MANUAL

$ aaru65 --help

📎 **Edit Record**

Time stamp/ Edition	Changes
1668012682/1	Initial release
1680347909/2	Massive changes
1680347909/4	Added customizable fader hookup guide

Follow the instuction below to install flex cable, improper installation may damage your board.

[Step 1] Open the black actuator from the back of the connector.
[Step 2] insert the flex cable in and make sure you can see ▥ pattern on the cable, then push the actuator back to its original position.

CONT
ENTS

ANKH

The meaning of the image remains a mystery to ancient Egyptologists. Some experts believe it is a uterine figure, but this theory is not fully accepted. The British Egyptologist Alan Gardner speculates that it was an image of a loafer buckle, with a loop around the ankle.

Symbols of life often appeared in ancient Egyptian cemeteries and art. In the images, the fingers of the god who gave life to the mummy are often painted with symbols of life. The ancient Egyptians used the symbol of life as a talisman, sometimes adding two more letters for "strength" and "health." Mirrors are also often made in the shape of symbols of life.

LAYOUTS and KECODES[01]

This chapter describes the layouts supported by Aaru65's two PCB versions and the factory settings for keycodes.

#Layouts

The PCB of Aaru65 comes in soldered and hot-swappable version.
Both versions support the ANSI layout.
In addition, the soldered version supports ISO layouts, 7U Spaces, split backspace keys, and stepped Caps lock. To select these options, make sure your plate is compatible with them.
The chart below plots these layouts.

• **Soldered and hotswap version: ANSI layout**
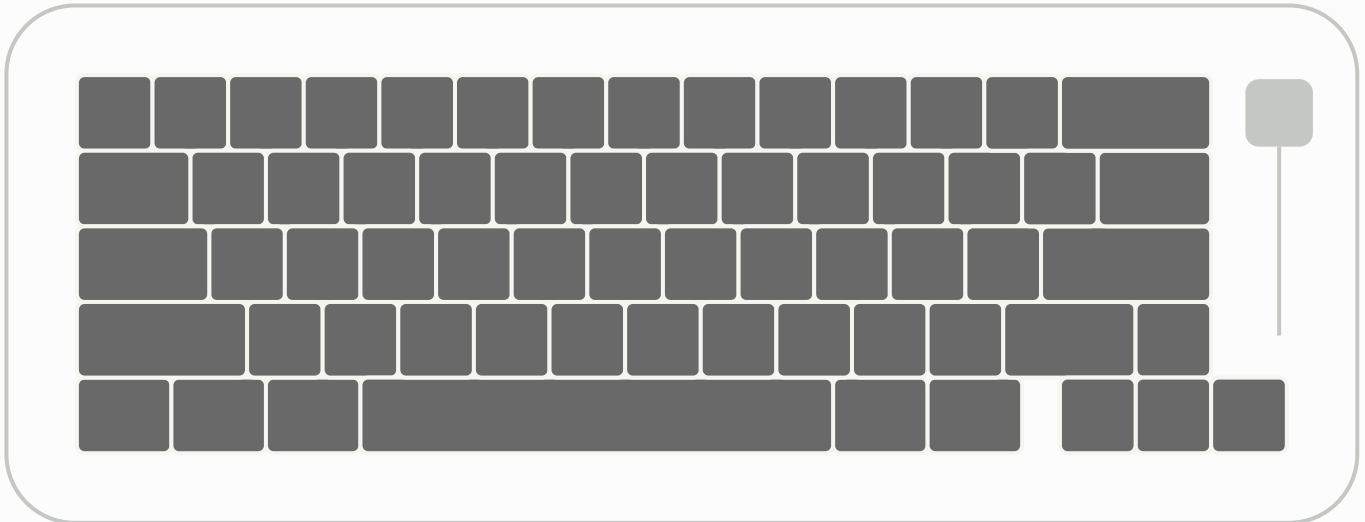
• **Soldered version: 7U, ISO and split backspace**
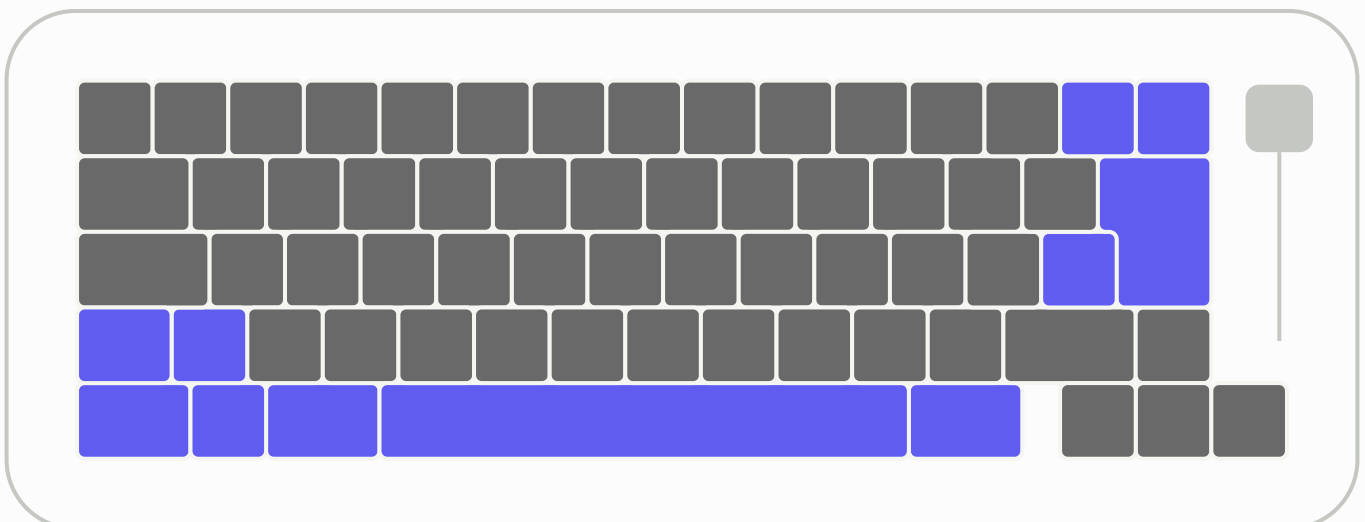
▲ The blue areas indicate how they differ from ANSI layouts

#Keycodes

A key code determines the function of a key.
If the factory key code is not the one you want or the location you want to change, refer to the "VIA" section of the Keyboard section.
The chart below plots the factory keycode table.

• **Keycodes of soldered version: ANSI layout**

esc	! 1	@ 2	# 3	$ 4	% 5	^ 6	& 7	* 8	(9	) 0	_ -	+ =	backspace
tab	Q	W	E	R	T	Y	U	I	O	P	{ [	}]	| \\
caps lock	A	S	D	F	G	H	J	K	L	: ;	" '		enter
left shift	Z	X	C	V	B	N	M	< ,	> .	? /	right shift		▲
left ctrl	left win	left alt						right alt	fn	◄	▼	►	

▲ The first layer

|	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	
	RGB_INDICATOR_ENABLE_TOGGLE	RGB_INDICATOR_MODE	RGB_INDICATOR_SELECT	RGB_INDICATOR_HUI	RGB_INDICATOR_SAI	RGB_INDICATOR_VAI		DEVICE_INFO					
	FADER_ENABLE_TOGGLE	FADER_REVERSE											
					NK_TOGG							page up	
CL_TOGG	GUI_TOG	AG_TOGG						fn		page down		

▲ The second layer
Hold fn to jump to the second layer, release fn to return to the first layer.
The ● marked key code sets the key for the RGB indicator, refer to the Lighting chapter.
The ● marked key code sets the key for the slider, see the Fader chapter.
The ● marked key code sets keys for user preferences, see the Keyboard chapter.

• Keycodes of soldered version: ANSI layout

esc	! 1	@ 2	# 3	$ 4	% 5	^ 6	& 7	* 8	(9	) 0	_ -	+ =	~ `	bksp

tab	Q	W	E	R	T	Y	U	I	O	P	{ [	}]	

caps lock	A	S	D	F	G	H	J	K	L	: ;	" ,	~ #	enter

left shift	| \\	Z	X	C	V	B	N	M	< ,	> .	? /	right shift	▲

left ctrl	left win	left alt		right alt	fn	◄	▼	►

▲ The first layer

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12		

| | RGB_INDICATOR_ ENABLE_ TOGGLE | RGB_ INDICATOR_ MODE | RGB_ INDICATOR_ SELECT | RGB_ INDICATOR_ HUI | RGB_ INDICATOR_ SAI | RGB_ INDICATOR_ VAI | | DEVICE_ INFO | | | | | |

| | FADER_ ENABLE_ TOGGLE | FADER_ REVERSE | | | | | | | | | | | |

| | | | | | | | NK_TOGG | | | | | | page up |

CL_TOGG	GUI_TOG	AG_TOGG							fn	page down

▲ The second layer
Hold fn to jump to the second layer, release fn to return to the first layer.
The ● marked key code sets the key for the RGB indicator, refer to the Lighting chapter.
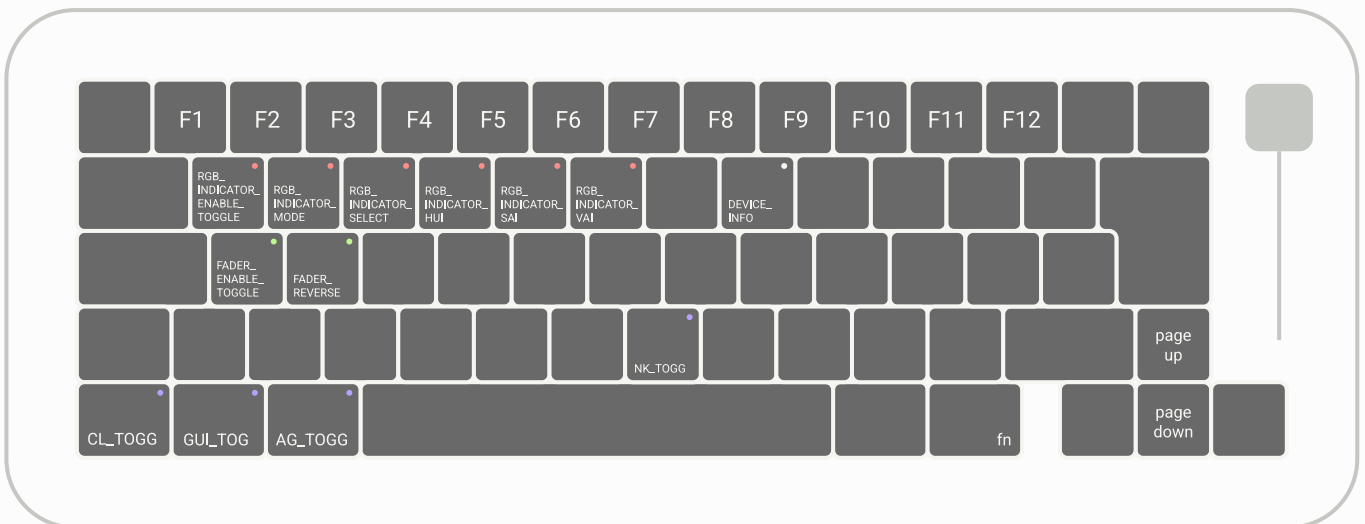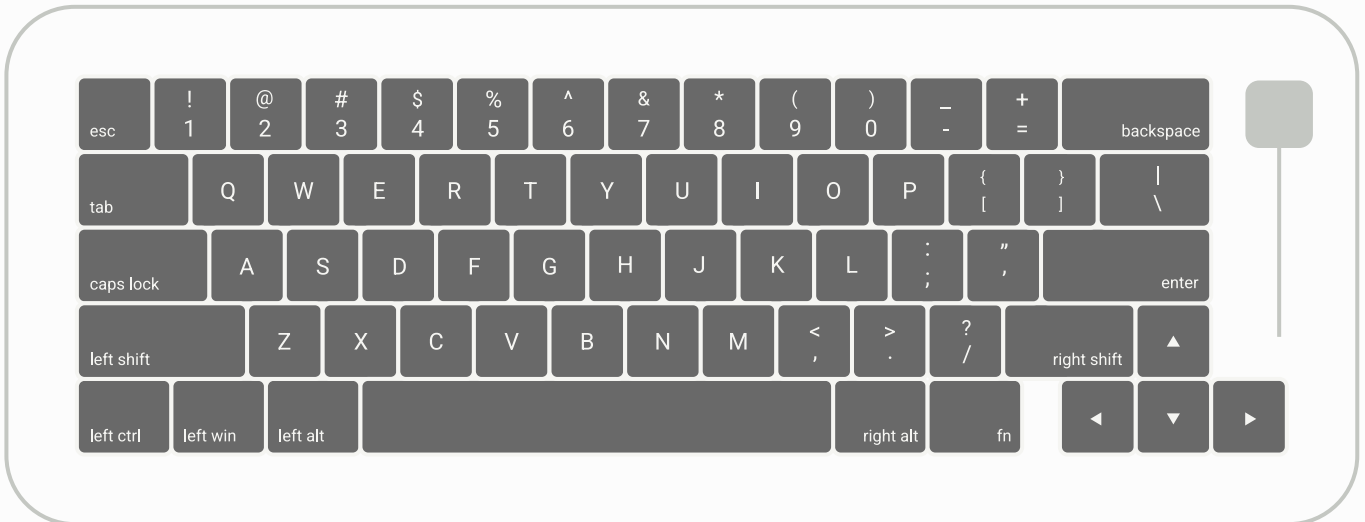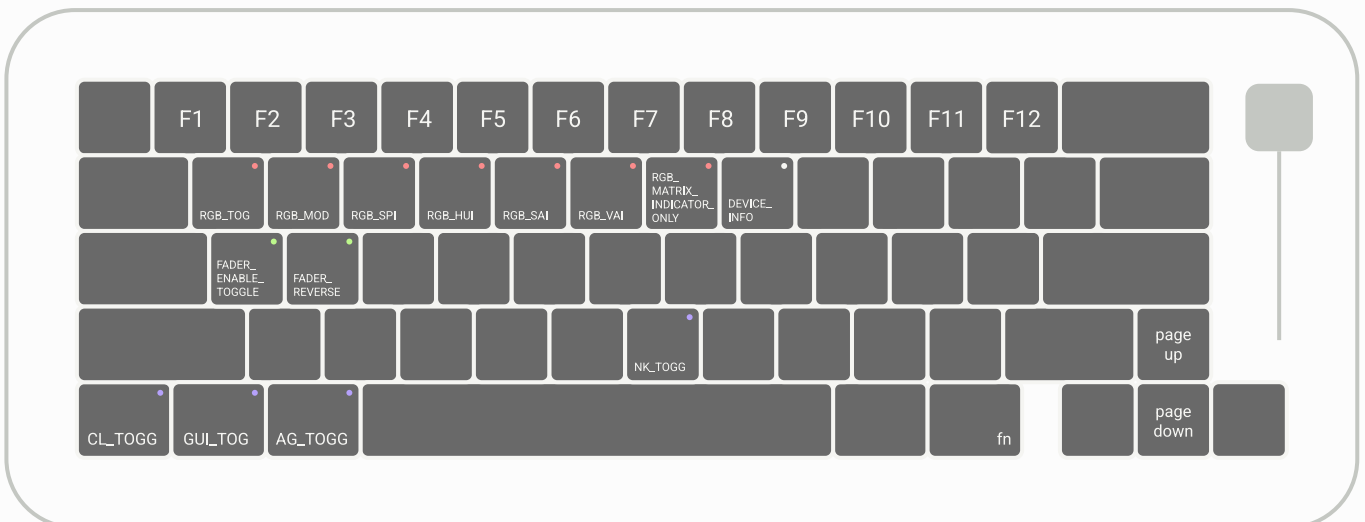The ● marked key code sets the key for the slider, see the Fader chapter.
The ● marked key code sets keys for user preferences, see the Keyboard chapter.

• Keycodes of hotswap version

esc	! 1	@ 2	# 3	$ 4	% 5	^ 6	& 7	* 8	(9	) 0	_ -	+ =	backspace
tab	Q	W	E	R	T	Y	U	I	O	P	{ [	}]	| \
caps lock	A	S	D	F	G	H	J	K	L	: ;	" '	enter
left shift	Z	X	C	V	B	N	M	< ,	> .	? /	right shift	▲
left ctrl	left win	left alt		right alt	fn	◀	▼	▶

▲ The first layer

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	
	RGB_TOG	RGB_MOD	RGB_SPI	RGB_HUI	RGB_SAI	RGB_VAI	RGB_MATRIX_INDICATOR_ONLY	DEVICE_INFO				
	FADER_ENABLE_TOGGLE	FADER_REVERSE										
							NK_TOGG					page up
CL_TOGG	GUI_TOG	AG_TOGG						fn		page down

▲ The second layer

Hold fn to jump to the second layer, release fn to return to the first layer.
The ● marked key code sets the key for the RGB indicator, refer to the Lighting chapter.
The ● marked key code sets the key for the slider, see the Fader chapter.
The ● marked key code sets keys for user preferences, see the Keyboard chapter.

Scarab

The scarab is an ancient Egyptian symbol or object carved to look like a scarab. Its most common use is as a talisman. The scarab is sometimes used on government seals as a symbol of royalty. By the early New Kingdom, scarabs were also placed in mummies' coffins, which were thought to protect the remains.

Because the scarab beetle's ball-rolling habit is close-ly associated with the ancient Egyptian sun god, Kabri, it has a certain religious significance. The scarab motif became popular throughout Egypt after it was used as an ornament during the first intermediate period, and later became a cultural icon throughout Egypt until the end of ancient Egypt.
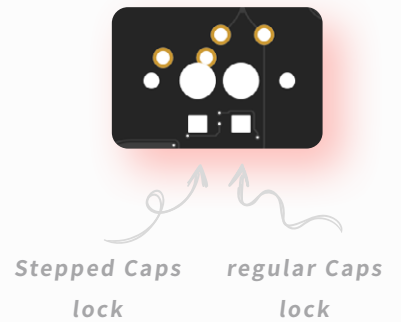
LIGHTING 06

Both the soldered and hot-swappable versions of Aaru65 feature RGB indicator to indicate caps lock status. The soldered version of the RGB indicator can be set to up to six effects, while the hotswap version of the RGB indicator effect changes with RGB matrix effects.
RGB matrix lights are unique to the hot-swappable version, with about 40 built-in lighting effects.

#Soldered • RGB indicator

The RGB indicator light of soldered version lights up when you hit the Caps lock key, visualizing the state of caps lock.
As shown in the picture on the right, the soldered version of the PCB has two RGB indicators, both located at the position of Caps lock. This is for better compatibility with the regular Caps lock keycaps and the stepped Caps lock keycaps, so please decide which LED to enable according to your situation.
You can customize the lighting effect of the indicator, choose one of the six lighting effects, or set the hue, saturation, and brightness (HSV) of the light.
Also, if you don't need to use the light, you can turn it off.
All settings are automatically memorized by Aaru65 and do not reset after power off.

Stepped Caps lock   *regular Caps lock*

• Lighting control instruction

The six keycodes above are the settings for the RGB indicator of the soldered version. See the Layouts and Keycodes chapter or Online Keycodes Table for where these keys are located.
Here's an explanation of what each keycode does, from left to right:

RGB_INDICATOR_ENABLE_TOGGLE
Turn off the RGB indicator function and press it again to enable it

RGB_INDICATOR_MODE
Switch to the next light effect

RGB_INDICATOR_SELECT
Switch to stepped Caps lock indicator, press it again to switch back

RGB_INDICATOR_HUI
Offset the hue of RGB indicator

RGB_INDICATOR_SAI
Increase the saturation of the RGB indicator and decrease the saturation while holding shift

RGB_INDICATOR_VAI
Increase the brightness of the RGB indicator and decrease the brightness while holding shift

• Lighting effects

The soldered version of the RGB indicator has six lighting effects, and the default effect is effect 6. Press `RGB_INDICATOR_MODE` to switch to the next effect.
The explanation of each light effect are as follows:

effect 1:
No special effect

effect 2:
Fade in

effect 3:
Fade out

effect 4:
Fade in and fade out

effect 5:
The light gradates in a certain hue range

effect 6:
Hue changes randomly, and has a fade in and fade out effect

• FAQs

1.   - Why does the indicator never turn on?
        - Press `RGB_INDICATOR_VAI` to increase the indicator brightness.

2.   - Can I set the fade time for the fade in and out effect?
        - Not at the moment.

3.   - The indicator can't seem to show red/green/blue pixels?
        - Please contact Helix Lab after sales.

4.   - What do the terms "hue" and "saturation" mean?
        - Hue refers to the tendency of colors, such as red, green, cyan. Saturation refers to the intensity of the hue.

5.   - Can I move the keys related to the RGB indicator to the position I want?
        - Of course. See the "VIA" section of the Keyboard chapter.

6.   - My issue is not listed?
        - Follow Debug chapter to find your issue, or contact Helix Lab after sales.

#Hotswap・RGB indicator

The RGB indicator of hotswap version lights up when you hit the Caps lock key, visualizing the state of the caps lock.
You can customize the hue, saturation, and brightness (HSV) of the indicator.
Since the indicator's keycodes are shared with RGB matrix system, it also turns off the indicator function when you turn off RGB matrix light, however, Aaru65 offers a specialized mode that retains the indicator function when RGB matrix is off.
All settings are automatically memorized by Aaru65 and do not reset after power off.

• Lighting control instruction

The seven keycodes above are the RGB matrix light keycodes of the hotswap version, and RGB matrix system shares these key codes with the RGB indicator. See the Layouts and Keycodes chapter or Online Keycodes Table for where these keys are located.
Here's an explanation of what each keycode does, from left to right:

RGB_TOG
Toggles RGB matrix light, and also toggle the RGB indicator

RGB_MOD
Switches RGB matrix light to the next lighting effect

RGB_SPI
Increases the animation speed of RGB matrix light, reduce the speed while holding shift (does not affect RGB indicators)

RGB_HUI
Shifts the hue of RGB matrix light, and also shifts the hue of RGB indicator

RGB_SAI
Increases the saturation of RGB matrix light, decrease the saturation while holding shift, and also affect the saturation of RGB indicator

RGB_VAI
Increases the brightness of RGB matrix light, reduce the brightness while holding shift, and also affect the brightness of RGB indicator

RGB_MATRIX_INDICATOR_ONLY
Turns off RGB matrix light, but unlike RGB_TOG, this key code does not turn off the RGB indicator light. To exit the mode, press RGB_MOD

• FAQs

1.   - Why does the indicator never turn on?
   - Press `RGB_VAI` to increase the indicator brightness.

2.   - Is it possible to keep the indicator light function while disabling RGB matrix light?
   - Yes. The `RGB_MATRIX_INDICATOR_ONLY` key can do the trick. Please refer to the previous page.

3.   - The indicator can't seem to show red/green/blue pixels?
   - Please contact Helix Lab after sales.

4.   - Can I change the position of RGB indicator?
   - Please contact Helix Lab after sales for firmware customization.

5.   - What do the terms "hue" and "saturation" mean?
   - Hue refers to the tendency of colors, such as red, green, cyan. Saturation refers to the intensity of the hue.

6.   - Can I move the keys related to the RGB indicator to the position I want?
   - Of course. See the "VIA" section of the [Keyboard](#) chapter.

7.   - My issue is not listed?
   - Follow [Debug](#) chapter to find your issue, or contact Helix Lab after sales.

#Hotswap · RGB matrix

Hotswap version's RGB matrix system contain a variety of lighting effects.
You can switch among about 40 lighting effects and customize the animation speed, as well as hue, saturation and brightness (HSV).
Users can either adjust the RGB matrix light settings directly on the keyboard through the relevant keys, or visually adjust them in VIA.
Fn + slider can also adjust the brightness of the RGB matrix light.
All settings are automatically memorized by Aaru65 and do not reset after power off.

· Lighting control instruction

The seven keycodes above are the RGB matrix light keycodes of the hotswap version, and RGB matrix system shares these key codes with the RGB indicator. See the Layouts and Keycodes chapter or Online Keycodes Table for where these keys are located.
Here's an explanation of what each keycode does, from left to right:

RGB_TOG
Toggles RGB matrix light, and also toggle the RGB indicator

RGB_MOD
Switches RGB matrix light to the next lighting effect

RGB_SPI
Increases the animation speed of RGB matrix light, reduce the speed while holding shift (does not affect RGB indicators)

RGB_HUI
Shifts the hue of RGB matrix light, and also shifts the hue of RGB indicator

RGB_SAI
Increases the saturation of RGB matrix light, decrease the saturation while holding shift, and also affect the saturation of RGB indicator

RGB_VAI
Increases the brightness of RGB matrix light, reduce the brightness while holding shift, and also affect the brightness of RGB indicator

RGB_MATRIX_INDICATOR_ONLY
Turns off RGB matrix light, but unlike RGB_TOG, this key code does not turn off the RGB indicator light. To exit the mode, press RGB_MOD

• **FAQs**

1.   - Why does the light never turn on?
        - Press `RGB_VAI` to increase the brightness.

2.   - Is it possible to keep the indicator light function while disabling RGB matrix
        light?
        - Yes. The `RGB_MATRIX_INDICATOR_ONLY` key can do the trick. Please refer to
        the previous page.

3.   - Some LEDs don't light up or can't show red/green/blue pixels?
        - Please contact Helix Lab after sales.

4.   - What do the terms "hue" and "saturation" mean?
        - Hue refers to the tendency of colors, such as red, green, cyan. Saturation
        refers to the intensity of the hue.

5.   - When the computer is shut down, the lights is still on?
        - Depending on your computer's BIOS setup, some USB ports can power
        devices plugged into them even when the computer is shut down, Aaru65 will
        automatically turn off its lights after 20 minutes of inactivity.

6.   - When I turned the lights to white color, the computer suddenly disconnected
        Aaru65?
        - Increase the brightness of the light or turn them to white color will make
        Aaru65 power hungry.
        If your USB port is a legacy USB Type-A port or a USB HUB, it may causing the
        computer to think a short-circuiting device is connected and disabled it for
        security reasons.
        When your computer no longer recognizes the keyboard, you can
        plug your Aaru65 into a charger, turn down the brightness, then plug it
        back into your computer.

7.   - I've set the light to its maximum brightness, but I still don't think it's
        bright enough?
        - You can choose to use switches with better light transmittance.

8.   - Can I move the keys related to the RGB indicator to the position I want?
        - Of course. See the "VIA" section of the Keyboard chapter.

9.   - My issue is not listed?
        - Follow Debug chapter to find your issue, or contact Helix Lab after sales.

Anubis

Anubis was associated with mummification and was the guardian of the dead on their journey to the afterlife. He is usually described as a male with the head of a jackal, but is also described as a jackal wearing a ribbon, with his forearms bent in the shape of a flail.

According to drawings in the Book of the Dead, priests often wore jackal masks to support upright mummies during the burial rituals of mummification. Anubis was the ancient Egyptian god of the dead. For this reason, some priests wear Anubis masks during mummification or burial ceremonies to symbolize that Anubis leads the work and protects the dead.

FADER 13

Aaru65 is equipped with a Fader for both soldered and hotswap versions, which is designed to output MIDI signals.
Aaru65's fader enables professional users to perform the same functions that MIDI provides, users can also map MIDI signals into various functions to improve work efficiency.

#How the fader works

MIDI is a communication protocol that is most widely used in music field.
On Aaru65, whenever the slider is moved, the micro chip sends MIDI packets via USB to the host. If you want to map signals to personalized system controls such as volume, you will need to install MIDI signal mapping software like MIDI Mixer.

• Test MIDI signals

MIDI data sent by Aaru65 is detectable by the host, so you can monitor MIDI data by opening midimonitor.com with a browser.
You'll see that Aaru65 sends data on channels 1 and CC0, and the value varies between 0 and 127 as the fader moves.

• FAQs

1.   - Why can't my fader adjust the volume?
        - You need software that translates MIDI signals into system controls such as volume, see the sections later in this chapter. The software should be run in the background of your OS.

2.   - Why must MIDI be used? Can't you just control the volume?
        - The slider has a physical boundary, which determines that it outputs an absolute value rather than a relative value, so the position of the slider must be synchronized with the current position of the computer volume, and MIDI acts as an intermediary between the two.

3.   - My computer seems unable to recognize the Aaru65 as a MIDI device?
        - Open your device manager, and Aaru65 should appear in the "Sound, Video, and Game Controllers" category. If they have yellow question marks or exclamation marks, right-click and select "Update Driver".

4.   - Can you change the channel value or CC value of MIDI output data?
        - Yes. You can find the "Fader" block in VIA to set this up. See the "VIA" section in the Keyboard chapter.

5.   - Why moving the fader make the keyboard unresponsive?
        - If you do not have any software running on your computer that can read MIDI data, it is not recommended moving the fader, which may cause the keyboard to become unresponsive. This does not happen if you are already running software that can read MIDI data.

9.   - My issue is not listed?
        - Follow Debug chapter to find your issue, or contact Helix Lab after sales.

#Fader settings

By pressing keycodes, Aaru65 disables or inverts the output value of the fader, you can also visually adjusts these settings in VIA.

For professional users who want to change the channel values and CC values of the data, see the 4th question in FAQs on the previous page.

All settings are automatically memorized by Aaru65 and do not reset after power off.

• **Fader control instruction**

The two keycodes above is the fader controlling keycodes. See the Layouts and Keycodes chapter or Online Keycodes Table for where these keys are located.

Here's an explanation of what each keycode does, from left to right:

FADER_ENABLE_TOGGLE
Toggles the data output of fader

FADER_REVERSE
Invert the output value of fader, press it again to cancel the inversion

#MIDI Mixer

The MIDI Mixer translates the MIDI signal received by the host into a variety of system controls, making it ideal for mapping Aaru65's slider data to system volume controls.
MIDI Mixer is currently only available for Windows, so system volume control is not available for macOS.

• MIDI Mixer configuration

[Step 1] Insert AARU65 keyboard and download MIDI Mixer from midi-mixer.com, or install it from Windows App Store.
[Step 2] Install and open MIDI Mixer.
[Step 3] Open a web browser on your computer, paste the following address in the address bar and press enter
midi-mixer://share/f0f3182af521c7baf197cfe5879672cd
This address opens MIDI Mixer and automatically loads Aaru65's configuration.
Allow MIDI Mixer to open if your browser asks.
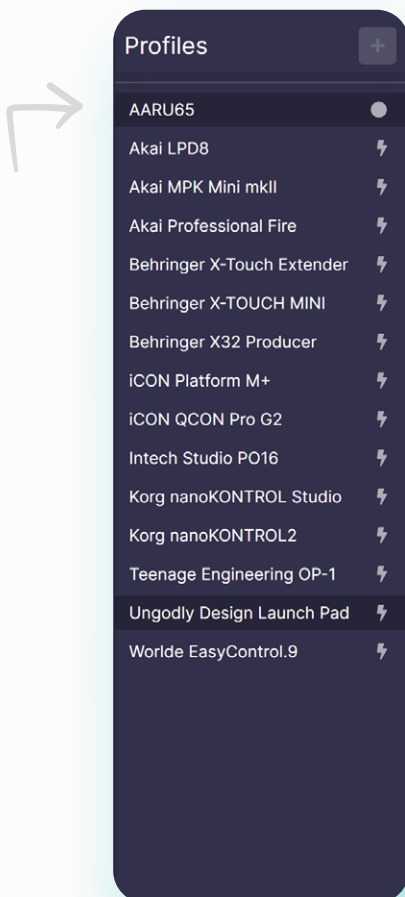
As shown on the left, the configuration for AARU65 has been added to the MIDI Mixer. Left-click to select it.
If MIDI Mixer does not automatically refresh "AARU65", click any button in the Profiles list to refresh，alternatively, restart MIDI Mixer.

Profiles +

AARU65
Akai LPD8
Akai MPK Mini mkII
Akai Professional Fire
Behringer X-Touch Extender
Behringer X-TOUCH MINI
Behringer X32 Producer
iCON Platform M+
iCON QCON Pro G2
Intech Studio PO16
Korg nanoKONTROL Studio
Korg nanoKONTROL2
Teenage Engineering OP-1
Ungodly Design Launch Pad
Worlde EasyControl.9

[Step 4] Select "AARU65" from the "Input" drop-down menu.
If "AARU65" does not appear in this menu, restart the MIDI Mixer and be sure to connect your keyboard before the MIDI Mixer opens.
(If MIDI Mixer does not display the main interface after restarting, it may be hidden in the taskbar. Please click the icon from the taskbar to access the main interface of the software)
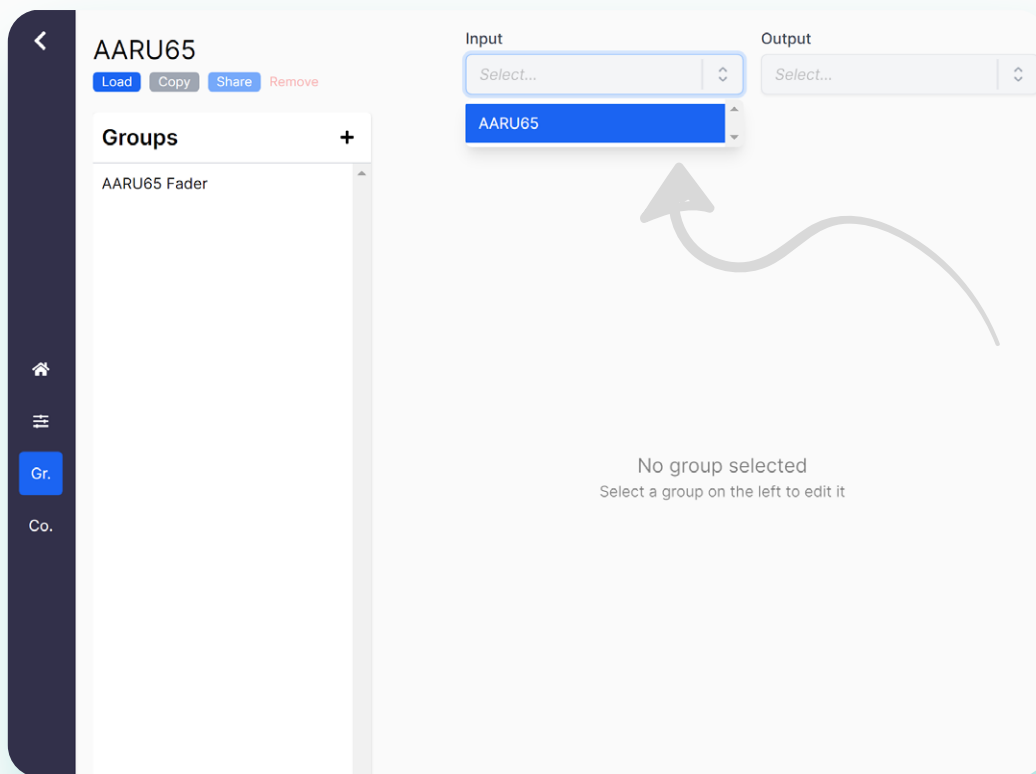

[Step 5] Click the "Load" button.
If it goes well, you will see a green dot appear next to AARU65 in Profiles on the left.
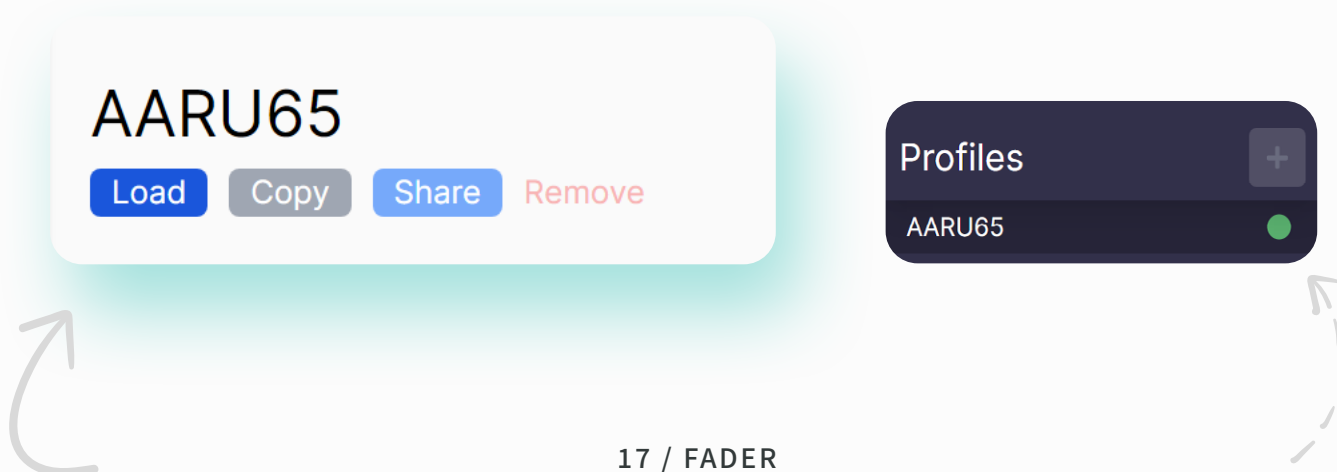
[Last step] As shown below, click the icon on the left to enter the binding interface, and then select the item to be bound from the drop-down menu on the right.
If you want to control the global volume of your system, you should usually select Speaker.
You can also try other items, such as only controlling the volume of Chrome when you select "Chrome".
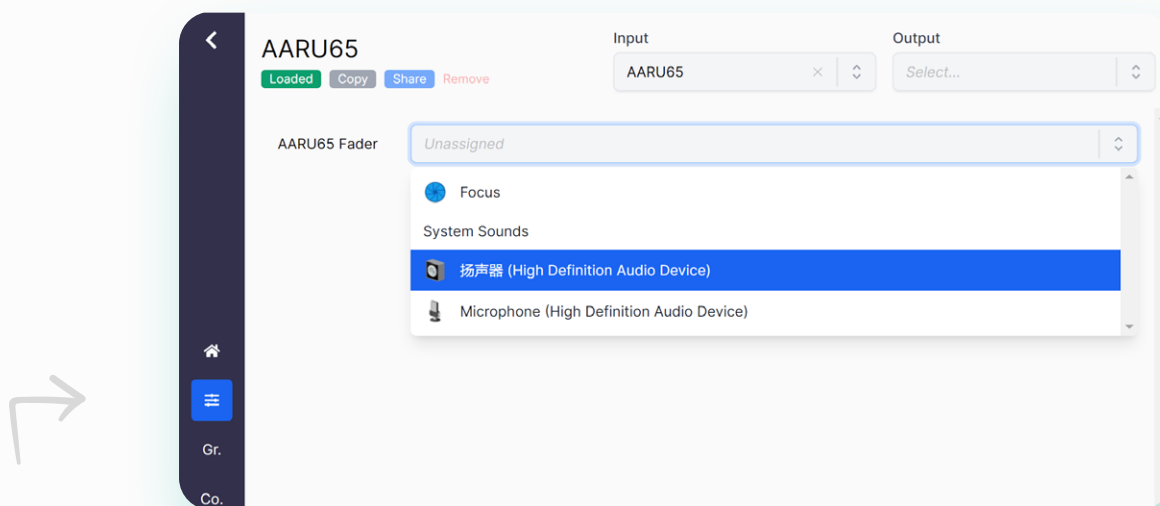
【Practical setup】 Click the settings icon in the lower left corner of MIDI Mixer
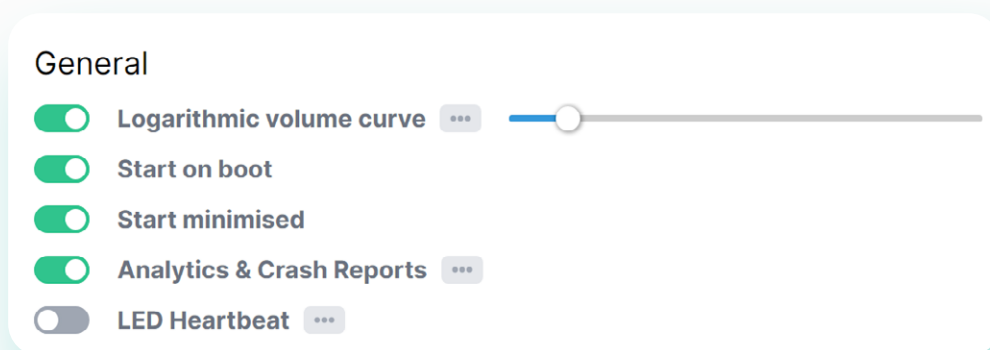
Logarithmic volume curve:
If you find that the mapping between Aaru65's fader and volume is not linear, it helps to adjust this slider to a smaller value.
Start on boot:
Automatically run the MIDI Mixer on startup. The volume mapping function is available only when the MIDI Mixer is running.
Start minimised:
MIDI Mixer is automatically minimized to the taskbar after running. It is recommended to turn on this option.

#More applications

In addition to the system volume control application, you can explore other using scenarios. However, due to space limitations, please find relevant information yourself.

• **Application examples**

- For hotswap versions, the Fn+ slider combo can be used to adjust the brightness of the RGB matrix light.

- Compatible with audio software, such as Logic Pro、FL Studio、Cycling '74 Max

- Map the fader to the parameter bar in Adobe Lightroom
repository github.com/rsjaffe/MIDI2LR

- Control screen brightness with MIDI Mixer
repository github.com/Jaggernaut555/midi-mixer-brightness

- Control smart home devices with MIDI Mixer
repository github.com/Theo428/midi-mixer-mqtt

#non-fader version

The fader is not a necessary option for Aaru65, and Helix Lab provides decorative bar to take the fader's place.
To use the decorative bar, the fader on the PCB must be removed first.
Users who remove the slide by themselves must be careful. The safer and cheaper method is to use a desolder pump. If possible, a digital desoldering station is a better solution.
When using a desolder pump, you can add some leaded solder to the solder joint, which can reduce the melting point of the solder and increase the fluidity of the solder, reduce the difficulty of disassembly.

If using a heat gun for disassembly, be sure to use a small nozzle as much as possible, preferably with a layer of heat-resistant tape around unrelated components to reduce the risk of damage. If your PCB is a soldered version and the key switches is already installed, then it is not recommended that you use a heat gun, as the plastic body of key switch can easily be affected by the heat and melt.

#Customizatible fader

The customizatible fader is a new feature come in firmware version 1.1.0. You can learn how to customize the fader according to the content introduced in this chapter.

• **Enable customizatible fader**

Aaru65's fader works in MIDI mode by default, so you need to change the fader's mode to "Custom" in VIA.
Please click "FADER" on the sidebar in VIA, and then change the "Mode" label from "MIDI" to "Custom" in the UI shown below.
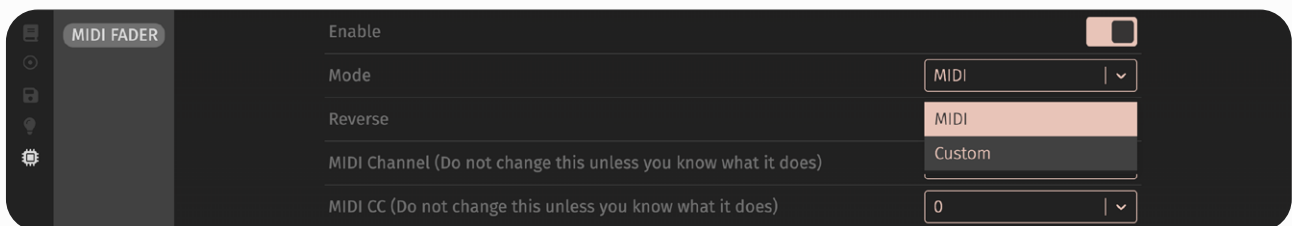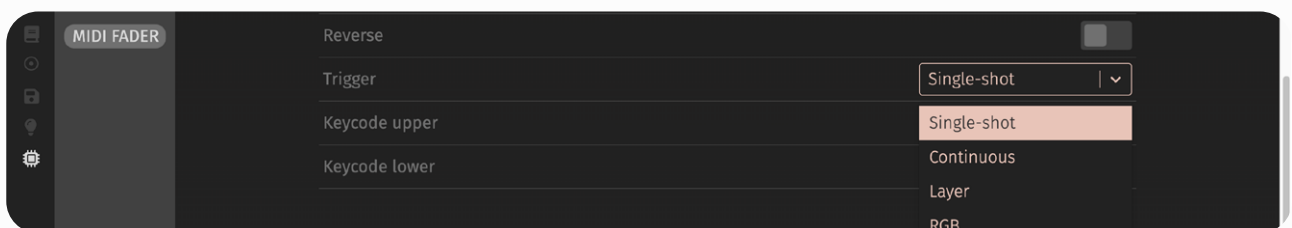

• **Trigger**

Triggers are used to determine the specific behavior of the slider. Currently, there are four types of triggers:

- Single-shot
- Continuous
- Layer
- RGB

The default trigger is Single-shot, you can modify the trigger in the Trigger drop-down menu, as shown in the figure below:

The trigger should be selected according to your needs. For the specific introduction of each trigger, please refer to the next page.
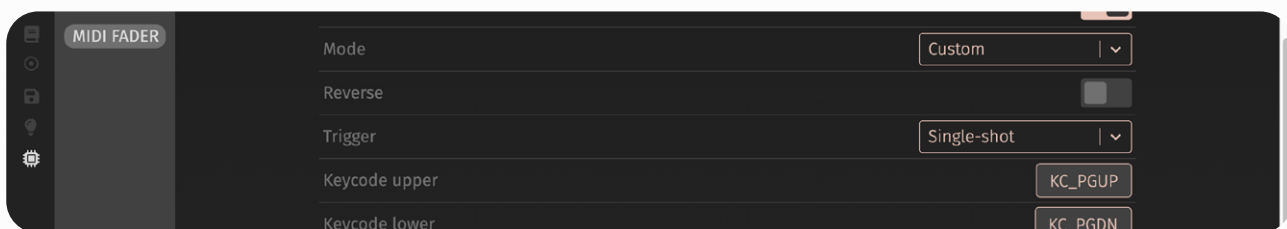
· **Single-shot**

Single-shot trigger triggers once when the fader moves to a fixed area of the upper or lower position.
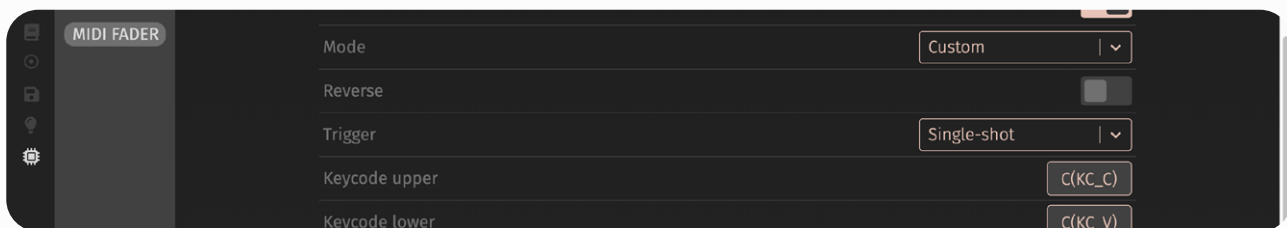
> The left figure shows a simulated image of the trigger area. When the fader moves to the upper green area, Keycode upper is triggered once. When the fader moves to the lower green area, Keycode lower is triggered once. It doesn't generate any action when the fader returns to the central black area.

Keycode upper and Keycode lower default to KC_NO (null keycode, will not do anything), you can modify it to your desired keycode in VIA, keycode are started with "KC_". For more information, refer to keycodes document and modifier document.
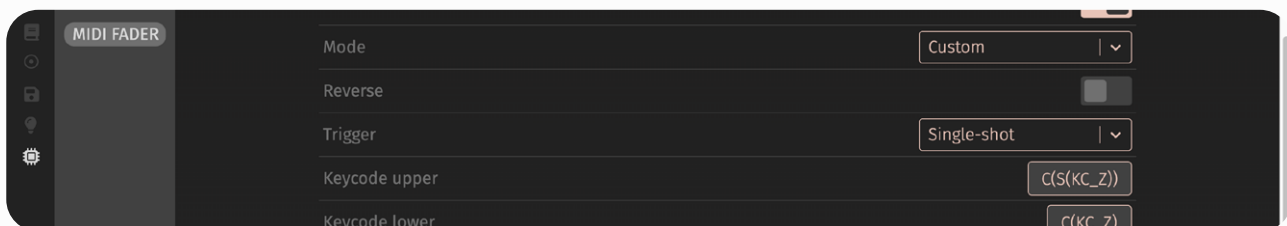
[Single-shot sample I] Page up and Page down:

[Single-shot sample II] Copy and Paste [For macOS: G(KC_C) and G(KC_V)]:

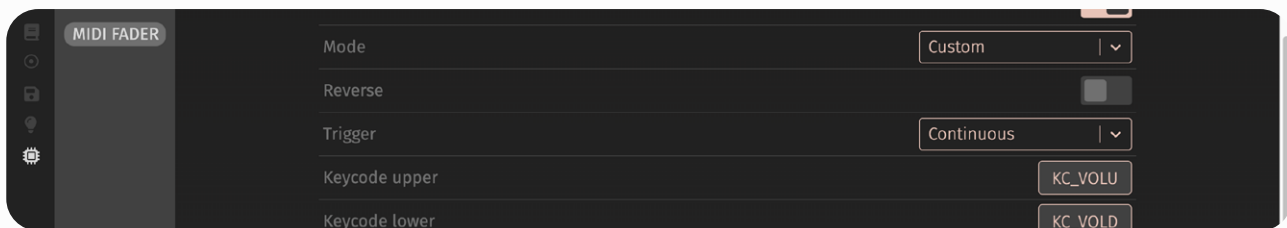[Single-shot sample III] Undo and Redo [For macOS: LSG(KC_Z) and G(KC_Z)]:

• Continuous

The continuous trigger is automatically triggered at a frequency of 5 times per second when the fader moves to a fixed area, until the it leaves the area.
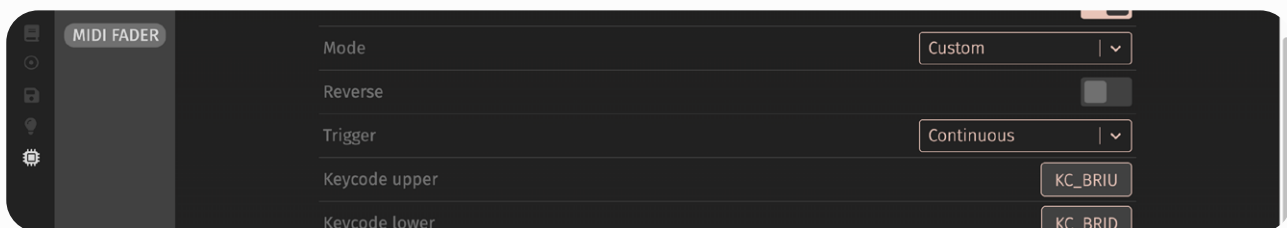
> The left figure is a simulated image of the trigger area. When the fader moves to the upper green area, Keycode upper is continuously triggered. When the slider moves to the lower green area, Keycode lower is continuously triggered. There is no action when the fader returns to the central black area.

Keycode upper and Keycode lower default to KC_NO (null keycode, will not do anything), you can modify it to your desired keycode in VIA, keycode are started with "KC_". For more information, refer to keycodes [document](#) and modifier [document](#).
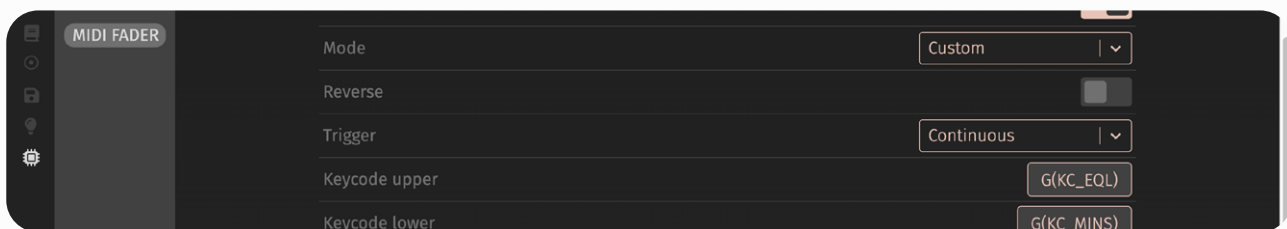
[Continuous sample I] Volume up and Volume down:

MIDI FADER		
Mode		Custom
Reverse		
Trigger		Continuous
Keycode upper		KC_VOLU
Keycode lower		KC_VOLD

[Continuous sample II] Screen brightness up and Screen brightness down:

MIDI FADER		
Mode		Custom
Reverse		
Trigger		Continuous
Keycode upper		KC_BRIU
Keycode lower		KC_BRID

[Continuous sample III] Zoom in and Zoom out:

| MIDI FADER		
Mode		Custom
Reverse		
Trigger		Continuous
Keycode upper		G(KC_EQL)
Keycode lower		G(KC_MINS)

• Layer

Layer trigger switches the layer of the keyboard when the fader moves to the upper or lower fixed area, and returns to the default layer after leaving this area.

> The left figure is a simulated image of the trigger area. When the fader moves to the upper green area, it switches to Layer upper, when it moves to the lower green area, it switches to Layer lower, and when the fader returns to the central black area, it returns to the default layer.

Layer upper and Layer lower default to Layer 1 (Layer 0 is the initial layer of the keyboard, and Layer 1 is the second layer), and you can modify it to your desired layer in VIA.

[Layer sample] Move slider up switches layer 2, move slider down switches layer 3:
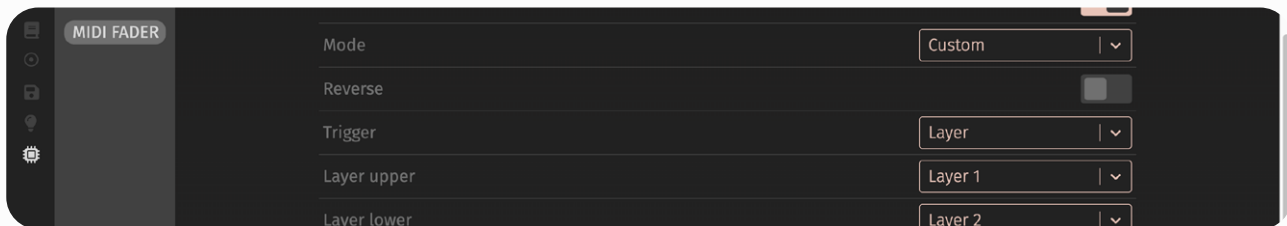
• RGB

RGB trigger sets the brightness of the RGB lighting according to the position of the fader, only applicable to hotswap PCB.

Mummy

A mummy is a body that has been preserved artificially or under natural conditions for a long time. The ancient Egyptians believed that people could be resurrected after death, and the resurrected soul needed the original body, so the body had to be preserved for the afterlife. The ancient Egyptians began embalming their bodies from at least 3700 BC to 3500 BC.

Mummification involves cutting out the body's internal organs, filling the abdomen with spices such as frankincense and cinnamon, sewing the body and covering it with dried natoline, taking it out after 35 days, then wrapping it in linen, filling it with spices and coating it with resin.

KEYBOARD ²⁴

This chapter describes practical functions.

#Keycodes magic

keycodes magic includes keycode locking and transposition.
Keycode locking disables a keycode temporarily: the keycode will not be output to the host until the key is unlocked. Aaru65's default keymap comes with the Win-key locking feature.
Keycode transposition is the immediate position exchange between two keycodes.
The current key locking and transposition status can be read from debugging information, see the Debug chapter.
All settings are automatically memorized by Aaru65 and do not reset after power off.

• keycode locking and transposition instruction

| CL_TOGG | GUI_TOG | AG_TOGG |

The three keycodes above are key locking and transposition keys. See the Layouts and Keycodes chapter or Online Keycodes Table for where these keys are located. Here's an explanation of what each keycode does, from left to right:

CL_TOGG
Swap the position of Ctrl and Caps lock, press it again to cancel the swap

GUI_TOG
Lock the Win key, press it again to unlock

AG_TOGG
Swap the positions of the Win and Alt, press it again to cancel the swap

• FAQs

1.   - What is the meaning of keycode locking and transposition?
       - The Win-key locking is usually used to prevent unintended activation.
       Swapping the Ctrl and Caps lock is for special typing habits.
       Swapping the Win and Alt to conform to macOS keyboard layout.

2.   - My issue is not listed?
       - Follow Debug chapter to find your issue, or contact Helix Lab after sales.

#N-key rollover

By default, Aaru65 uses six-key rollover mode. That is, a host receives a maximum of six keystrokes at a time.
Aaru65 also supports N-key rollover mode. N-key rollover mode can be enabled by hit the keycode described in this page.
Unfortunately, not all consoles will be able to handle N-key rollover mode, and if you connect Aaru65 to such console, you'll find that keyboard is unresponsive, except for the lights. In this case, you'll need to switch Aaru65 to six-key rollover mode.

• N-key rollover instruction

The keycode above is the rollover mode switch key. See the Layouts and Keycodes chapter or Online Keycodes Table for where these keys are located.
Here's an explanation of what the keycode does:

    NK_TOGG
    Switch between six-key rollover and n-key rollover mode.

• FAQs

1.   - Why can't the n-key rollover be enabled by default instead of manually?
    - Some computers can't recognize n-key rollover keyboard. To avoid confusion, Helix Lab makes six-key rollover the default mode.

2.   - My computer does not seem to support n-key rollover, what is the solution?
    - Follow the instructions on this page to switch to six-key rollover mode. If you really want n-key rollover, you can try updating your computer system.

3.   - My issue is not listed?
   - Follow Debug chapter to find your issue, or contact Helix Lab after sales.

#VIA

Aaru65 supports keycode modification via VIA, which can be accessed by using the web client provided by usevia.app (recommended) without downloading the client. If using a local client, ensure that it is the latest version, older versions cannot be used with Aaru65.

• Keycode modification instruction (Chrome browser)

[Step 1] Connect Aaru65 to your computer. Go to usevia.app, click "Authorize Device", Chrome will pop a dialog box up as shown on the right, please click on "AARU65" then click "Connect".

[Step 2] Switch to the "SETTINGS" tab, open the "Show Design tab" button, then switch to the "DESIGN" tab, click the "Load" button to upload json file.
For soldered version, uploads "helixlab_aaru65_soldered_1.1.0.json".
For hotswap version, uploads "helixlab_aaru65_hotswap_1.1.0.json".
Fow hotswap version with SignalRGB support, uploads "helixlab_aaru65_hotswap_signalrgb.json".
When the upload is complete, switch to the "CONFIGURE" tab.
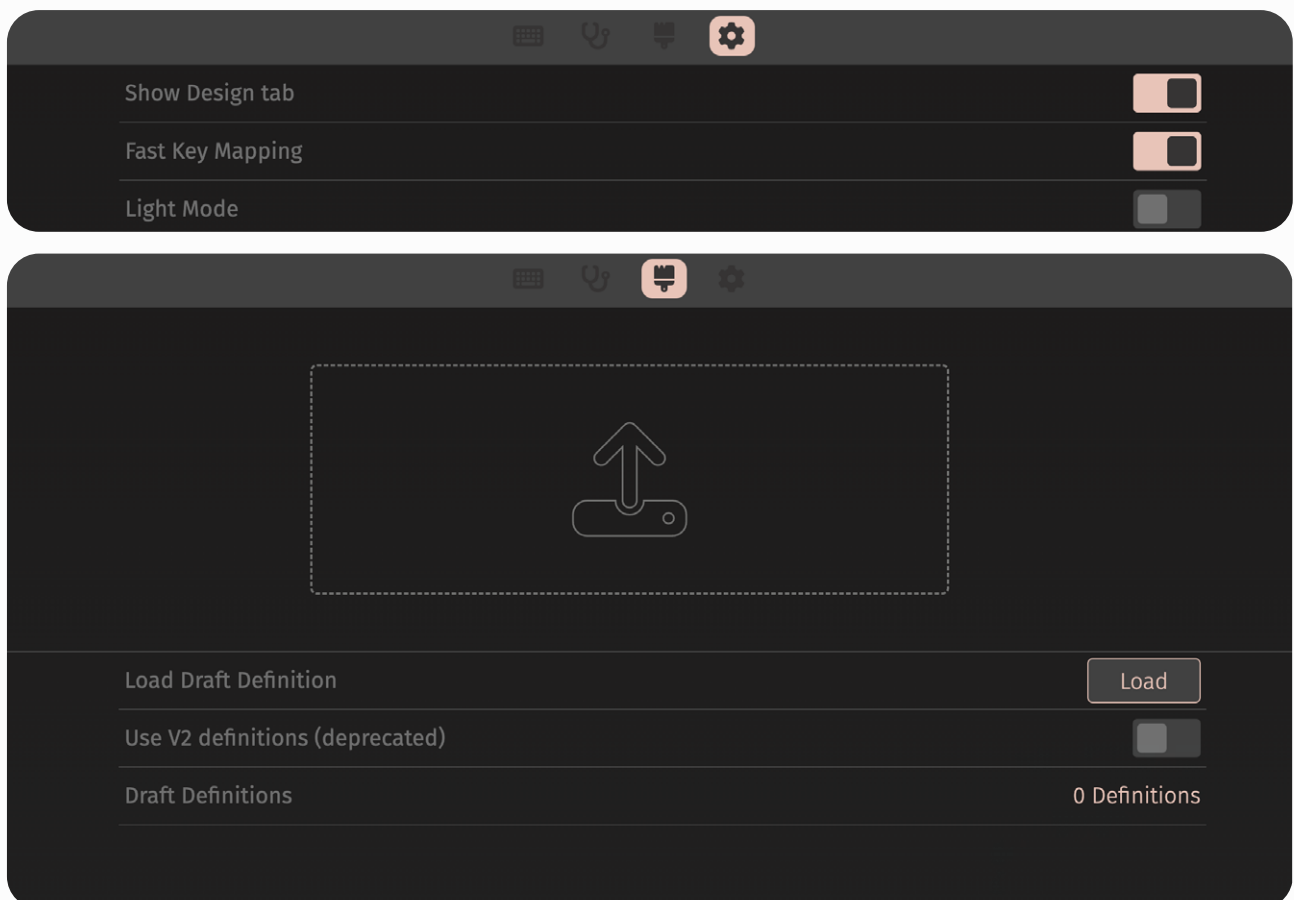
[Last step] Select a key to be modified in the upper keyboard, and select the target keycode from the key code pool. Your changes will take effect immediately.

The "LAYER" is keyboard's layer, switching layer by holding down "MO(1)" (commonly referred to as Fn). Click the "0 1 2 3" button to view and modify keycodes of each layer.

The RGB-related and slider settings keycodes are located under the "CUSTOM" TAB.
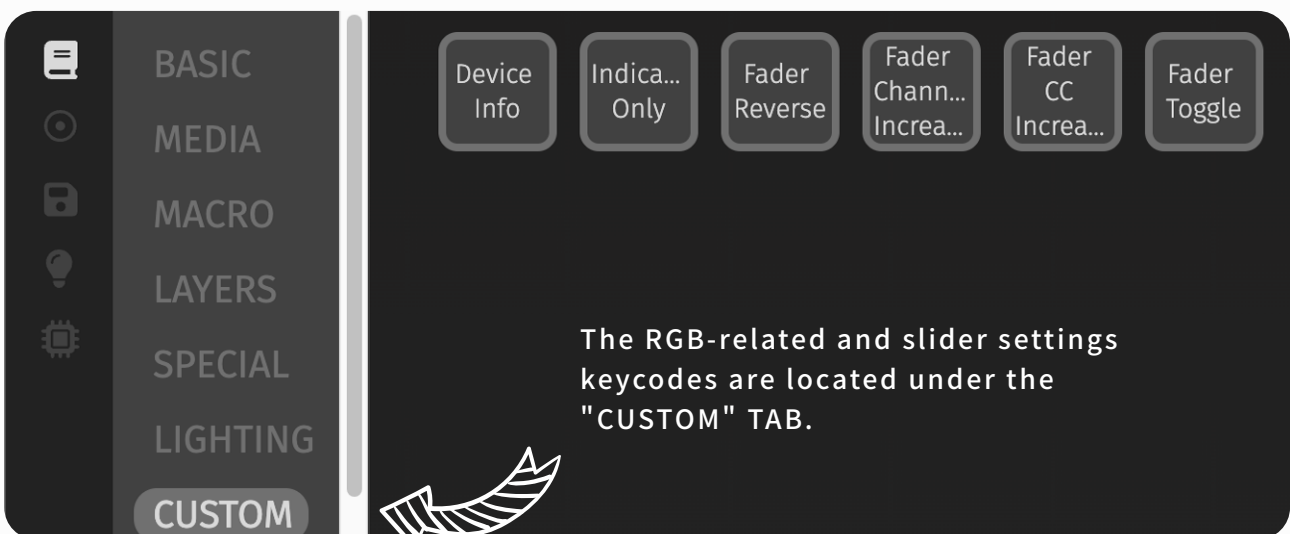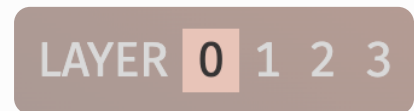
For hotswap version, you can adjust RGB matrix lights by "LIGHTING" tab.
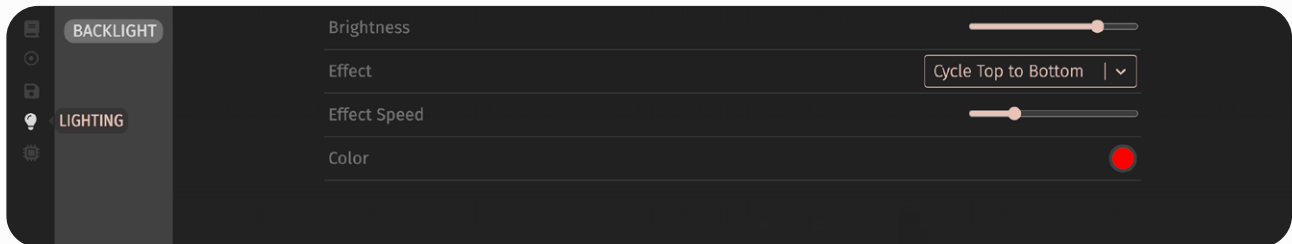
Slider settings can be modified by "FADER" tab.
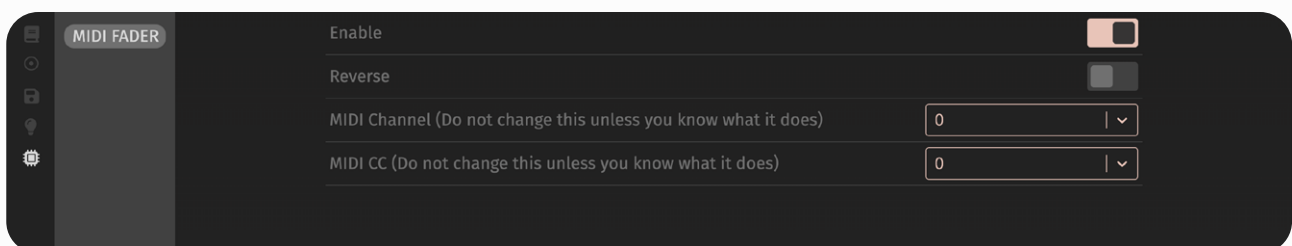
• **Q&A**

1. - VIA doesn't recognize Aaru65?
    - Make sure you imported Json file correctly, and avoid using older versions of VIA.

2. - Keycodes messed up, how to reset to default?
    - Follow "Reset" section on the next page。

3. - My issue is not listed?
    - Follow Debug chapter to find your issue, or contact Helix Lab after sales.

#Reset

When you want to reset all settings or encounter problems with Aaru65, follow the steps below.

• Reset instruction

[Step 1] Disconnect USB cable
[Step 2] Hold down esc key, connect USB cable to your computer, then release the esc key.
[Step 3] The keyboard has been powered up but will not work, the computer will pop up a USB driver called "RPI-RP2", we do not need it here, just ignore it.
[Last step] Unplug USB cable, and then reconnect the USB cable, at this time the keyboard is ready to work, and it has reset all settings.

Bennu

Bennu is an ancient Egyptian deity linked with the Sun, creation, and rebirth. He may have been the original inspiration for the phoenix legends that developed in Greek mythology.

Some of the titles of Bennu were "He Who Came Into Being by Himself", and "Lord of Jubilees"; the latter epithet referred to the belief that Bennu periodically renewed himself like the sun was thought to do. His name is related to the Egyptian verb wbn, meaning "to rise in brilliance" or "to shine".

DEBUG ³¹

The debug function allows users to know the status of all settings on their keyboard. When they encounter problems or forget settings, it is very helpful to view the debug information.

#Soldered • Debug

This section provides a brief description of the soldered version debugging process. You need to install the QMK Toolbox, which can be downloaded from github.com/qmk/qmk_toolbox/releases.
Connect Aaru65 to your computer, open the QMK Toolbox, and press the DEVICE_ INFO key to view debug information displayed in QMK Toolbox.

• Debug instruction

The keycode above is the debug key. See the Layouts and Keycodes chapter or Online Keycodes Table for where the key is located.
Here's an explanation of what the keycode does:

    DEVICE_INFO
    view debugging information in QMK Toolbox

• Soldered version: debug information example
```
> [DEVICE INFO]
> General
>   VID: 0x484C                              USB VID
>   PID: 0x4456                              USB PID
>   VER: 0x0100                              Firmware version
>   Manufacturer: Helix Lab                  Manufacture
>   Product: AARU65                          Product
> Firmware
>   QMK Ver: "0.18.1-317-gfb8a67"            QMK version
>   Build Date: "2022-11-01-10:25:01"        Build date
>   Keyboard: "helixlab/aaru65/soldered"     Keyboard full path
>   Keymap: "via"                            Keymap name
> Keyboard
>   NKRO: no                                 N-key rollover enabled?
>   Win Lock : no                            Win-key locked?
>   Alt_Win Swap : no                        Alt and Win swapped?
>   Ctrl_Caps Swap : no                      Ctrl and Caps lock swapped?
> RGB Indicator
>   RGB Indicator Enable: yes                RGB indicator enabled?
>   RGB Indicator Selection: no              Stepped Caps lock LED enabled?
>   RGB Indicator Mode: 6                    RGB indicator effect mode
>   RGB Indicator HSV: 36 255 255            RGB indicator HSV
> Fader
>   Fader Enable: yes                        Fader enabled?
>   Fader Reverse: no                        Fader inverted?
>   Fader Channel: 0                         MIDI channel
>   Fader CC: 0                              MIDI CC
>   Fader Value: 127                         MIDI value
> [END]
```

#Hotswap・Debug

This section provides a brief description of the hotswap version debugging process. You need to install the QMK Toolbox, which can be downloaded from github.com/qmk/qmk_toolbox/releases.

Connect Aaru65 to your computer, open the QMK Toolbox, and press the DEVICE_INFO key to view debug information displayed in QMK Toolbox.

• Debug instruction

The keycode above is the debug key. See the Layouts and Keycodes chapter or Online Keycodes Table for where the key is located.

Here's an explanation of what the keycode does:

DEVICE_INFO
view debugging information in QMK Toolbox

• Hotswap version: debug information example

```
> [DEVICE INFO]
> General
>   VID: 0x484C                                    USB VID
>   PID: 0x4457                                    USB PID
>   VER: 0x0100                                    Firmware Version
>   Manufacturer: Helix Lab                        Manufacture
>   Product: AARU65                                Product
> Firmware
>   QMK Ver: "0.18.1-317-gfb8a67"                  QMK version
>   Build Date: "2022-11-10-20:42:25"             Build date
>   Keyboard: "helixlab/aaru65/hotswap"           Keyboard full path
>   Keymap: "via"                                  Keymap name
> Keyboard
>   NKRO: no                                       N-key rollover enabled?
>   Win Lock : no                                  Win-key locked?
>   Alt_Win Swap : no                              Alt and Win swapped?
>   Ctrl_Caps Swap : no                            Ctrl and Caps lock swapped?
> RGB Matrix
>   RGB Matrix Enable: yes                         RGB matrix light enabled?
>   RGB Matrix Mode: 14                            RGB matrix effect mode
>   RGB Matrix HSV: 0 255 199                      RGB matrix HSV
>   RGB Matrix Speed: 64                           RGB matrix effect speed
>   RGB Matrix Indicator Only: no                  RGB matrix disabled, expect for indicator?
> Fader
>   Fader Enable: yes                              Fader enabled?
>   Fader Reverse: no                              Fader inverted?
>   Fader Channel: 0                               MIDI channel
>   Fader CC: 0                                    MIDI CC
>   Fader Value: 70                                MIDI value
> [END]
```

The Eye of Horus

The Eye of Horus, wedjat eye or udjat eye is a concept and symbol in ancient Egyptian religion that represents well-being, healing, and protection. It derives from the mythical conflict between the god Horus with his rival Set, in which Set tore out or destroyed one or both of Horus's eyes and the eye was subsequently healed or returned to Horus with the assistance of another deity, such as Thoth. Horus subsequently offered the eye to his deceased father Osiris, and its revitalizing power sustained Osiris in the afterlife. The Eye of Horus was thus equated with funerary offerings, as well as with all the offerings given to deities in temple ritual.

MISCELLANEOUS ³⁶

Some minor features will be described in this chapter.

#Firmware

Firmware is the software running on Aaru65's micro chip, and when you need to update firmware, follow the methods in this section.
When you flash firmware in the following way, you will erase all the settings you have previously made on the keyboard.

• Flash firmware instruction

[Step 1] Prepare the firmware to flash. Aaru65 hosts all available firmware at helix. site/blogs/resources/resources-for-aaru65
[Step 2] Disconnect the USB cable.
[Step 3] Hold down esc key, connect USB cable to your computer, then release the esc key.
[Step 4] Your computer will pop up a USB driver called "RPI-RP2", drag or paste your firmware to the USB driver, the USB driver will automatically unmount itself when complete.
[Last step] Unplug USB cable, and then reconnect the USB cable, at this time the keyboard is ready to work, and it has reset all settings.

• FAQs

1.   - On macOS Ventura, the third step always says "failed to complete this operation"?
   - This is probably a macOS Ventuara bug that was fixed in Ventura13.1, but if you're still having problems, you can do it from terminal.
   Open the "Terminal" app in "Applications" and copy the following content to the command line:

          cp helixlab_aaru65_hotswap_via_1.0.0.uf2 /Volumes/RPI-RP2

   You need to replace "helixlab_aaru65_hotswap_via. uf2" to the name of the firmware you use, and append the actual path of the firmware.
   For example, if you put the firmware on your desktop, then the full path should be

          /Users/yourusername]/Desktop/helixlab_aaru65_hotswap_via_1.0.0.uf2

   "yourusername" is your user name of macOS.
   Press Enter to confirm the command.

#SignalRGB

The hotswap version can work with SignalRGB to get more lighting effects.
The prerequisite for using SignalRGB is to flash firmware supporting SignalRGB into your hotswap PCB. Please note that this firmware will be in the test state for a long time, and the stability is not guaranteed for daily use.
You can get SignalRGB firmware from helix.site/blogs/resources/resources-for-aaru65, refer to the previous page for the way of flashing firmware.

• SignalRGB instruction

[Step 1] Download SignalRGB from SignalRGB official website.
[Step 2] Install SignalRGB as administrator. After the installation is complete, SignalRGB will run automatically. If it does not run after a long wait, exit the tasks related to SignalRGB from the task Manager and run SignalRGB manually as an administrator.
[Step 3] After confirming that SignalRGB can run, please exit the software, you need to exit it completely in the taskbar.
[Step 4] Download aaru65.js plugin，move it to
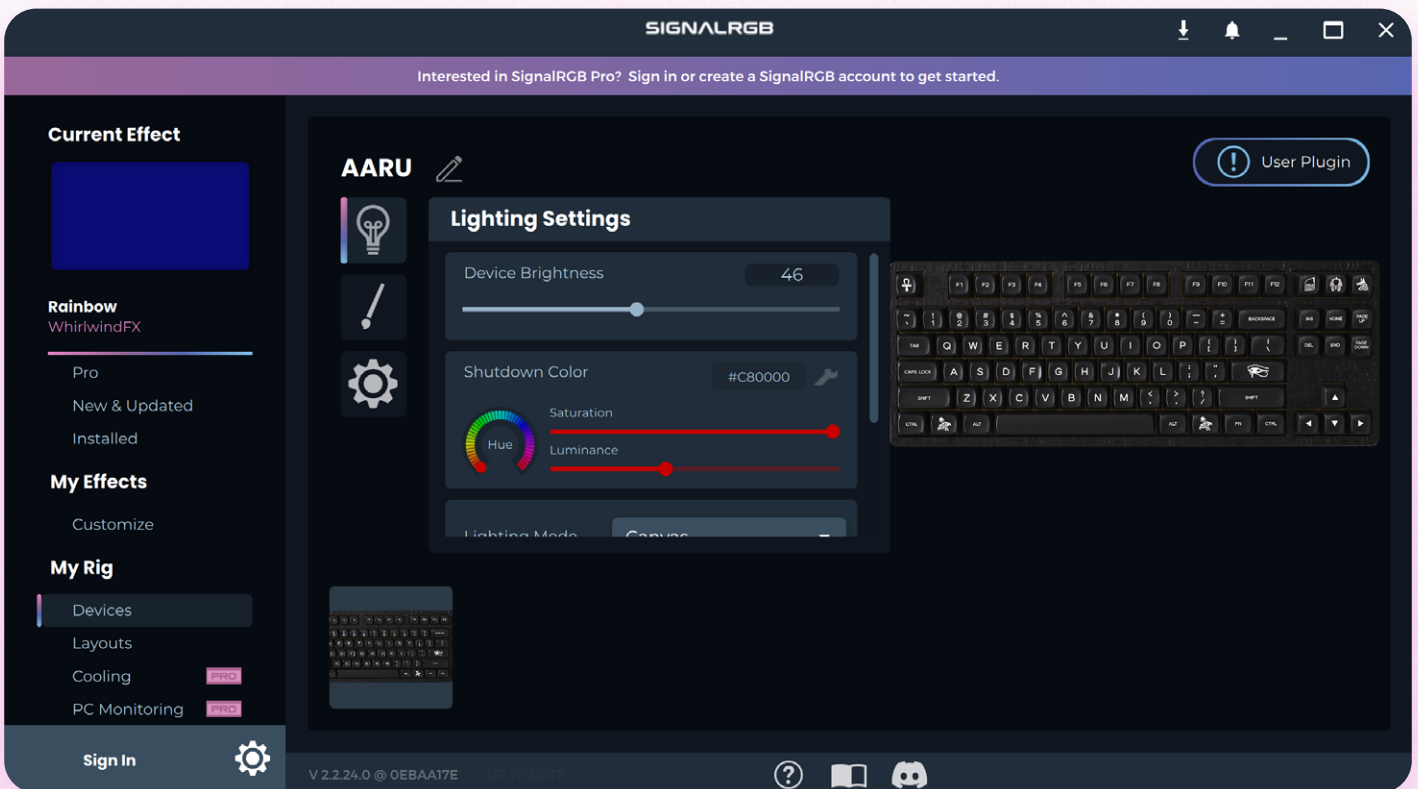   C:\Users\[YOUR USERNAME]\Documents\WhirlwindFX\Plugins
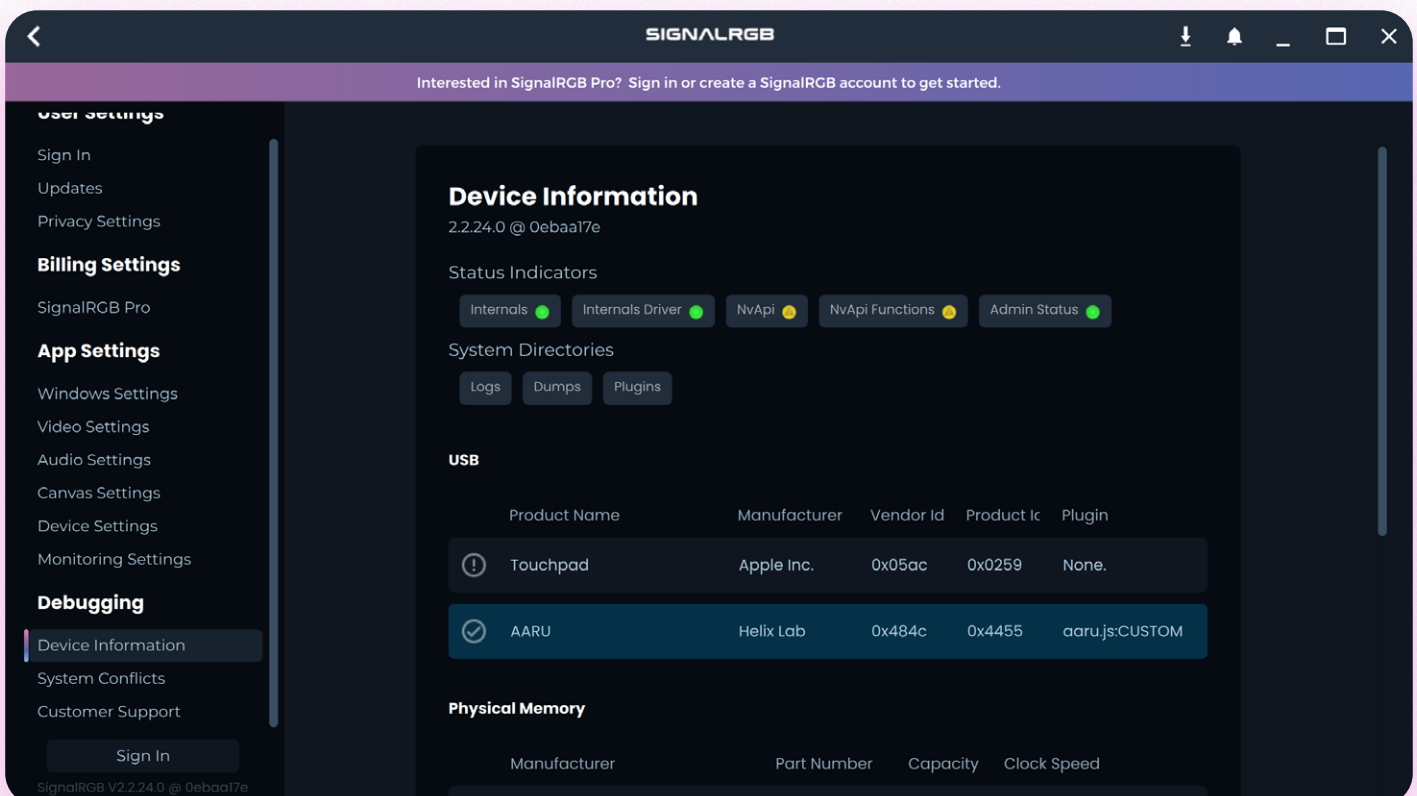
[Step 5] You can now reopen SignalRGB.
As shown in the image above, click "Device Infomation" to see if Aaru65 is recognized by SignalRGB.

[Last step]Adjust Aaru65's RGB matrix light effect to "SignalRGB". You can use VIA to do this, you need to import the Json file called "helixlab_aaru65_hotswap_ signalrgb. json".

In the "My effects" panel, you can select the effects you want. More effects can be obtained from the SignalRGB website.
SignalRGB light effect is only controlled by SignalRGB software, the keyboard cannot control its brightness, hue and saturation. And the light effect will not light up when SignalRGB is not connected.

#macOS adaption

Aaru65 firmware for macOS is available for both soldered and hotswap versions. The difference with the default firmware is:
1. Swap the position of Win and Alt keys by default to conform to the arrangement of control, option, and command on macOS.
2. Replace the F keys on the second layer of the keymap with macOS function keys.

• Functions

The 12 function keys will replace the F1-F12 function keys. From left to right:

Decrease screen brightness

Increase screen brightness

Mission control

Spotlight

Dictation/Siri

No not disturb

Fast backward

Play/Pause

Fast forward

Mute

Decrease volume

Increase volume

#FAQs

This section compiles frequently asked questions

• Soldered • RGB indicator FAQs
See "Soldered • RGB indicator" section of the [Lighting](#) chapter.

• Hotswap • RGB indicator FAQs
See "Hotswap • RGB indicator" section of the [Lighting](#) chapter.

• Hotswap • RGB matrix FAQs
See "Hotswap • RGB matrix" section of the [Lighting](#) chapter.

• Fader FAQs
See "How the fader works" section of the [Fader](#) chapter.

• Keycode magic FAQs
See "keycode magic" section of the [Keyboard](#) chapter.

• N-key rollover FAQs
See "N-key rollover" section of the [Keyboard](#) chapter.

• VIA FAQs
See "VIA" section of the [Keyboard](#) chapter.

• Firmware FAQs
See "Firmware" section of the [Miscellaneous](#) chapter.