tab legend

6.7 Lookup Table Tab

There are three modes for lookup table configurations: “Fixed Gamma”, “Fast Gamma”, “Table Based Interpolation”.

Only one mode can be used at any given moment: selecting one will disable the others.

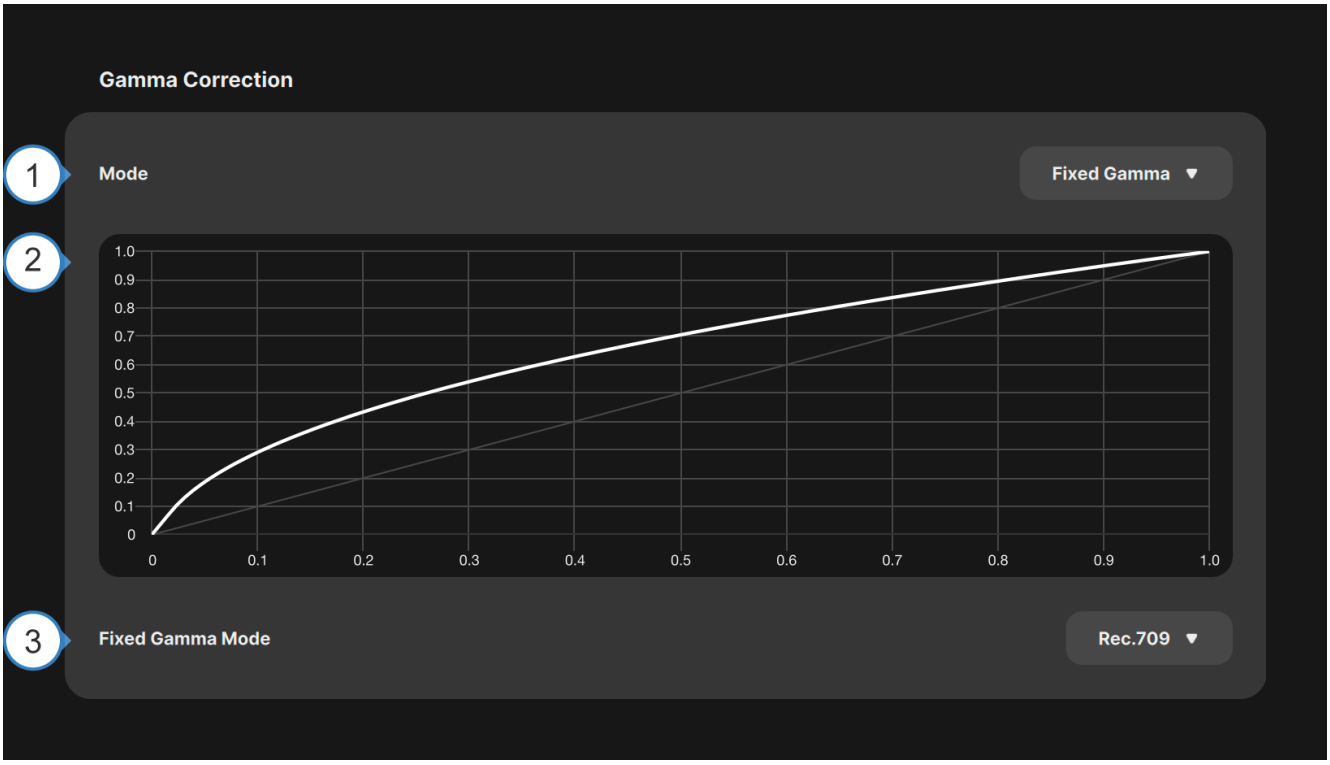


Figure 13 – Lookup Table tab (Fixed Gamma mode)

#	Description
1	Gamma channel selection. The RGB curves represent the LUT points for each color, while the master channel represents the combined points of all the colors. RGB channels are only available in “Table Based Interpolation”: In “Fast Gamma” and “Fixed Gamma” only the Master is shown.
2	Graphical representation of current gamma curve. In “Table-Based Interpolation”, adding a new sample point is done by clicking on the plot (up to 48 points). In “Fast Gamma” and “Fixed Gamma” modes the plot will become an un-editable preview of the gamma curve.
3	Enables “Fixed Gamma” mode where the gamma curve is set to a fixed preset. REC.709, REC.2100 PQ or REC.2100 HLG can be selected. PQ and HLG gamma curves are specified in ITU-R BY.2100 and can be used for HDR content.

Table 14 – Lookup Table tab legend (Fixed Gamma mode)

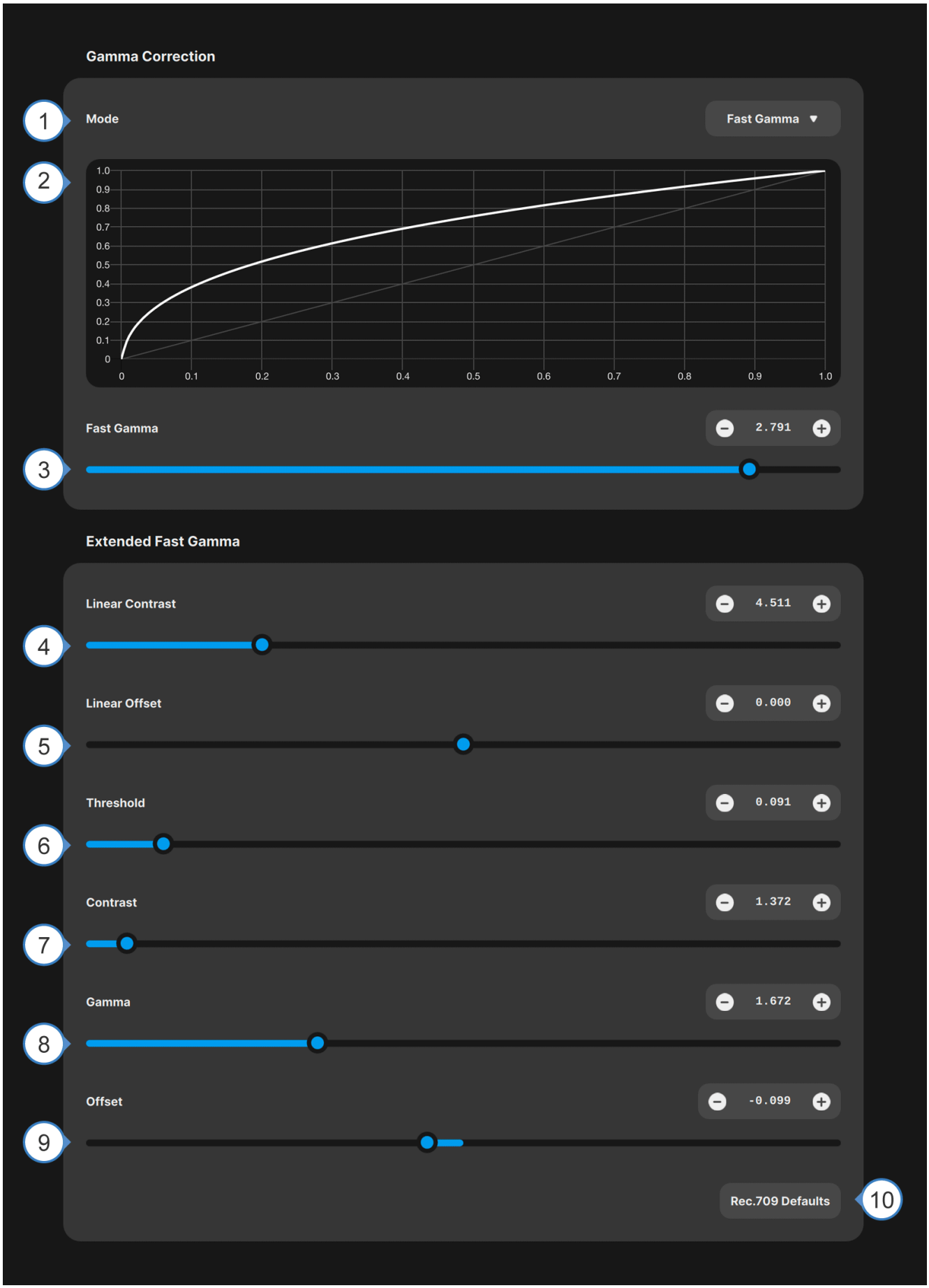


Figure 14 – Lookup Table tab (Fast Gamma mode)

#	Description
1	Gamma channel selection. The RGB curves represent the LUT points for each color, while the master channel represents the combined points of all the colors. RGB channels are only available in “Table Based Interpolation”: In “Fast Gamma” and “Fixed Gamma” only the Master is shown.
2	Graphical representation of current gamma curve. In “Table-Based Interpolation”, adding a new sample point is done by clicking on the plot (up to 48 points). In “Fast Gamma” and “Fixed Gamma” modes the plot will become an un-editable preview of the gamma curve.
3	Changes the gamma value.
4-9	Fine tunes the parameters to generate a custom de-gamma curve. By default, the parameters in this box are set to generate a standard REC.709 de-gamma curve.

Table 15 – Lookup Table tab legend (Fast Gamma mode)

Figure 15 – Lookup Table tab (Table-Based-interpolation)

#	Description
1	Gamma channel selection. The RGB curves represent the LUT points for each color, while the master channel represents the combined points of all the colors. RGB channels are only available in “Table Based Interpolation”: In “Fast Gamma” and “Fixed Gamma” only the Master is shown.
2	Graphical representation of current gamma curve. In “Table-Based Interpolation”, adding a new sample point is done by clicking on the plot (up to 48 points). In “Fast Gamma” and “Fixed Gamma” modes the plot will become an un-editable preview of the gamma curve.
3	Changes the current channel.
4	Stores up to 5 different tables of sample points. The storage selector can be used to switch between them.
5	Adds points to the plot.

6	Removes selected points.
7	List of added points.
8	Loads the current multi matrix color profile from a file.
9	Saves the current multi matrix color profile to a file.

Table 16 – Lookup Table tab legend

6.8 Defect Pixel Correction Tab

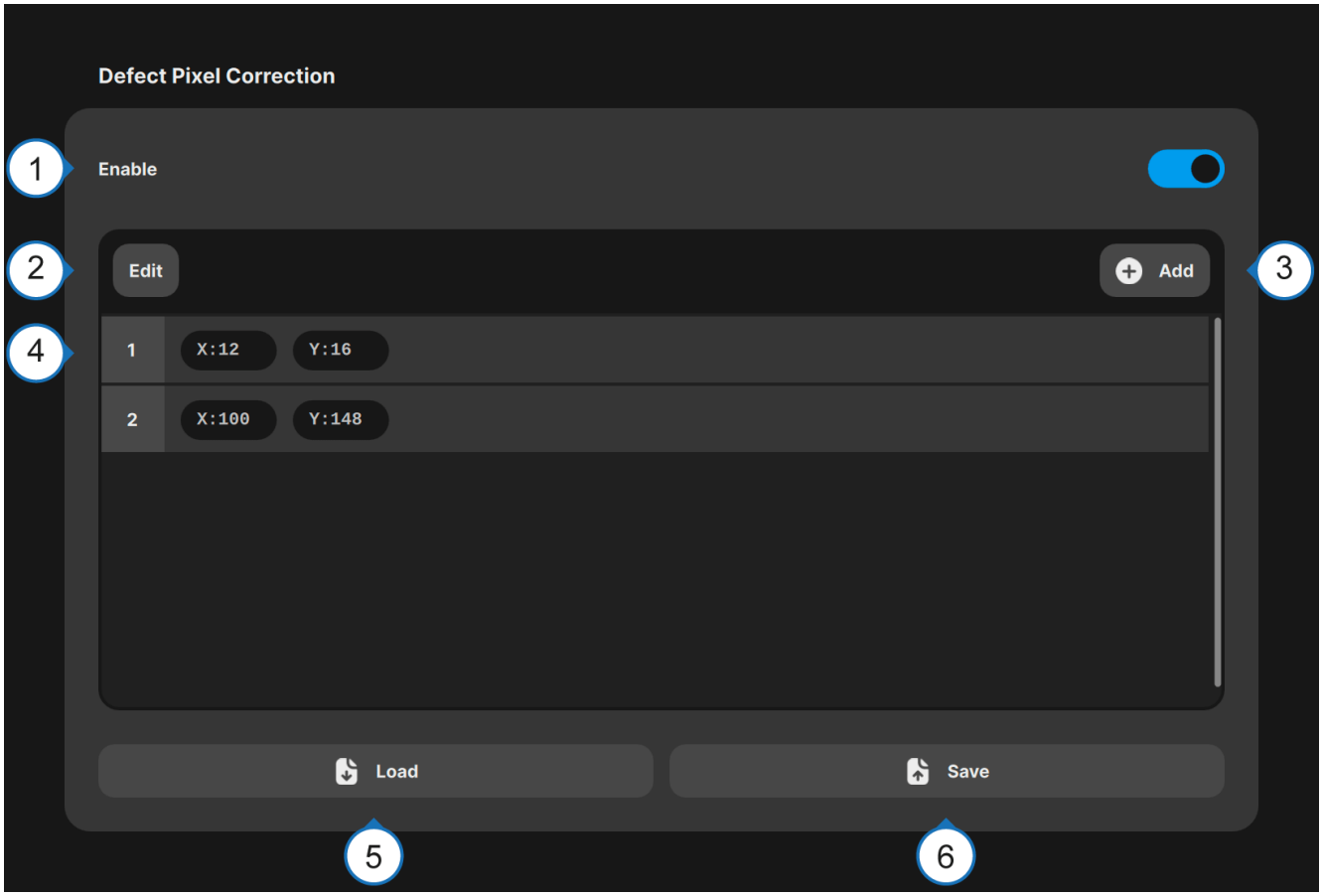


Figure 16 – Defect Pixel Correction tab (full version)

#	Description
1	Enables the defect pixel correction module.
2	Enable Table of defect pixel positions editing (edit or remove the selected position from the table).
3	Adds a coordinate representing a dead pixel entry to the table.
4	Table of defect pixel positions.
5	Imports a CSV file with the defect pixel table.
6	Exports a CSV file with the defect pixel table.

Table 17 – Defect Pixel Correction tab legend (full version)

6.9 Statistics ROI Tab

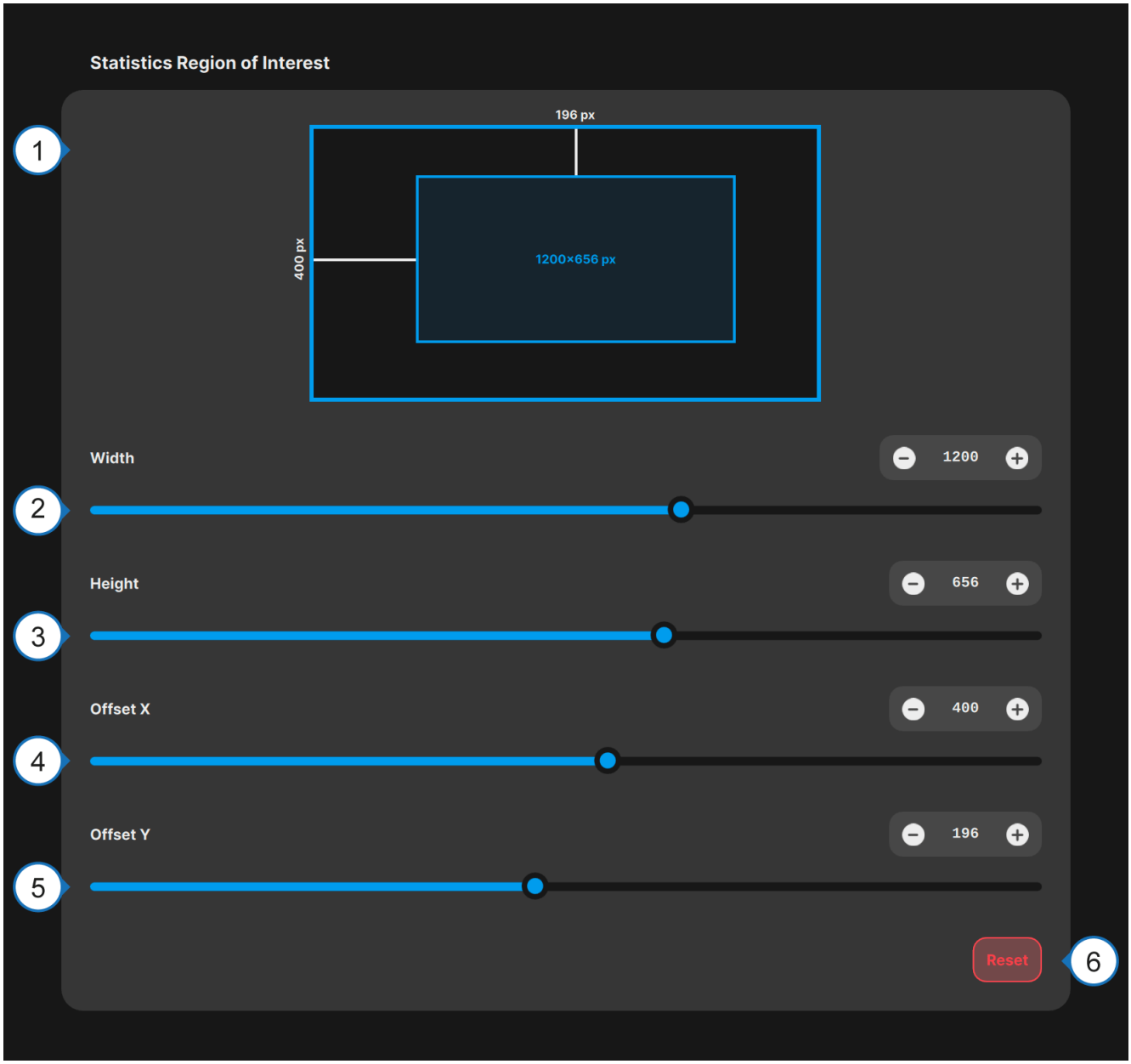


Figure 17 – Statistics ROI tab

#	Description
1	Visually represents the selected statistics ROI in relation to the full visible output image.
2	Sets the width, in pixels, of the statistics ROI.
3	Sets the height, in rows, of the statistics ROI.
4	Sets the offset X, in pixels, representing the offset between the output image X axis origin and the beginning of the statistics ROI.
5	Sets the offset Y, in lines, representing the offset between the output image Y axis origin and the beginning of the statistics ROI.
6	Resets the statistics ROI to full resolution of current visible output image.

Table 18 – Statistics ROI tab legend

6.10 SDI Output Tab

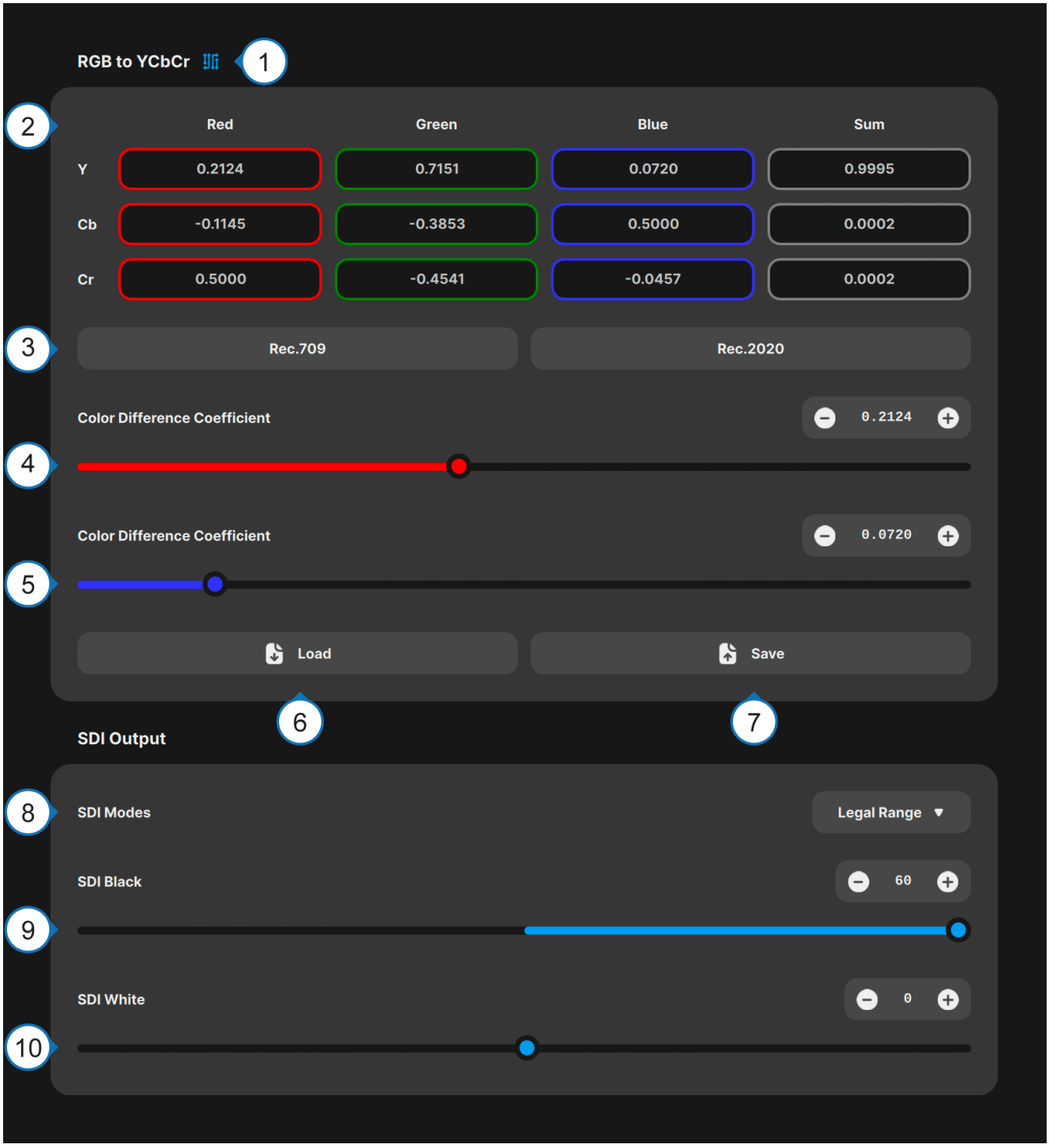


Figure 18 – SDI Output tab

#	Description
1	Icon shows that Engineering mode is On.
2	Shows the values of current color conversion matrix. [5]
3	Lists presets for color conversion. Default is Rec.709, Rec.2020 is usually used for UHD video\ HDR content. [5]
4	Fine tunes the matrix red balance. [5]
5	Fine tunes the matrix blue balance. [5]
6	Loads the color conversion matrix from a file. [5]

7	Saves the color conversion matrix to a file.
8	Sets SDI output range to legal or extended. In legal range mode, the black and white levels can be fine-tuned (see below).
9	Sets SDI black level (extend dynamic).
10	Sets SDI while level (extend dynamic).

Table 19 – SDI Output tab legend

Notes:

5. Settings which can be accessed by Engineering mode.

6.11 Info Tab

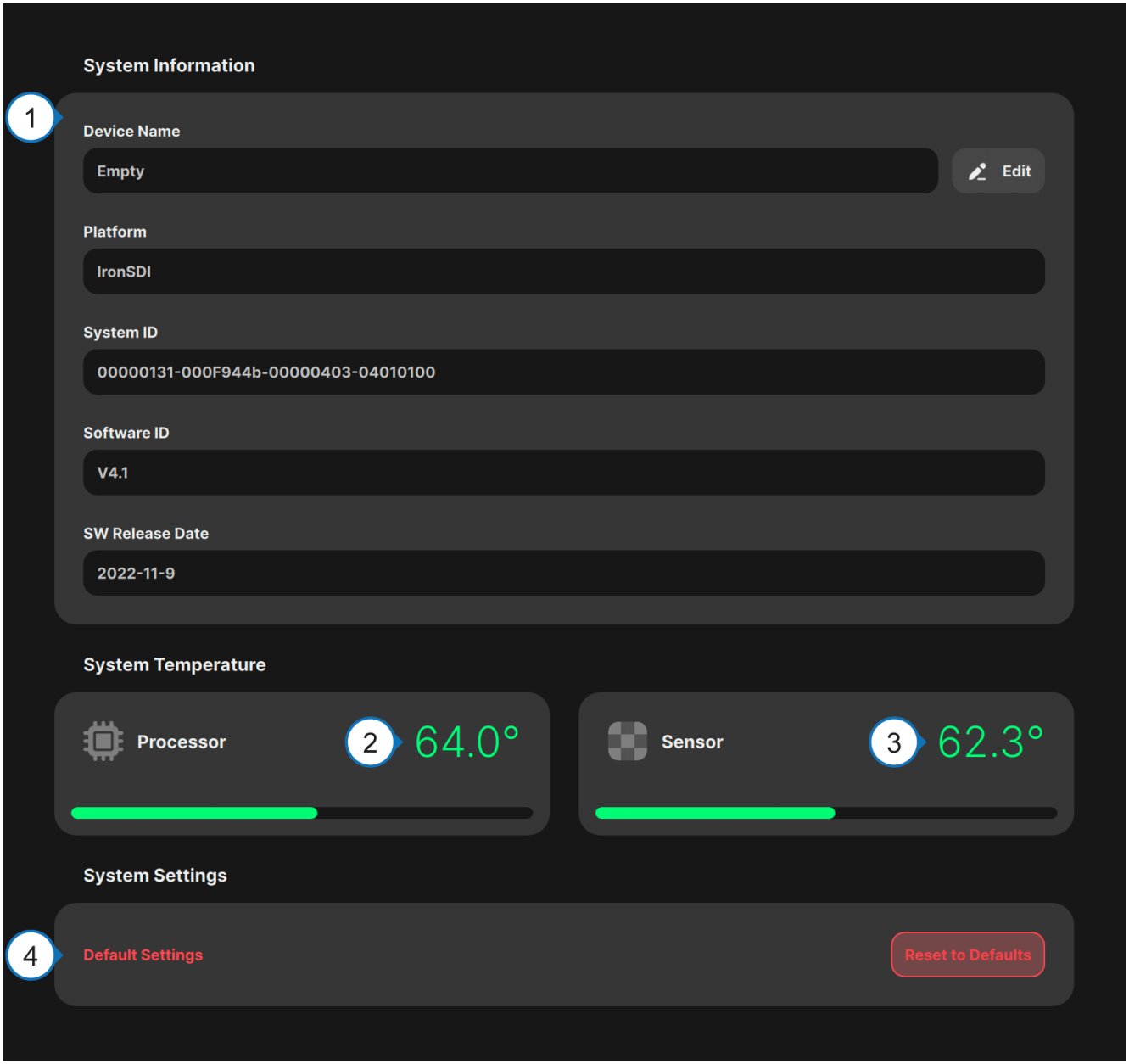


Figure 19 – Info tab

#	Description
1	General information about the connected device is shown in the system information box.
2	Information about the operating temperature of the processor.
3	Information about the operating temperature of the sensor.
4	Reset to Default settings. Use this to reset all settings to factory defaults. Please note that this will drop any current camera configurations! Current setting should be saved separately before performing a full reset, to be re-used later.

Table 20 – Info tab legend

6.12 Firmware Update Tab

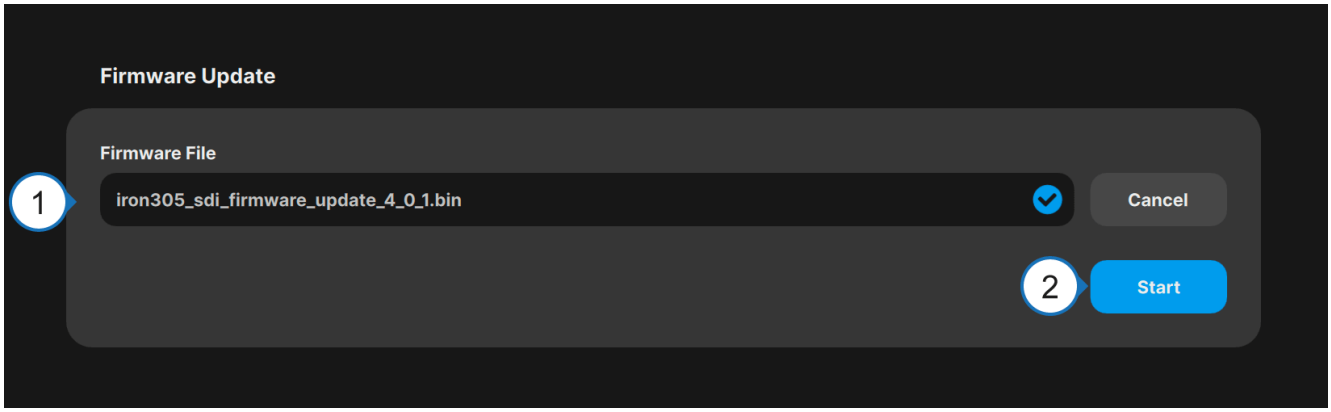


Figure 20 – Firmware Update tab

#	Description
1	Click this field to choose a firmware update file. Make sure to use an official firmware update .bin file provided by KAYA Instruments, for the specific camera device.
2	Initiates the update process.

Table 21 – Firmware Update tab legend

7 Mobile version

7.1 Bluetooth connection

The camera connection via Bluetooth accessible for Tablet and Smartphone.
The connect dialog will open immediately after Launching SDI Control Point.

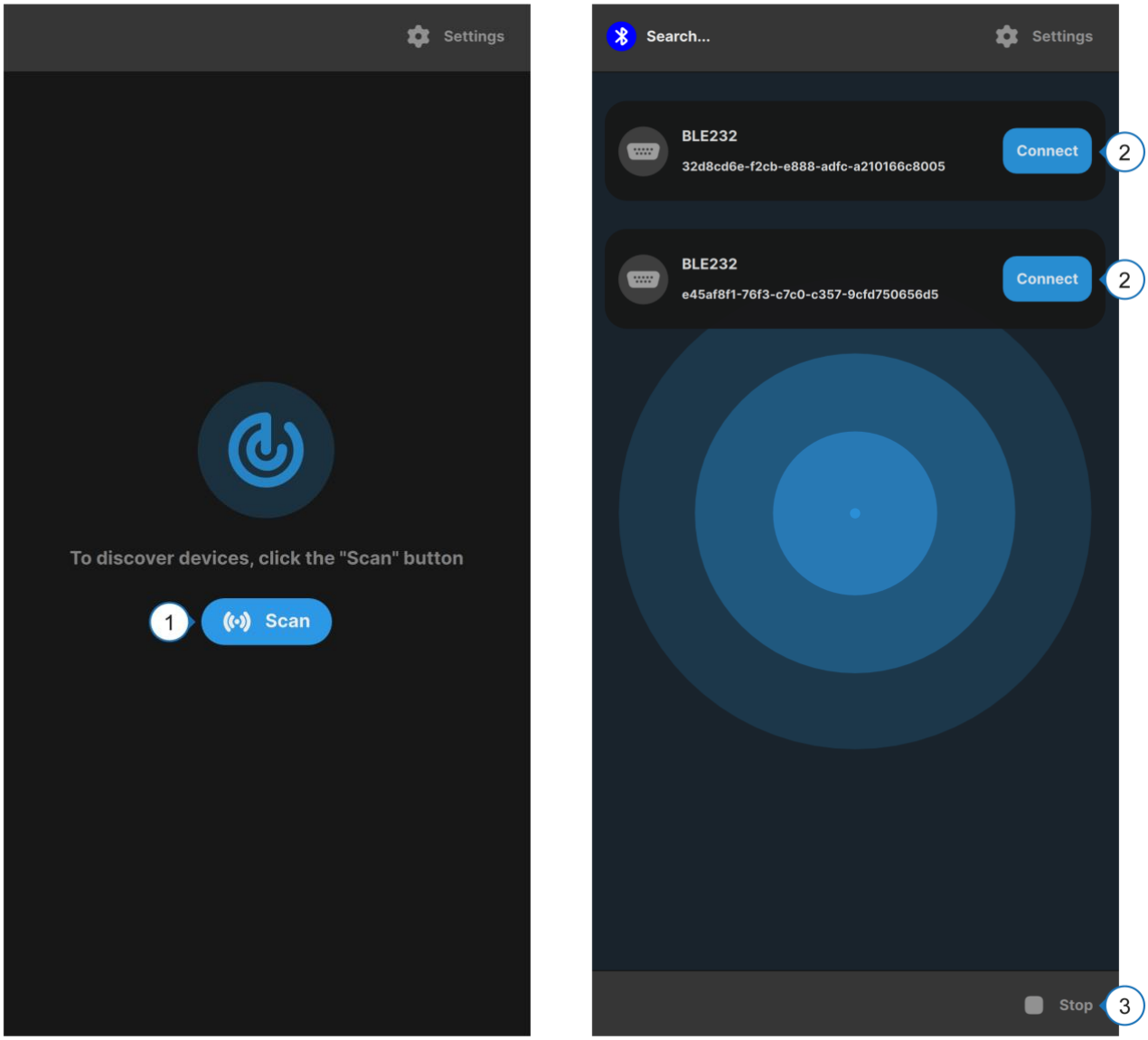


Figure 21 – Device connection process, Bluetooth

#	Description
1	Click Scan to Search for all available cameras connected to a selected port with a given baudrate.
2	Connection to the camera.
3	Stop the Connection Dialog.

Table 22 – Connection screen GUI legend

8 General Navigation

8.1 General Toolbar

After the connection was established, the main window will open. It has toolbar for general options such as save and load system settings.

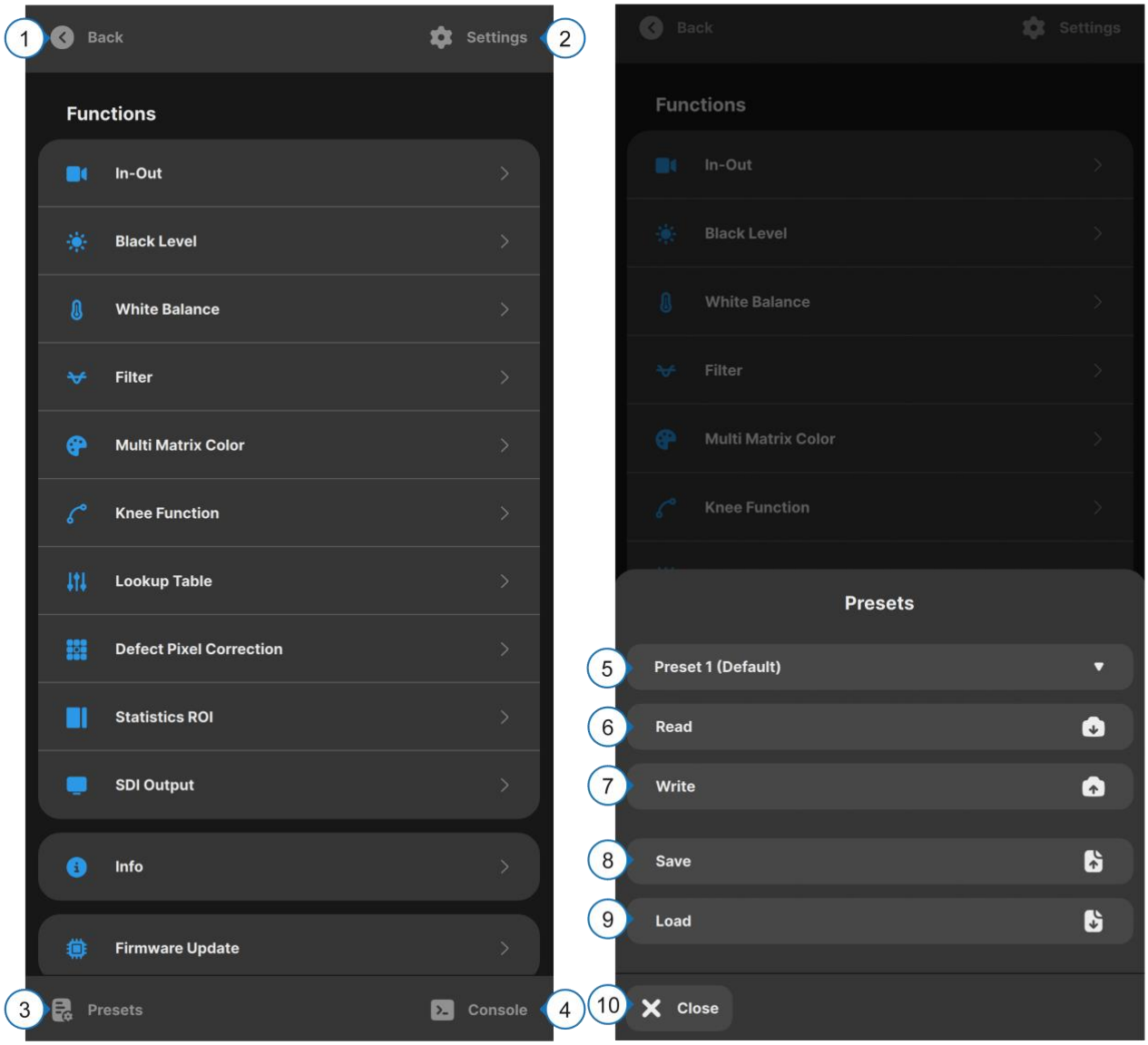


Figure 22 – GUI Toolbar and Presets dialog

#	Description
1	Go back to the connection dialog
2	Opens the system settings dialog
3	Opens the Presets dialog.
4	Opens the Debug Console (see section 8.45.4).
5	A list of user-defined settings (up to 8 pre-sets). Selects the default user setting which will be applied on camera power-up. Only previously saved user settings can be set as default. [6]
6	Loads previously saved user set settings. (GUI will be updated accordingly) camera configurations to camera's non-volatile memory.

7	Saves selected user setting with current.
8	Imports and applies camera configurations from a file. [7]
9	Exports the current camera settings to a file. [7]
10	Close Presets dialog

Table 23 – General Toolbar legend

Notes:

6. If no user set is selected, the camera will be loaded at factory settings. To reset the device back to its factory settings, the “Reset Settings to Defaults” located in the “Info Tab” can be applied.
7. Camera save-parameter files are generated with a custom .kyscp file extension.

8.2 Main window

After the connection was established, the main window will open. It is allows to navigate through the sub pages of the GUI.

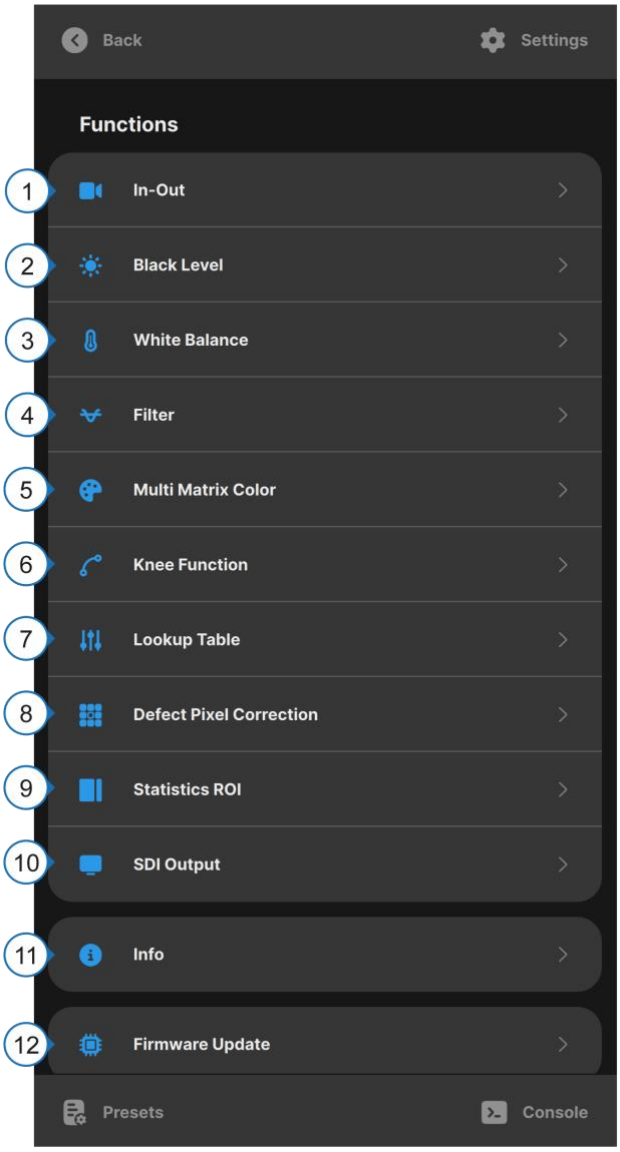


Figure 23 – GUI Main window

#	Description
1	In-Out Tab: Configure exposure settings, video output and timecode features.
2	Black Level Tab: Configures black levels and flare compensation.
3	White Balance Tab: Configures white balance settings.
4	Filter Tab: Configures antialiasing and unsharpen filter settings.
5	Multi Matrix Color Tab: Configures multi matrix color settings.
6	Knee Function Tab: Configures the knee function.
7	Lookup Table Tab: Configures the gamma correction lookup table.
8	Defect Pixel Correction Tab: Sets up the automatic defect pixel correction and create a defect pixel table.

9	Statistics ROI Tab: Defines the region of interest for automatic compensation algorithms.
10	SDI Output Tab: Configures the RGB to YcbCr matrix and fine tune the SDI output range.
11	Info Tab: Display device and software status information.
12	Firmware Update Tab: Performs device updates.

Table 24 – GUI Main window legend

8.3 System Setting Dialog

The settings dialog is used to configure general device and GUI settings.

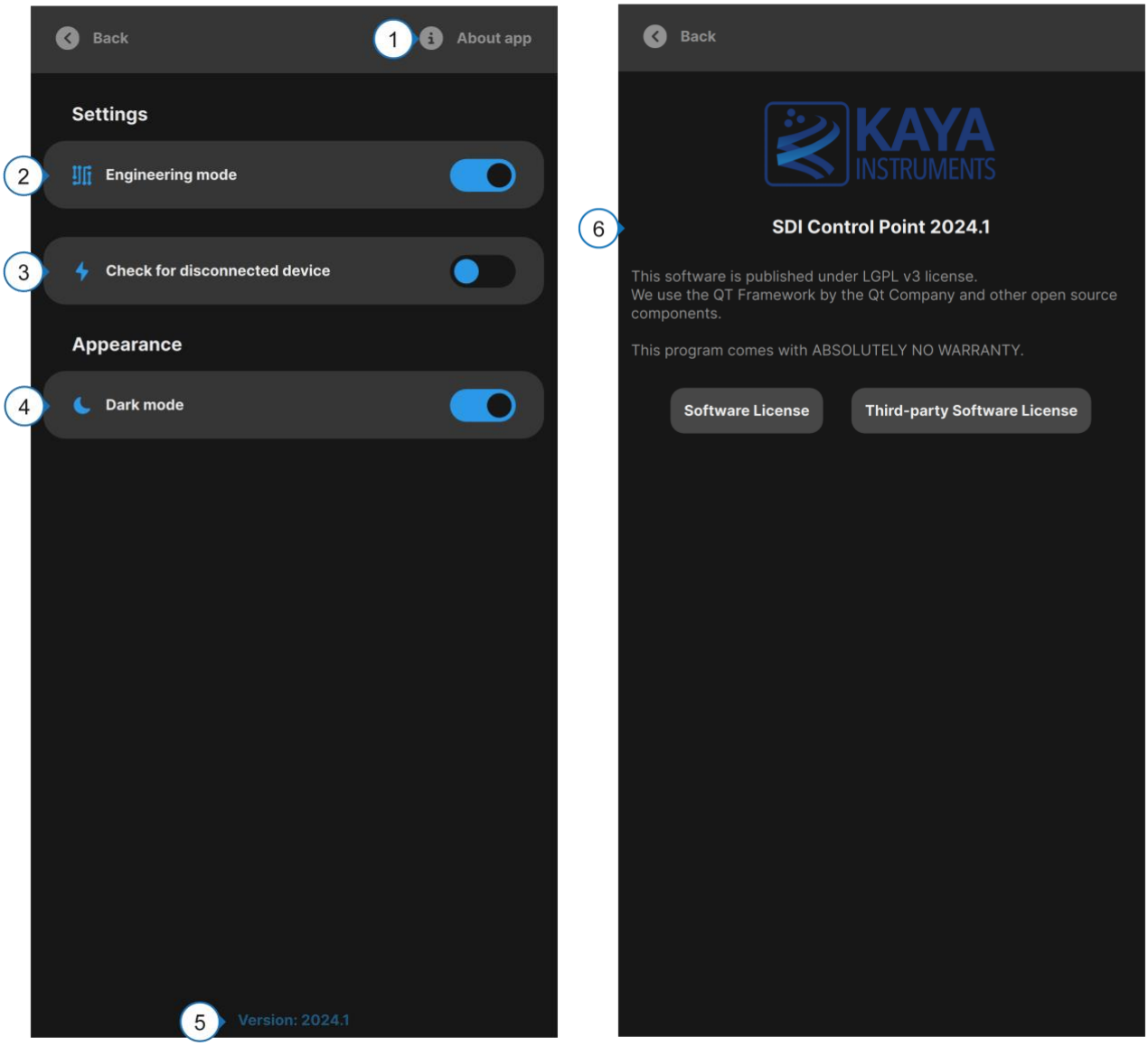


Figure 24 – System Setting

#	Description
1	Opens window with full information about app
2	Enable the engineering mode to display additional GUI features.
3	Enable a periodic connection check. If enabled the GUI will ping the connected device every 2 seconds. If device connection is lost, a dialog will be displayed.
4	Turn On and Off dark mode. By default, application uses a Dark mode.
5	Application version
6	Information about application (App version, Software license, Third-party Software license).

Table 25 – GUI System Setting legend

8.4 Debug Console

The Debug Console shows all commands which are send by the GUI. It can also be used to manually send commands to the device.

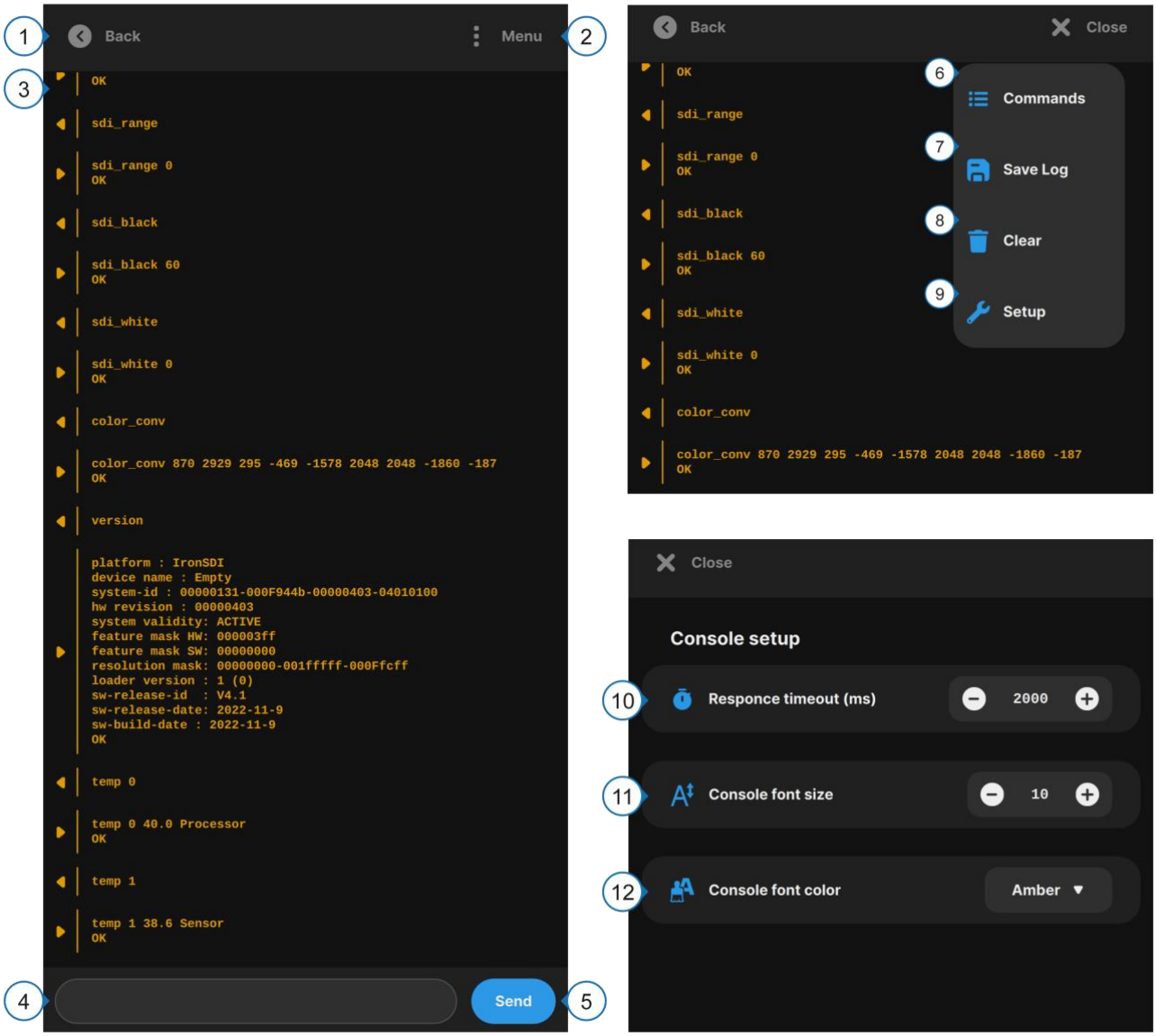


Figure 25 – Debug Console

#	Description
1	Go back to the Main window.
2	Open Debug Console menu.
3	History of send / received commands. [8]
4	The command line can be used to enter commands. [9]
5	Sends command to camera.
6	Displays a full list of supported camera commands.
7	Saves the current content of the Debug Console to a text file.
8	Clears the content of the Debug Console. Does not delete the command history.
9	Opens Setup where you can customize Response timeout, Console Font size and font color.

10	Specify a maximal timeout for command response (the default is 2000 ms) [9]
11	Adjusts the application's font size.
12	Adjusts the application's font color.

Table 26 – Debug Console legend

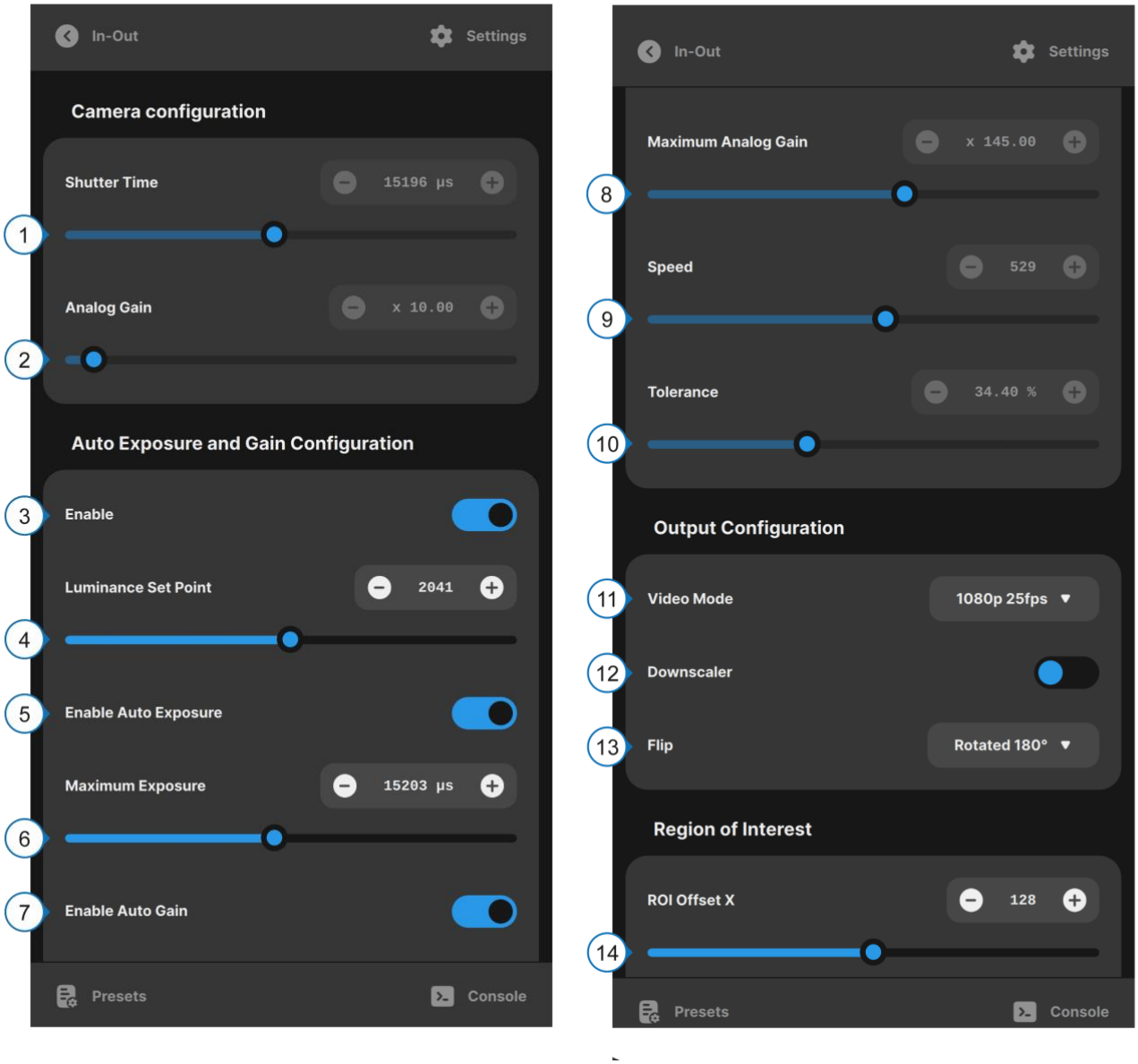
Notes:

8. The command line features a command history which can be accessed by pressing the Up and Down keys while the command line is active. Copying and pasting a list of commands is also possible. Please make sure that an appropriate command response wait time has been selected.
9. For most commands the default of 2000 ms is sufficient. For long commands like storing the DPCC table or enabling Genlock the wait time must be increased, or the device's answer won't be seen. If a script with multiple commands is run by pasting it into the command line a wait time which is long enough for the most time consuming command in the script is needed.

9 Features Toolset

Each tab focuses on a certain feature set of the device. Below is a list of all tabs currently available in the GUI.

9.1 In-Out Tab



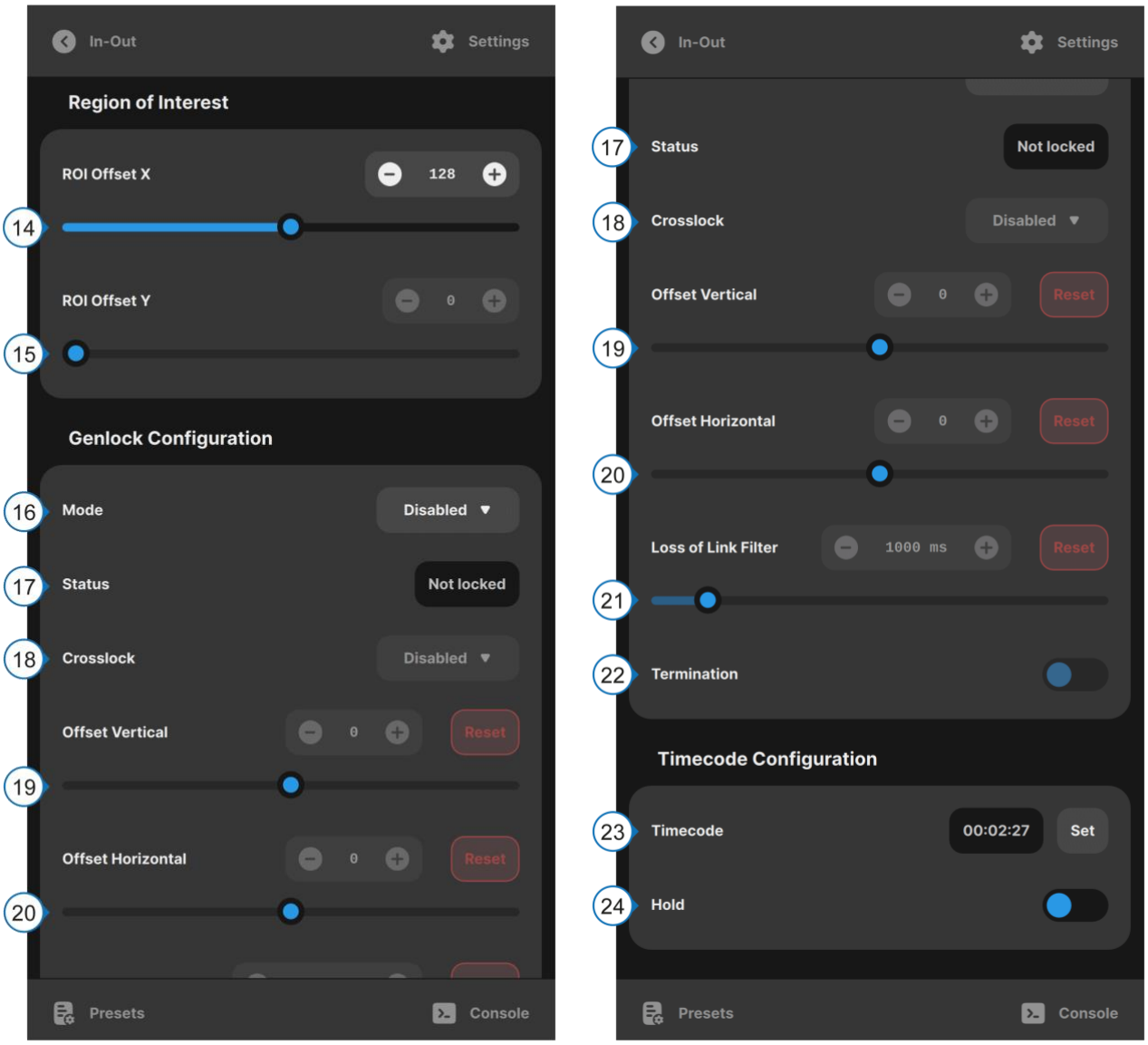


Figure 26 – In-Out tab

#	Description
1	Manually set the shutter time in microseconds. Can only be adjusted if auto exposure is disabled. The Combo Box and the "+" and "-" buttons to the right of the slider can be used to switch between common exposure time presets.
2	Manually set the sensor gain. Warning: Higher values will increase sensitivity but may introduce noise. Can only be adjusted if the auto-gain feature is disabled. The Combo Box and the "+" and "-" buttons to the right of the slider can be used to switch between common gain presets.
3	Enables auto exposure. This will automatically adjust shutter time and sensor gain. Can be turned off to use manual settings. Elements 4 to 10 will be available if enabled.
4	The target luminance is set by the setPoint, this will determine the target average image value. A higher setPoint results in a brighter exposed image.
5	Enables auto exposure. The algorithm calculates the average picture intensiveness inside the defined ROI and adjusts gain to meet the targeted luminance value.
6	Sets the maximal exposure time in microseconds.
7	Enables auto gain. The algorithm calculates the average picture intensiveness inside the defined ROI and tries to adjust it to desired luminance level by adjusting the gain.
8	Sets the maximal analog gain.
9	Sets the reaction time of the algorithm to changes. Acts as a low pass filter on the luminance update.
10	Sets the relative weight of the peak-brightness in setPoint calculation.

11	Sets the video mode (image resolution and video rate).
12	Set Downscaler format. Enables 4K to 2K downscaler for the first SDI output. This option is only available for 4K cameras, see the cameras reference manual for more details.
13	Sets the flip mode to mirror the image vertically, horizontally or both (rotate 180°).
14	Sets the absolute image ROI offset position across the sensor on the X axis.
15	Sets the absolute image ROI offset position across the sensor on the Y axis.
16	The genlock mechanism is used to synchronize multiple cameras video signals. The combo box allows to choose between genlock available modes.
17	Displays the current genlock status of the device.
18	Enables lock to tri-level signal source.
19	Adjust the vertical position offset which are added to the reference sync signal.
20	Adjust the horizontal position offset which are added to the reference sync signal.
21	The loss-of-link (lol) timeout can be configured to prevent glitches in the unstable genlock signal.
22	Termination of the genlock in/out.
23	Specifies new initial timecode value.
24	Holds the timecode at the same value which will result in image output with the last registered timecode. The timecode will continue to increase in the background. When hold is pressed again the new images' timecode will skip to the currently calculated timecode.

Table 27 – In-Out tab legend

9.2 Black Level Tab

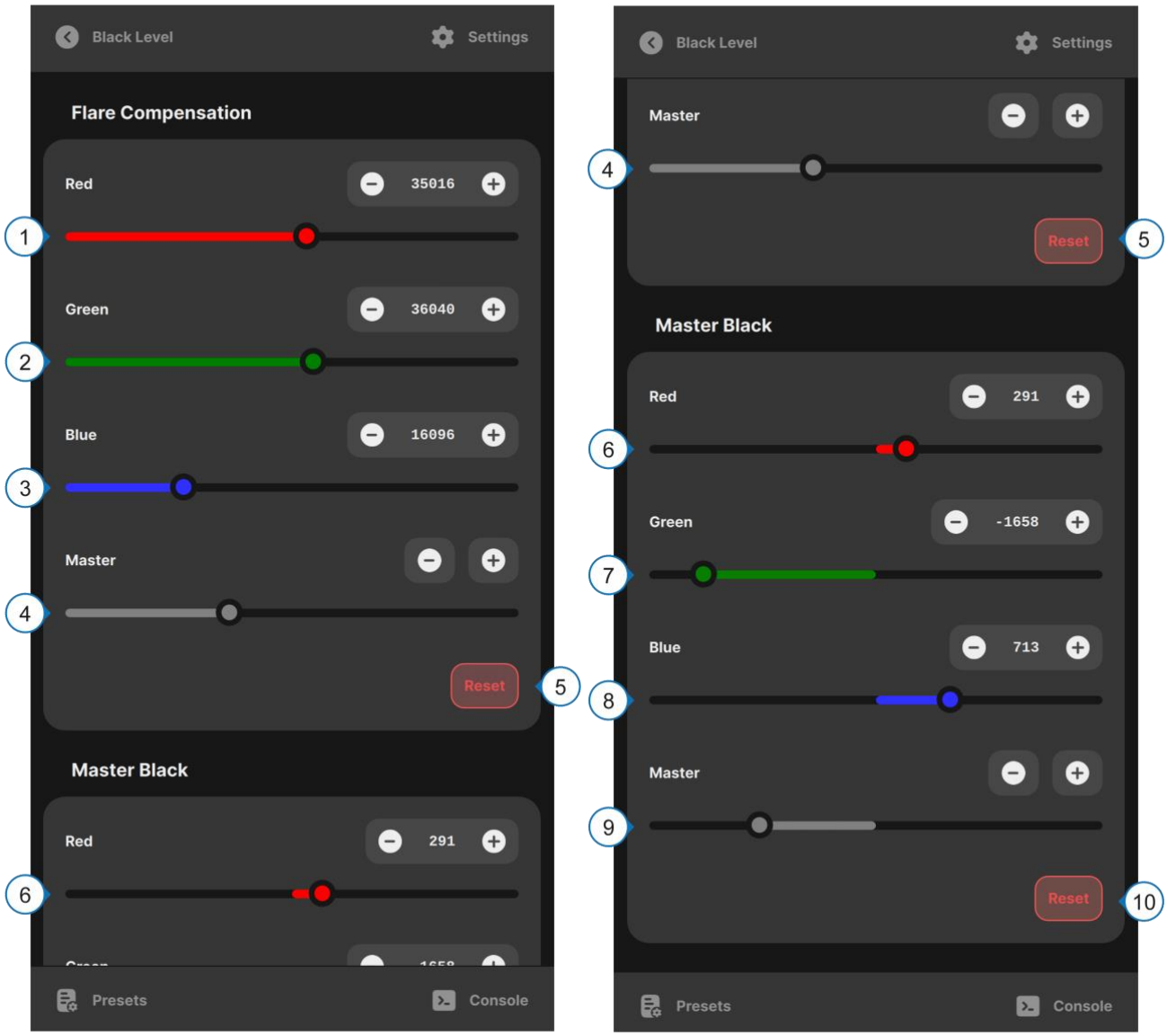


Figure 27 – Black Level tab

#	Description
1	Sensor black for each component separate.
2	Sensor black for all colors.
3	Resetting will set the Sensor black sliders to their default values.
4	Flare compensation (defog) for each component separate.
5	Flare compensation (defog) for all colors.
6	Resetting will set the Flare compensation sliders to their default values.
7	Master black for each component separate.
8	Master black for all colors.
9	Resetting will set the Master black sliders to their default values.

Table 28 – Black Level tab legend

9.3 White Balance Tab

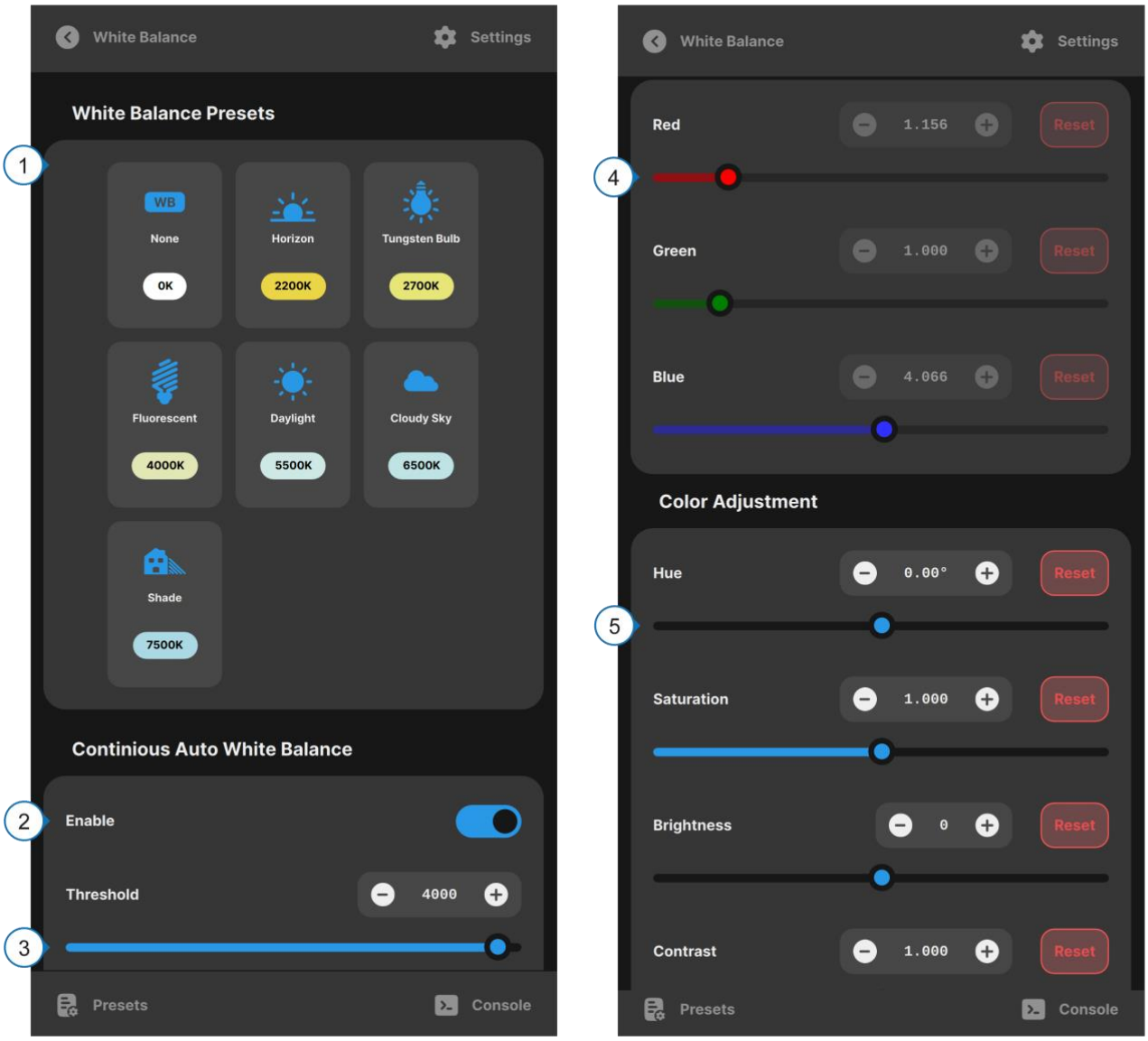


Figure 28 – White Balance tab

#	Description
1	White balance presets for different luminance scenes.
2	Enables continuous auto white balance.
3	Adds threshold maximum value configuration (0-4095) when the white balance compensation algorithm counts. Assists in calculation to omit over saturated pixels.
4	Manual red, green, blue gain.
5	Post processing: Hue, Saturation, Brightness, Contrast.

Table 29 – White Balance tab legend

9.4 Filter Tab

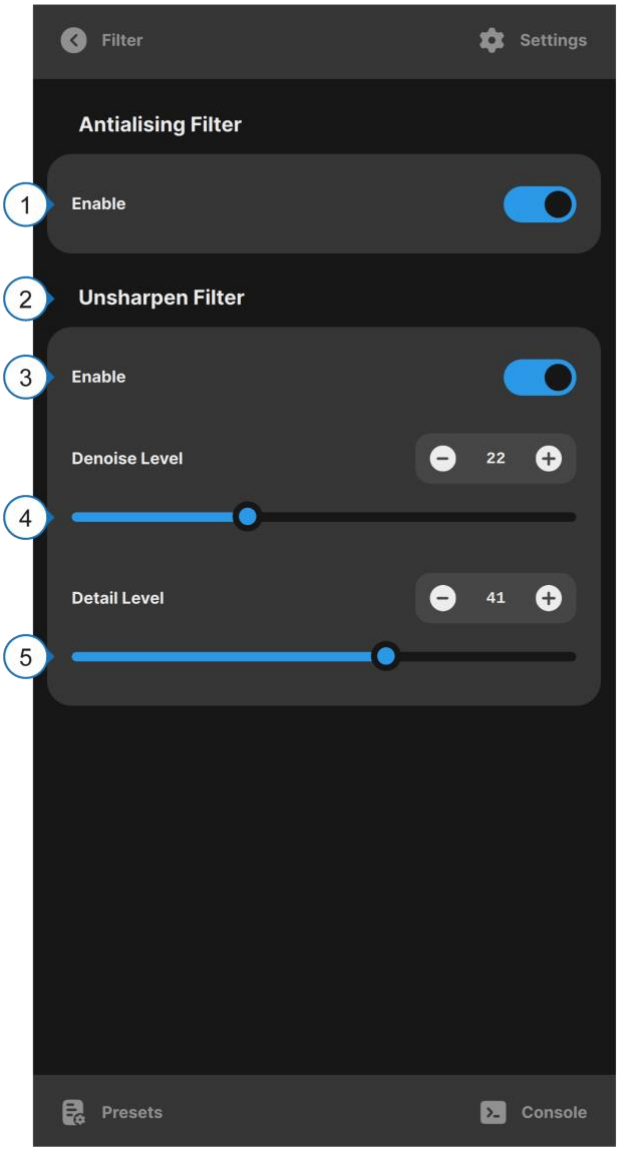


Figure 29 – Filter tab

#	Description
1	Enables Antialiasing filter.
2	Enables Denoise and Detail filters.
3	Set a higher denoise level filter for a cleaner image with less noise and detail.
4	Set a higher detail level to sharpen the image.

Table 30 – Filter tab legend

9.5 Multi Matrix Color Tab

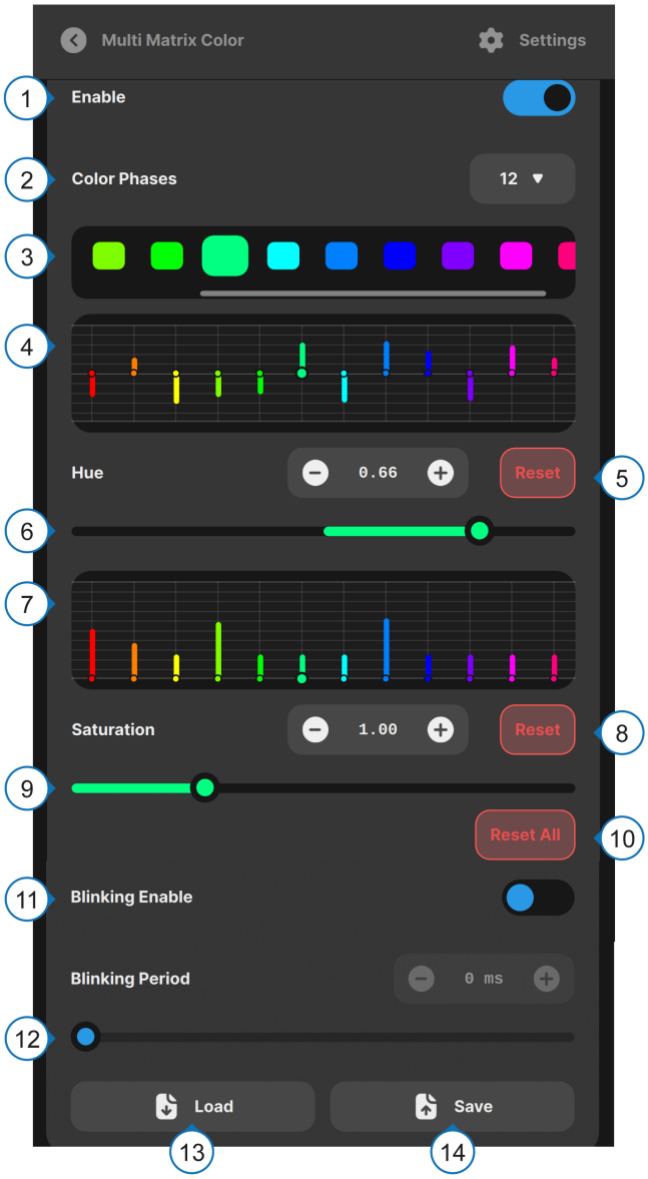


Figure 30 – Multi Matrix Color tab

#	Description
1	Enable / disable the multi matrix color controller.
2	Select the amount of phases (12, 16, 24 or 32). The more phases the finer you can tune the image color.
3	Toggle the blink button of a phase to make it blink in the output image to spot which colors the phase will effect.
4	The Hue Chart visually shows current color settings.
5	Resetting the hue will set the selected slider to its default values.
6	The hue sliders will move the color of the selected phase to the neighboring color.
7	The Saturation Chart visually shows current color settings.
8	Resetting the saturation will set the selected slider to its default values.
9	The saturation sliders make the selected phase more or less prominent.
10	Resetting the hue and the saturation will set the selected sliders to their default values.
11	Enable Blinking in the output image to spot which colors the phase will effect.

12	Set blinking period of the currently selected color phase.
13	Loads the current multi matrix color profile from a file.
14	Saves the current multi matrix color profile to a file.

Table 31 – Multi Matrix Color tab legend

9.6 Knee Function Tab

Figure 31 – Knee Function tab

#	Description
1	Graphical view of current knee settings.
2	Enable knee function.
3	Knee Point setting (point where the curve bends, indicated by the blue line in the plot).
4	White Clipping Point setting (maximum value of the knee function, indicated by the yellow line in the plot).
5	Knee Slope setting (angle of the first part of the knee function till the knee point).
6	Resetting will set the selected sliders to its default values.

Table 32 – Knee Function tab legend

9.7 Lookup Table Tab

There are three modes for lookup table configurations: “Fixed Gamma”, “Fast Gamma”, “Table Based Interpolation”.

Only one mode can be used at any given moment: selecting one will disable the others.

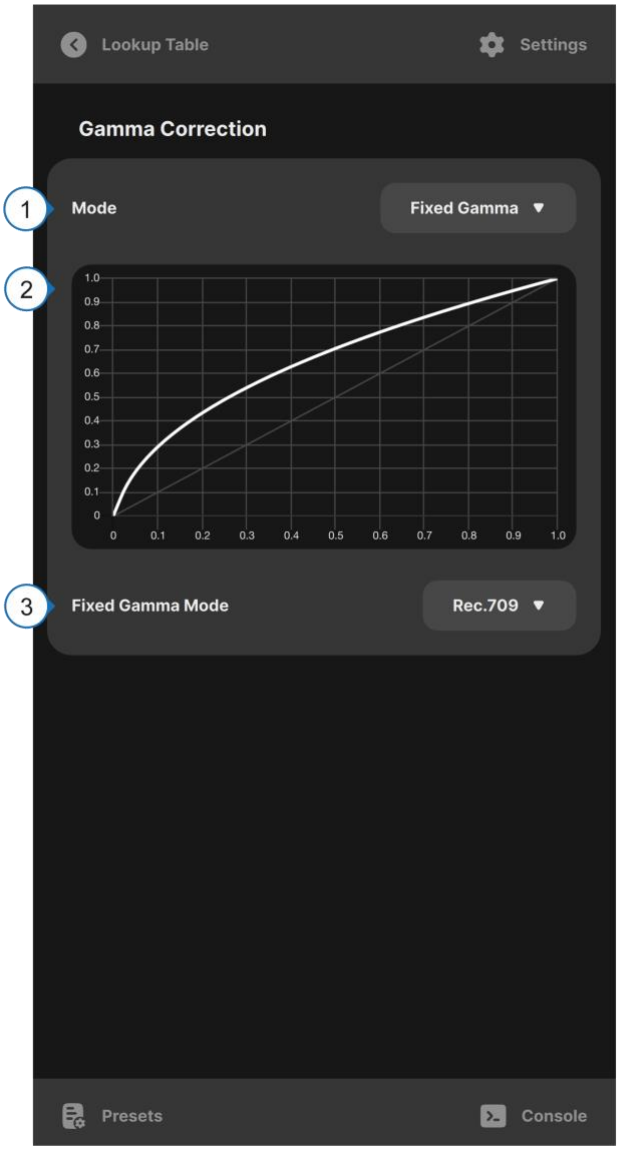


Figure 32 – Lookup Table tab (Fixed Gamma mode)

#	Description
1	Gamma channel selection. The RGB curves represent the LUT points for each color, while the master channel represents the combined points of all the colors. RGB channels are only available in “Table Based Interpolation”: In “Fast Gamma” and “Fixed Gamma” only the Master is shown.
2	Graphical representation of current gamma curve. In “Table-Based Interpolation”, adding a new sample point is done by clicking on the plot (up to 48 points). In “Fast Gamma” and “Fixed Gamma” modes the plot will become an un-editable preview of the gamma curve.
3	Enables “Fixed Gamma” mode where the gamma curve is set to a fixed preset. REC.709, REC.2100 PQ or REC.2100 HLG can be selected. PQ and HLG gamma curves are specified in ITU-R BY.2100 and can be used for HDR content.

Table 33 – Lookup Table tab legend (Fixed Gamma mode)

Figure 33 – Lookup Table tab (Fast Gamma mode)

#	Description
1	Gamma channel selection. The RGB curves represent the LUT points for each color, while the master channel represents the combined points of all the colors. RGB channels are only available in “Table Based Interpolation”: In “Fast Gamma” and “Fixed Gamma” only the Master is shown.
2	Graphical representation of current gamma curve. In “Table-Based Interpolation”, adding a new sample point is done by clicking on the plot (up to 48 points). In “Fast Gamma” and “Fixed Gamma” modes the plot will become an un-editable preview of the gamma curve.
3	Changes the gamma value.
4-9	Fine tunes the parameters to generate a custom de-gamma curve. By default, the parameters in this box are set to generate a standard REC.709 de-gamma curve.

Table 34 – Lookup Table tab legend (Fast Gamma mode)

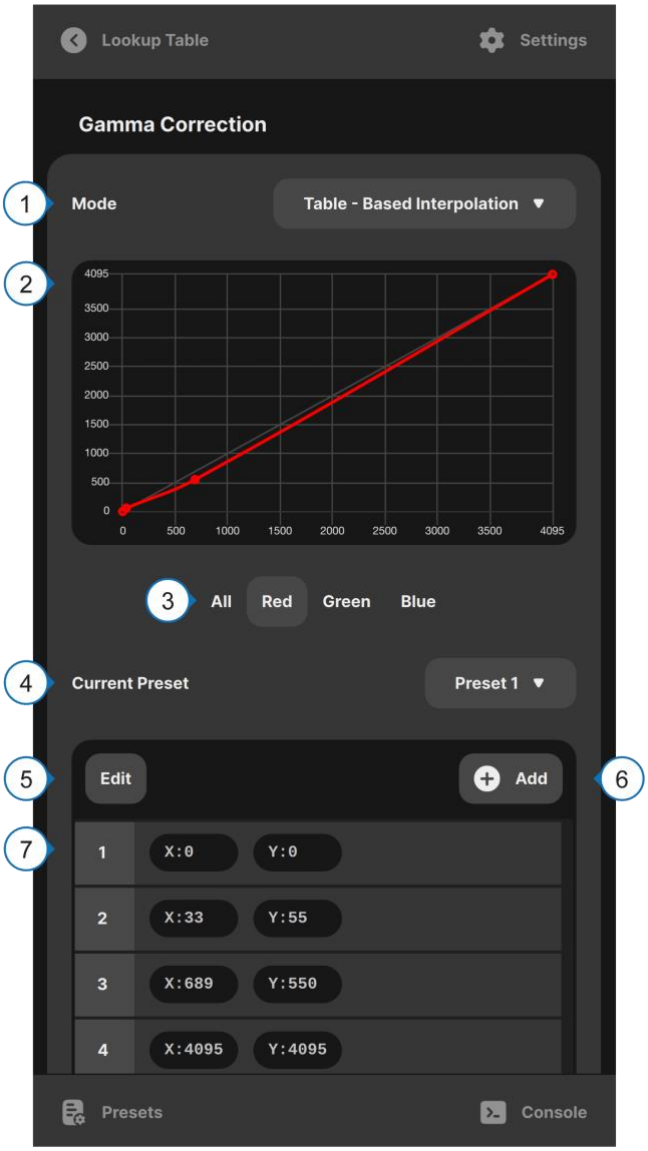


Figure 34 – Lookup Table tab (Table-Based-interpolation)

#	Description
1	Gamma channel selection. The RGB curves represent the LUT points for each color, while the master channel represents the combined points of all the colors. RGB channels are only available in “Table Based Interpolation”: In “Fast Gamma” and “Fixed Gamma” only the Master is shown.
2	Graphical representation of current gamma curve. In “Table-Based Interpolation”, adding a new sample point is done by clicking on the plot (up to 48 points). In “Fast Gamma” and “Fixed Gamma” modes the plot will become an un-editable preview of the gamma curve.
3	Changes the current channel
4	Stores up to 5 different tables of sample points. The storage selector can be used to switch between them.
5	Adds points to the plot.
6	Removes selected points from the plot.
7	List of added points.
8	Loads the current multi matrix color profile from a file.
9	Saves the current multi matrix color profile to a file.

Table 35 – Lookup Table tab legend

9.8 Defect Pixel Correction Tab

Figure 35 – Defect Pixel Correction tab (full version)

#	Description
1	Enables the defect pixel correction module.
2	Enable Table of defect pixel positions editing (edit or remove the selected position from the table).
3	Adds a coordinate representing a dead pixel entry to the table.
4	Table of defect pixel positions.
5	Imports a CSV file with the defect pixel table.
6	Exports a CSV file with the defect pixel table.

Table 36 – Defect Pixel Correction tab legend (full version)

9.9 Statistics ROI Tab

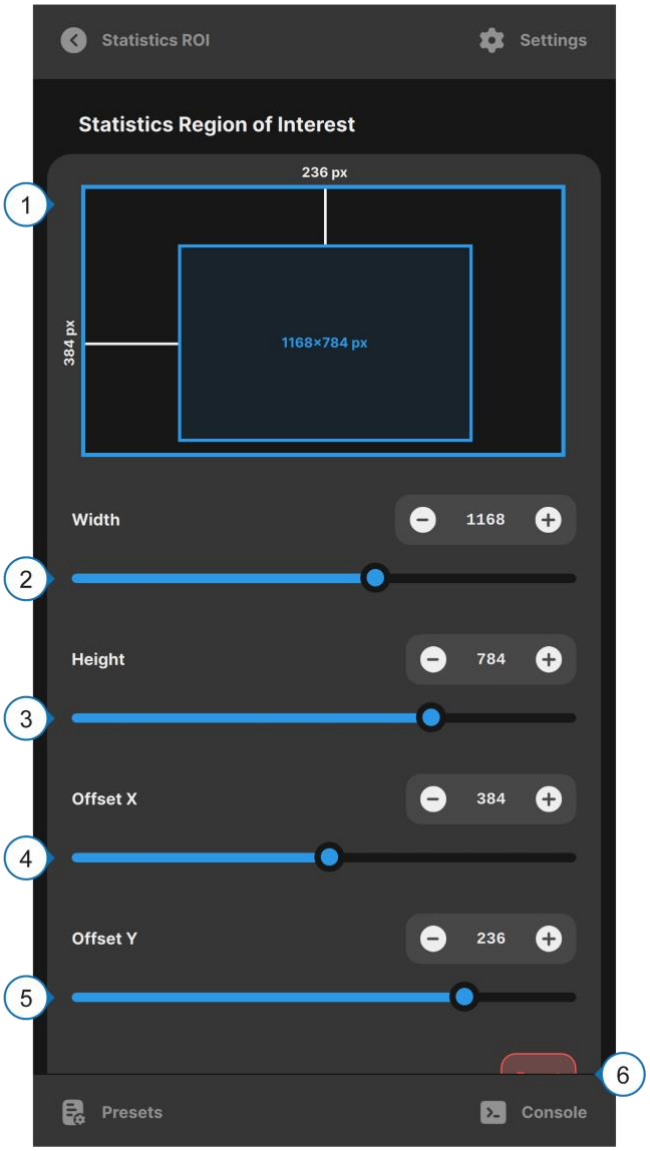


Figure 36 – Statistics ROI tab

#	Description
1	Visually represents the selected statistics ROI in relation to the full visible output image.
2	Sets the width, in pixels, of the statistics ROI.
3	Sets the height, in rows, of the statistics ROI.
4	Sets the offset X, in pixels, representing the offset between the output image X axis origin and the beginning of the statistics ROI.
5	Sets the offset Y, in lines, representing the offset between the output image Y axis origin and the beginning of the statistics ROI.
6	Resets the statistics ROI to full resolution of current visible output image.

Table 37 – Statistics ROI tab legend

9.10 SDI Output Tab

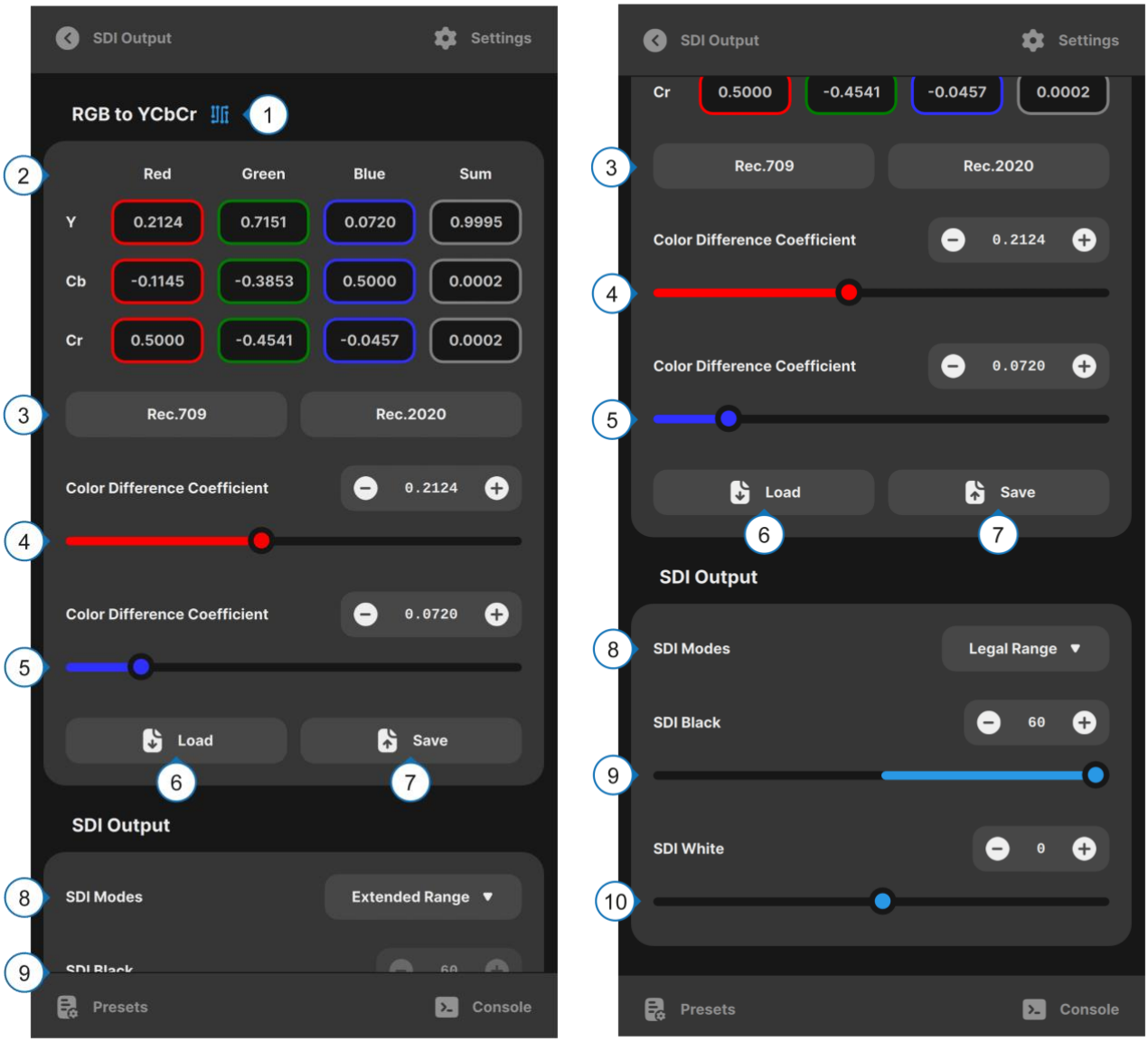


Figure 37 – SDI Output tab

#	Description
1	Icon shows that Engineering mode is On.
2	Shows the values of current color conversion matrix. [10]
3	Lists presets for color conversion. Default is Rec.709, Rec.2020 is usually used for UHD video\ HDR content. [10]
4	Fine tunes the matrix red balance. [10]
5	Fine tunes the matrix blue balance. [10]
6	Loads the color conversion matrix from a file. [10]
7	Saves the color conversion matrix to a file.
8	Sets SDI output range to legal or extended. In legal range mode, the black and white levels can be fine-tuned (see below).
9	Sets SDI black level (extend dynamic).
10	Sets SDI while level (extend dynamic).

Table 38 – SDI Output tab legend

Notes:

10. Settings which can be accessed by Engineering mode.

9.11 Info Tab

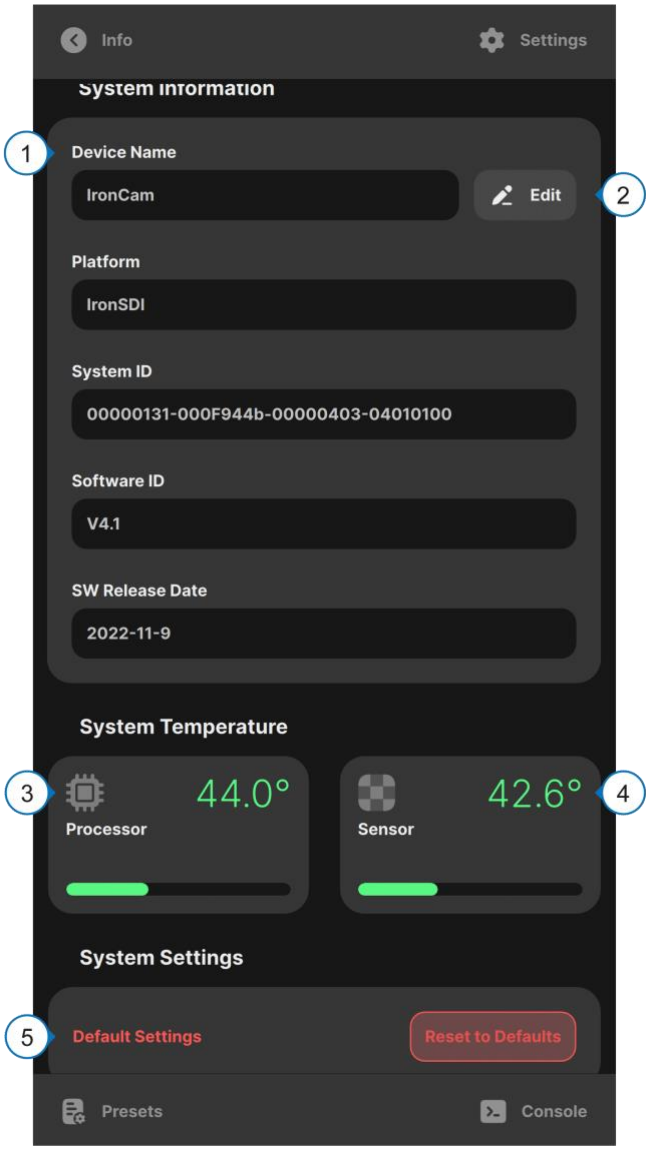


Figure 38 – Info tab

#	Description
1	General information about the connected device is shown in the system information box.
2	Edit device name.
3	Information about the operating temperature of the processor.
4	Information about the operating temperature of the sensor.
5	Reset to Default settings. Use this to reset all settings to factory defaults. Please note that this will drop any current camera configurations! Current setting should be saved separately before performing a full reset, to be re-used later.

Table 39 – Info tab legend

9.12 Firmware Update Tab

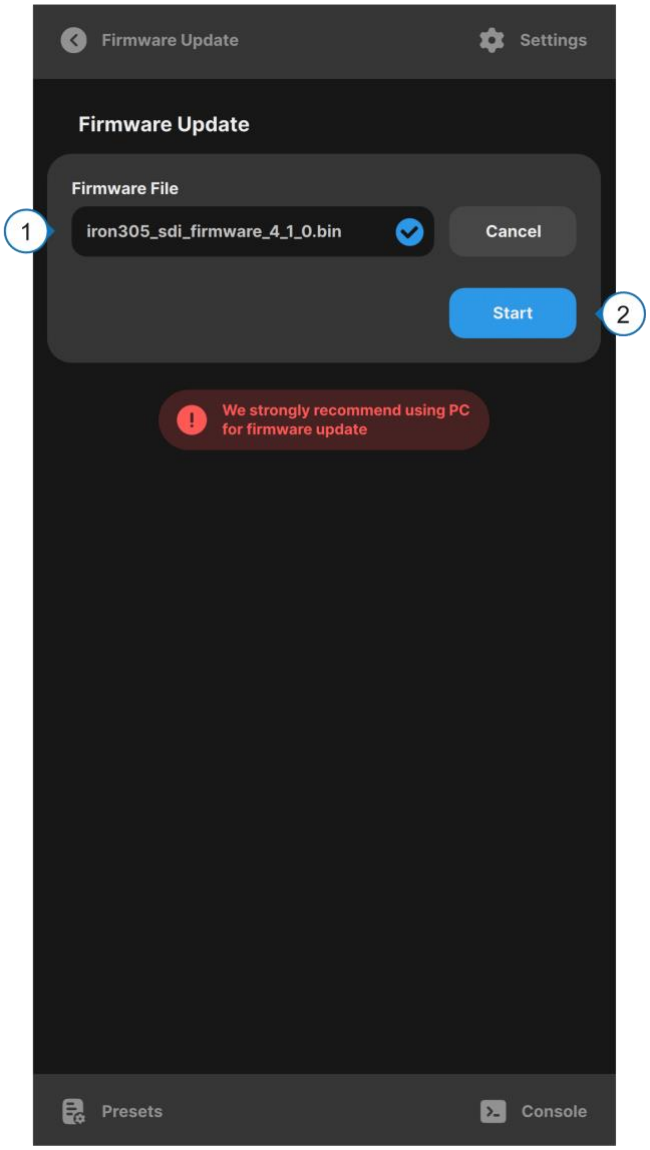


Figure 39 – Firmware Update tab

#	Description
1	Click this field to choose a firmware update file. Make sure to use an official firmware update .bin file provided by KAYA Instruments, for the specific camera device.
2	Initiates the update process.

Table 40 – Firmware Update tab legend