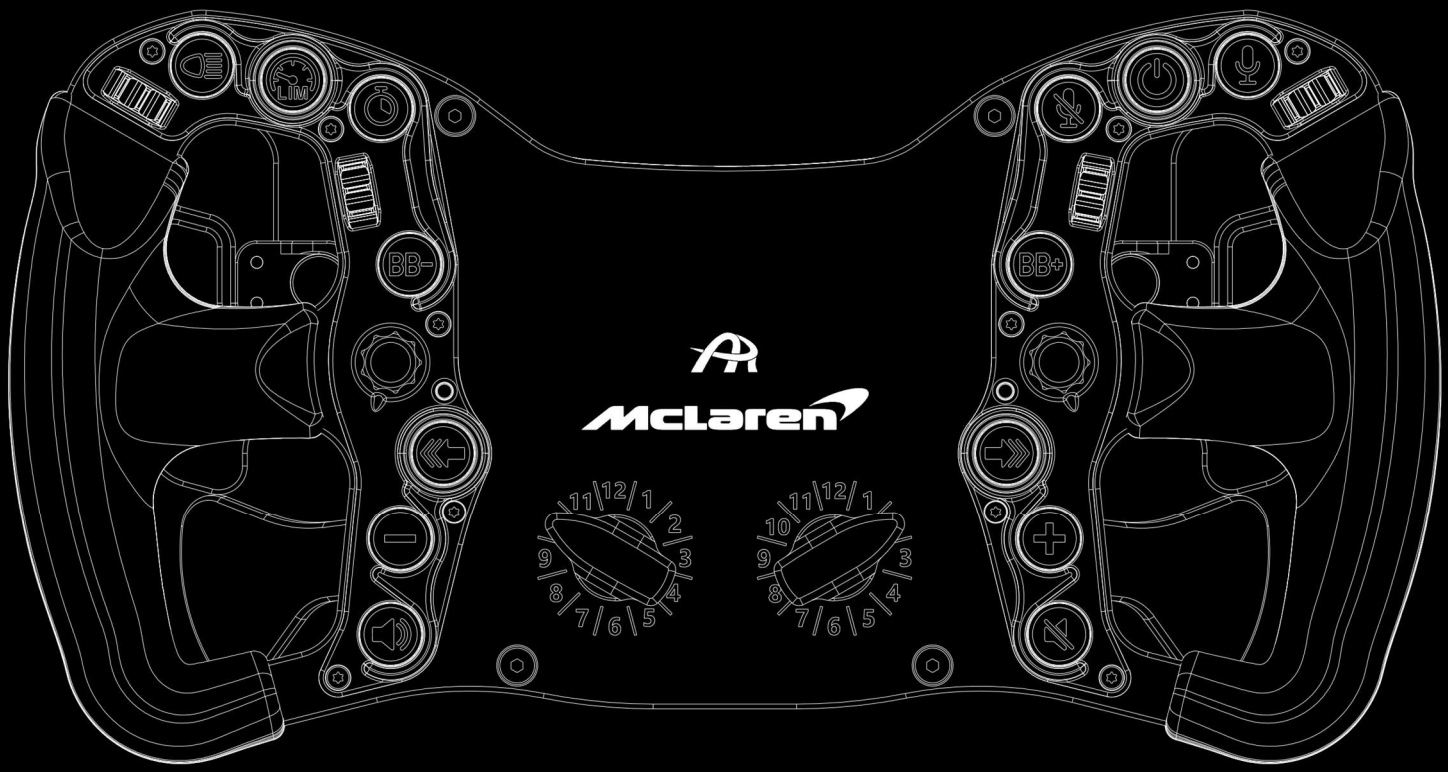
ASCHER RACING

McLaren Artura SPORT-SC
McLaren Artura PRO-SC

steering wheel for racing simulators
product manual
V1.0

SIMUCUBE
WIRELESS WHEEL



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1. Safety Information

Thank you for purchasing the Ascher Racing McLaren Artura steering wheel. Please read the manual carefully before installing and using the product.

1.1. Intended Use

The steering wheel is designed to be used in a competitive sim racing environment for indoor use only and connects wirelessly to a *Simucube receiver*.

Please note the following general safety aspects:

- The device must not be exposed to rain or humidity to avoid the risk of fire and electric shock.
- Do not operate or store the device outside of room temperature, 15°C to 35°C
- We strongly advise you not to drive a vehicle immediately after driving a racing simulation.
- This product is not intended for children under the age of 15 years.
- Contains small pieces – danger of swallowing!
- Extended periods of driving a simulation may cause health risks. Take a break of 5 minutes every 20 minutes and do not exceed 2 hours of total driving time per day.
- Keep hair, clothing and jewelry away from the product when in use.
- Only one person may use the product at any given time. Keep other persons away from the product when in use.
- Do not disassemble the product beyond what is described in this product manual.
- Do not apply excessive force, bend or pull on the wireless antenna.
- Make sure the steering wheel is mounted securely to your wheel base and screws are tightened properly before use.
- Do not leave the device exposed to a heat source or in a high-temperature location, such as in the sun in an unattended vehicle. To prevent the possibility of damage, remove the device from the vehicle or store it out of direct sunlight.

1.2. Battery Warnings

A rechargeable lithium polymer battery is used in this device. If these guidelines are not followed, batteries may experience a shortened life span or may present a risk of damage to the device, fire, chemical burn, electrolyte leak, and/ or injury.

- Do not modify, remanufacture, puncture or damage the device or battery.
- Do not remove or attempt to remove the battery.
- Do not expose the device to fire, explosion or another hazard.

2. Declaration of Conformity

It's in conformity with the essential requirements and other relevant requirements of the Radio Equipment Directive (RED) (2014/53/EU).

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesirable operation.

Any changes or modifications not expressly approved by KW automotive GmbH could void the user's authority to operate the equipment.

3. McLaren Licensing

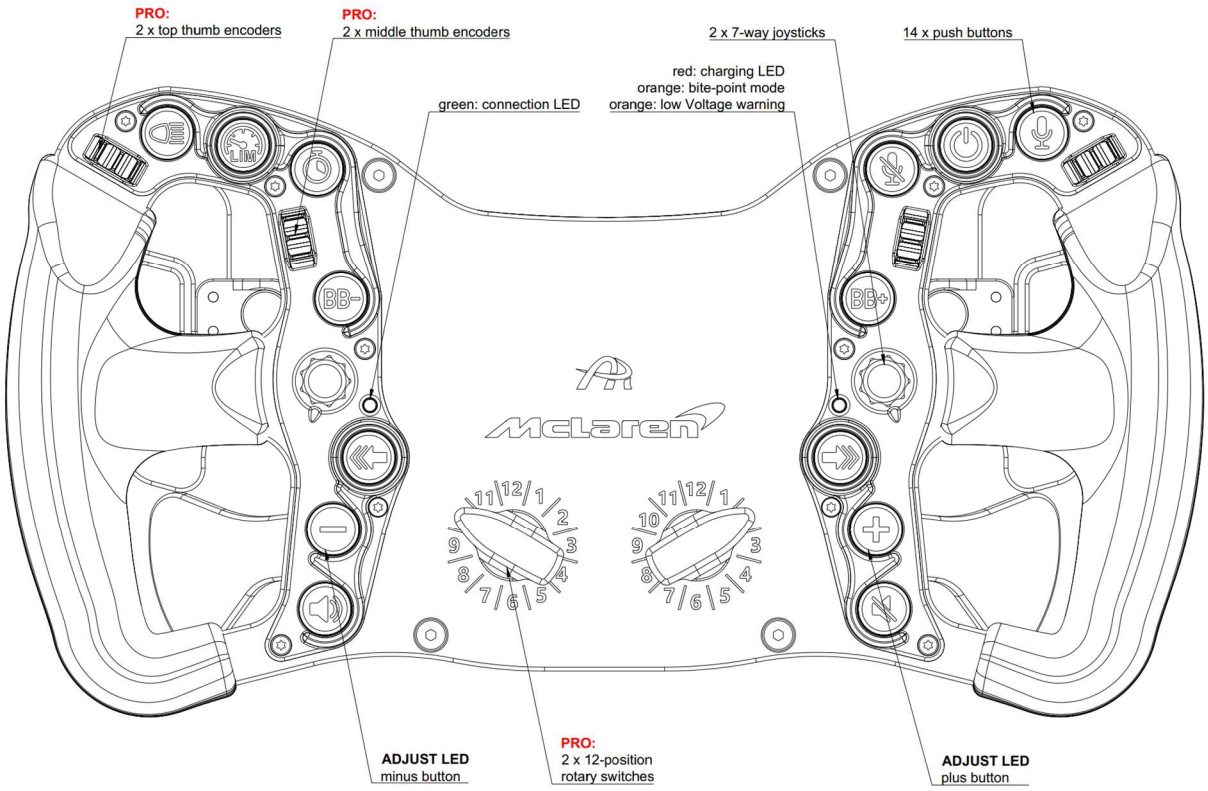
The Ascher Racing McLaren Artura steering wheel series is manufactured under license from *McLaren Automotive Limited*. The "McLaren" name and logo are registered trademarks of McLaren.

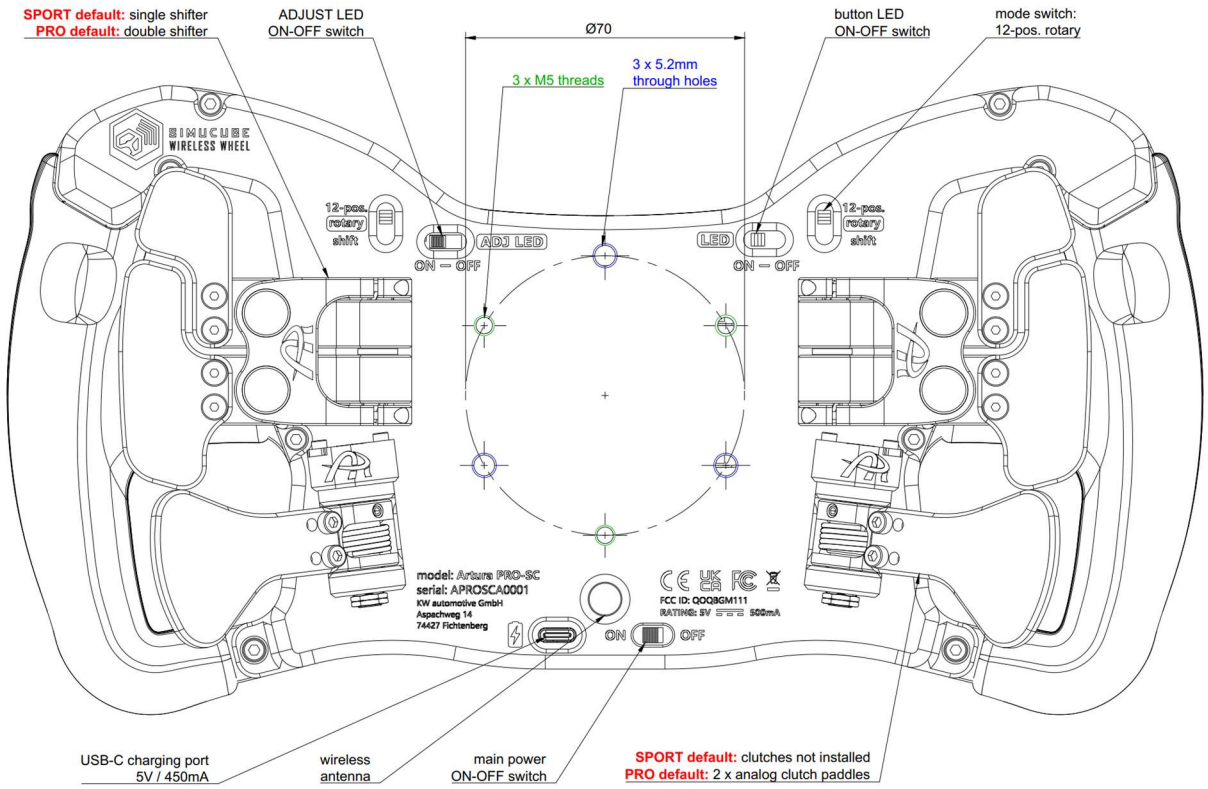
4. Box Contents

The box contains the following components and accessories:

- Artura SPORT-SC / Artura PRO-SC steering wheel
- USB-C to USB-A charging cable
- screws and washers for Quick Release mounting
- additional button caps with various symbols
- tools to swap button caps:
    - 2 x button cap removing tool
    - Allen key: 1.5mm
    - Torx key: TX8
- label sheet

5. Product Overview



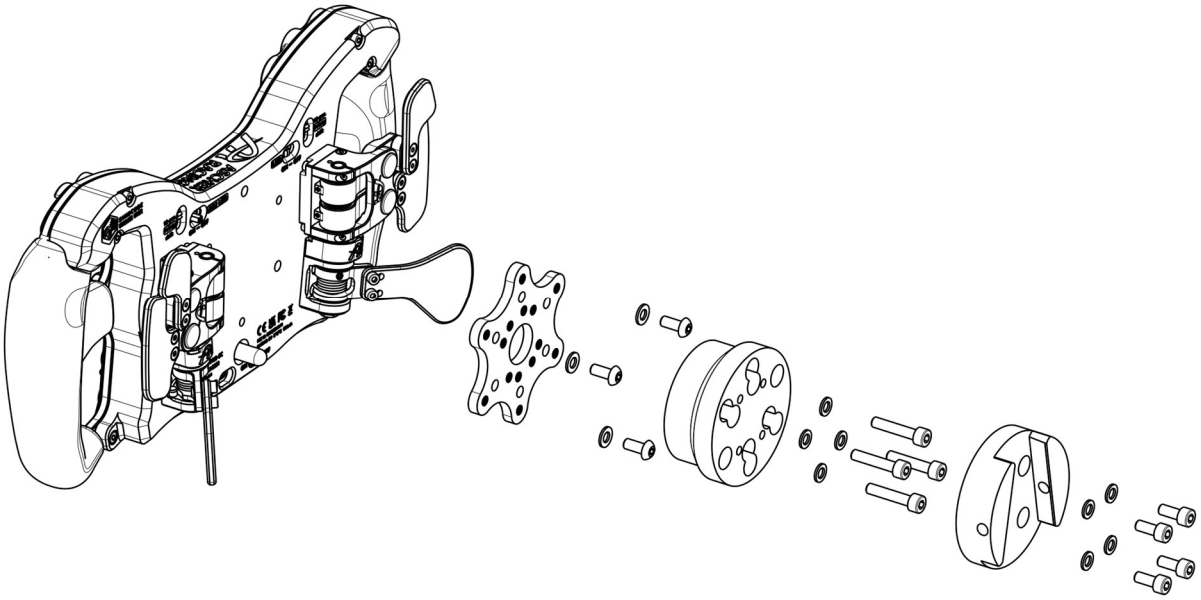


6. Quick Release Mounting Options

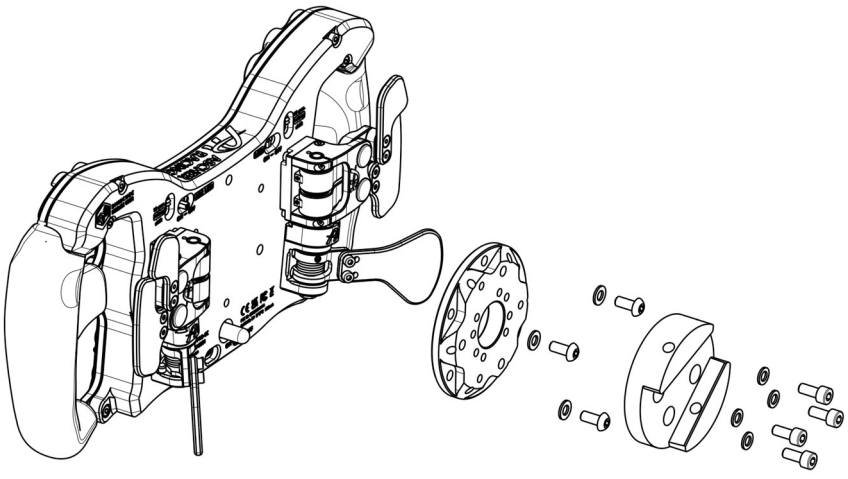
The steering wheel is equipped with a standard 70mm bolt pattern with alternating M5 threads and through holes as shown in 5 Product Overview. This offers a secure 3 bolt QR attachment for both outside as well as inside mounting, depending on the QR design (through holes, threaded blind holes etc.).

There are several possible mounting options for all common QRs shown below. Adapters or QRs are not part of the scope of supply and have to be purchased separately.

6.1. SC2 SQR WHEEL SIDE – Simucube Adapter



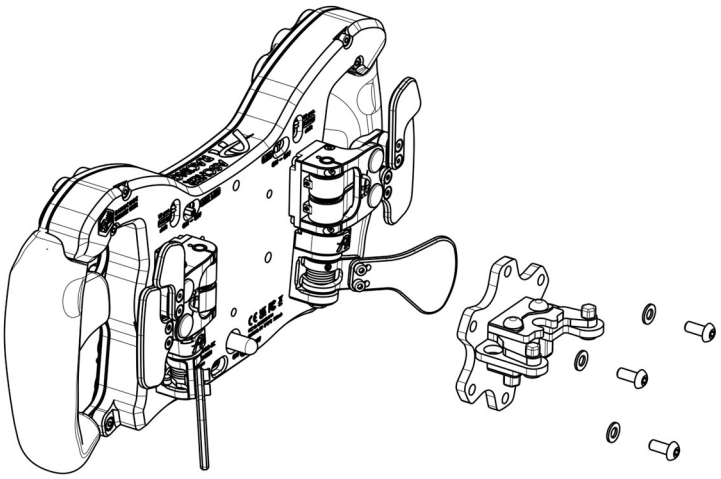
6.2. SC2 SQR WHEEL SIDE – Ascher Racing SQR Adapter



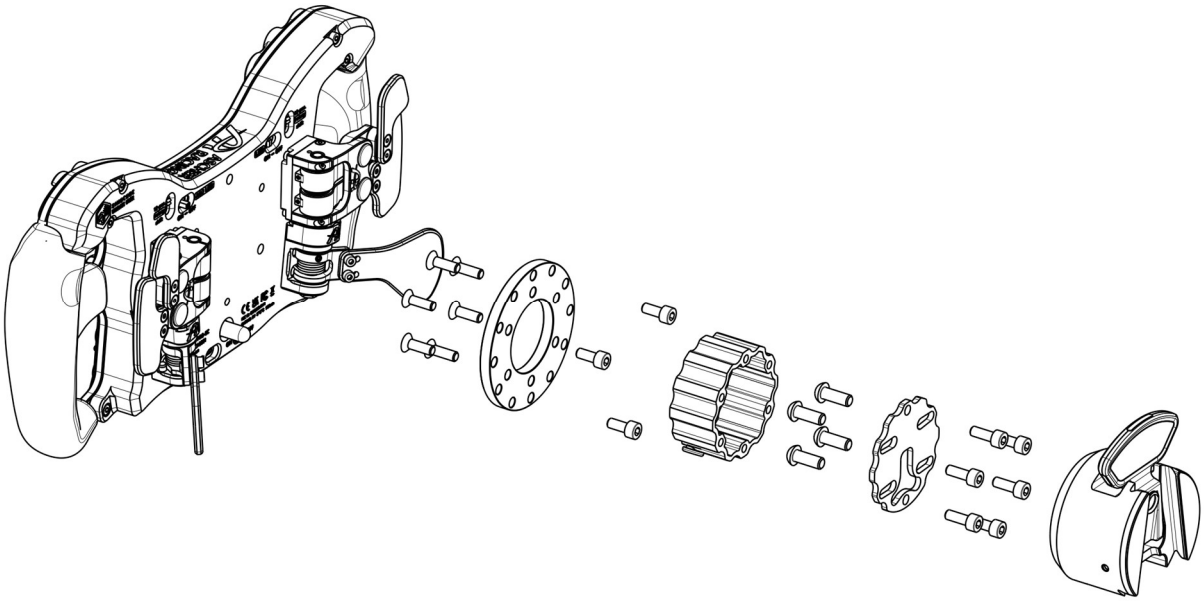
6.3. 70mm Bolt Pattern Quick Release – Outside Mounting

Standard 70mm bolt pattern Quick Releases with non-threaded through holes can be mounted directly from the outside to the M5 threaded holes on the rear side without opening the steering wheel.

Q1R:



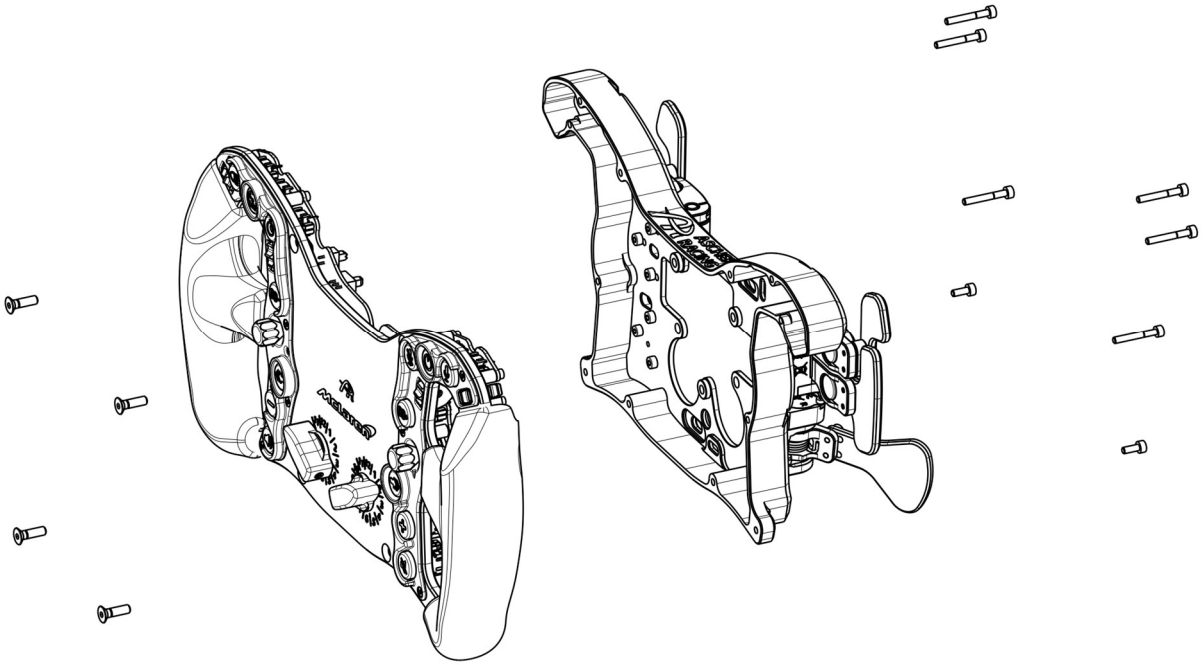
Asetek QR:



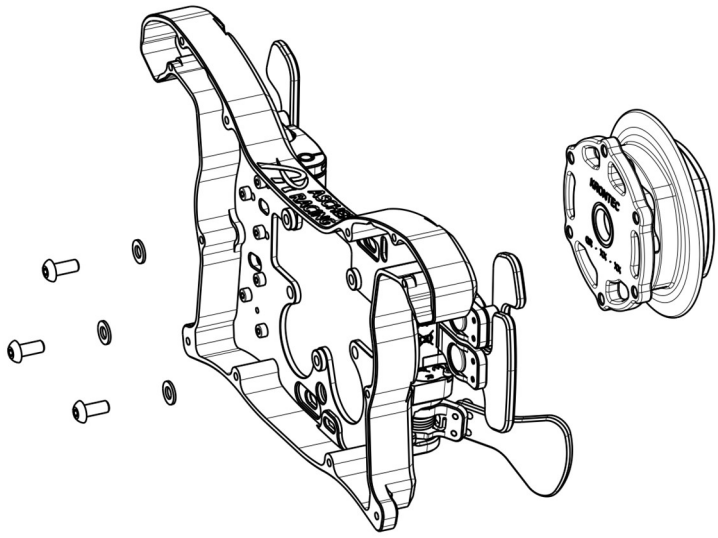
6.4. How to Open the Steering Wheel

QRs with either M5 threaded blind holes or other features preventing from conventional mounting can be attached from the inside of the wheel casing. Open the steering wheel as follows:

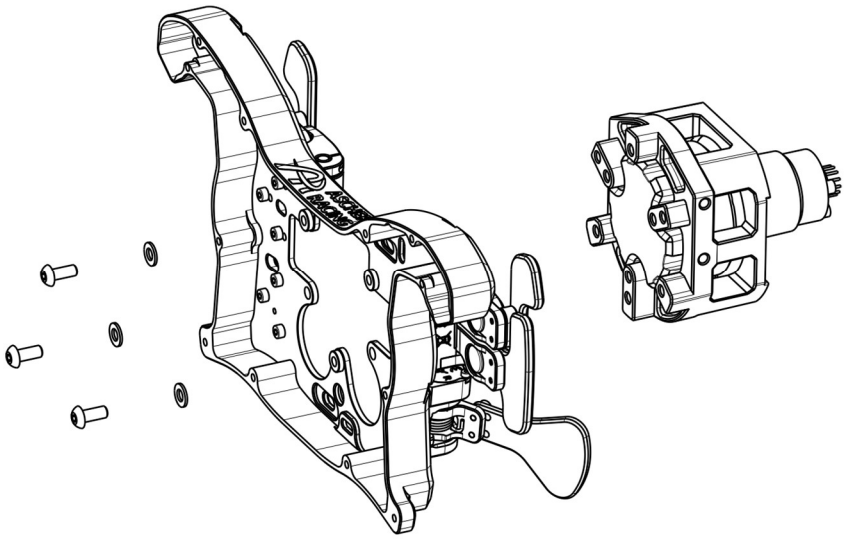
1. remove all (4 pcs) black countersunk M4 screws on the frontplate (Torx key: TX20)
2. remove all (8 pcs) M3 screws on the rear side (Allen key: 2.5mm)
3. unplug paddle shifters / clutch paddles to fully separate the rear casing
4. mount Quick Release as shown below
5. make sure not to squeeze any cables (frontplate and casing must touch without force)
6. assemble in reverse order



6.5. M5 Threaded QRs



6.6. Fanatec Podium Hub

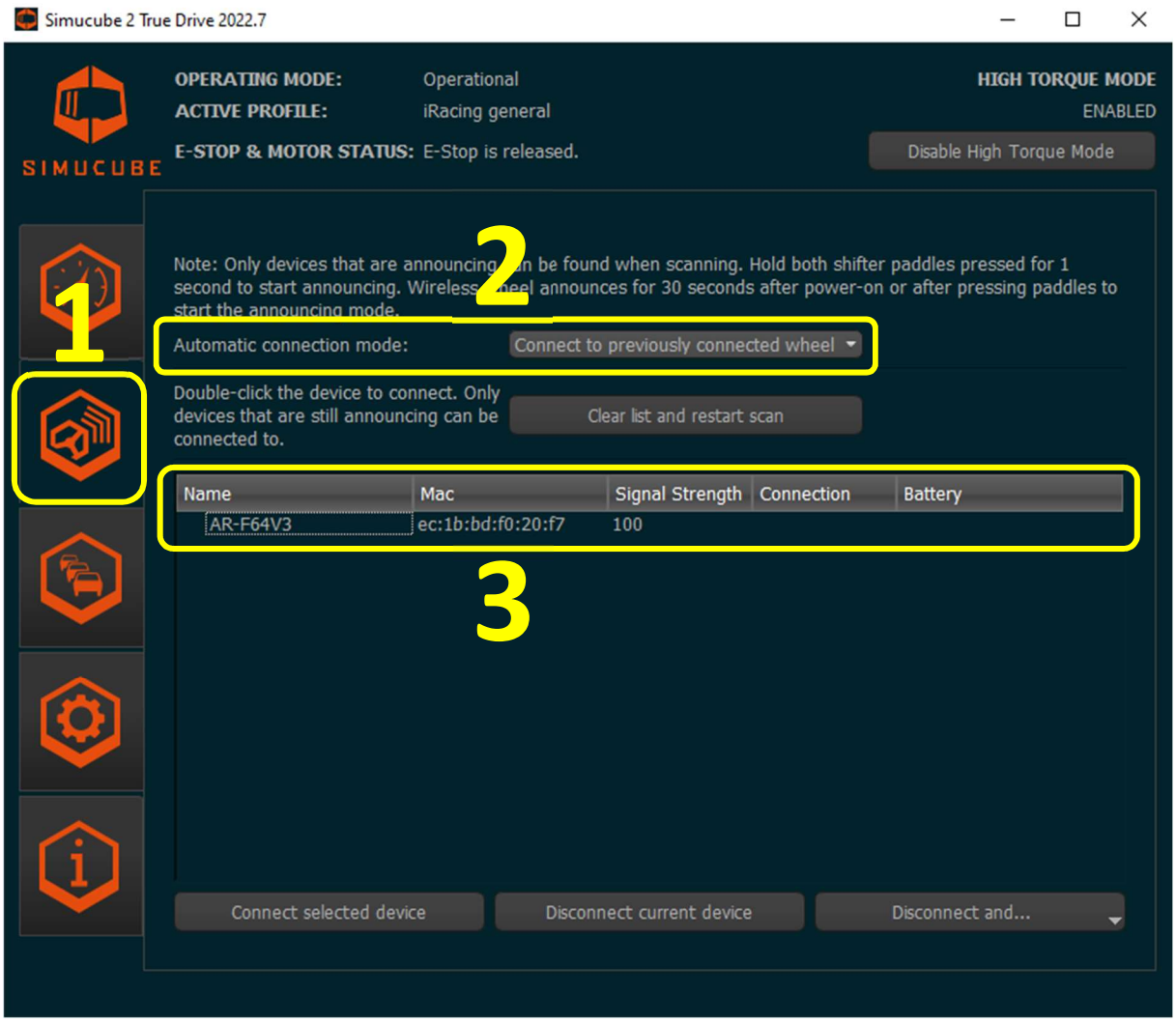


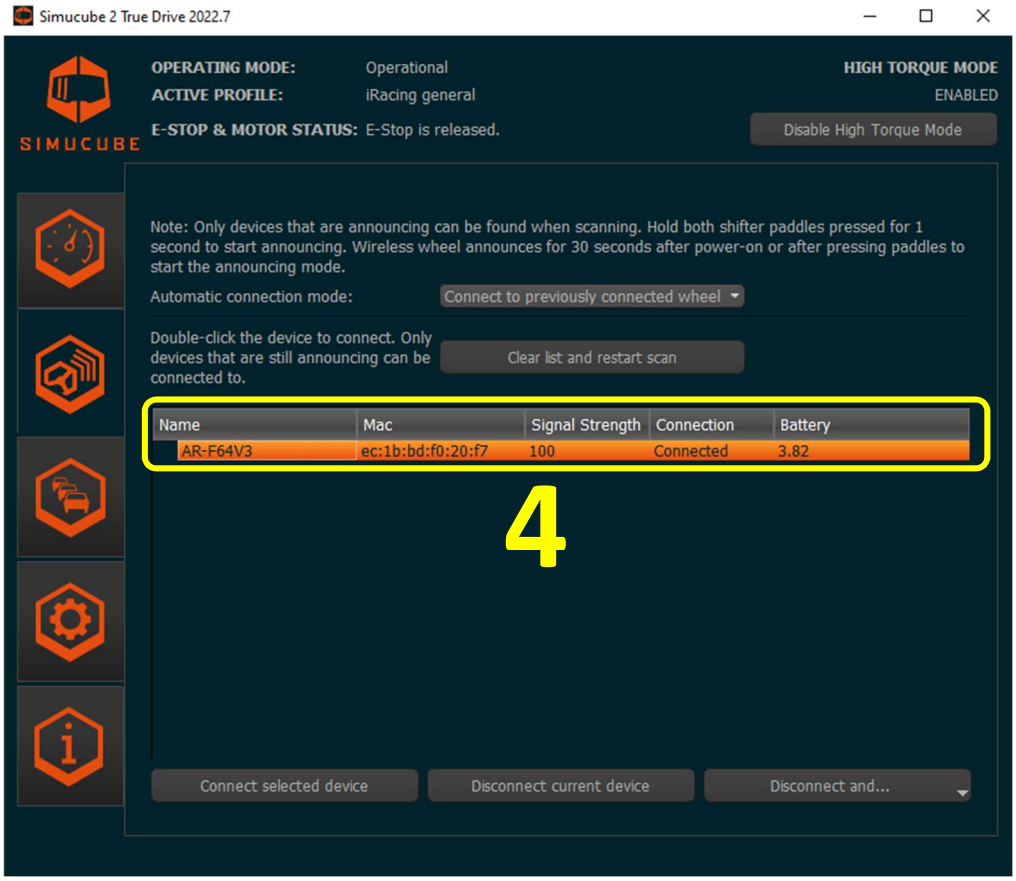
7. Getting Started

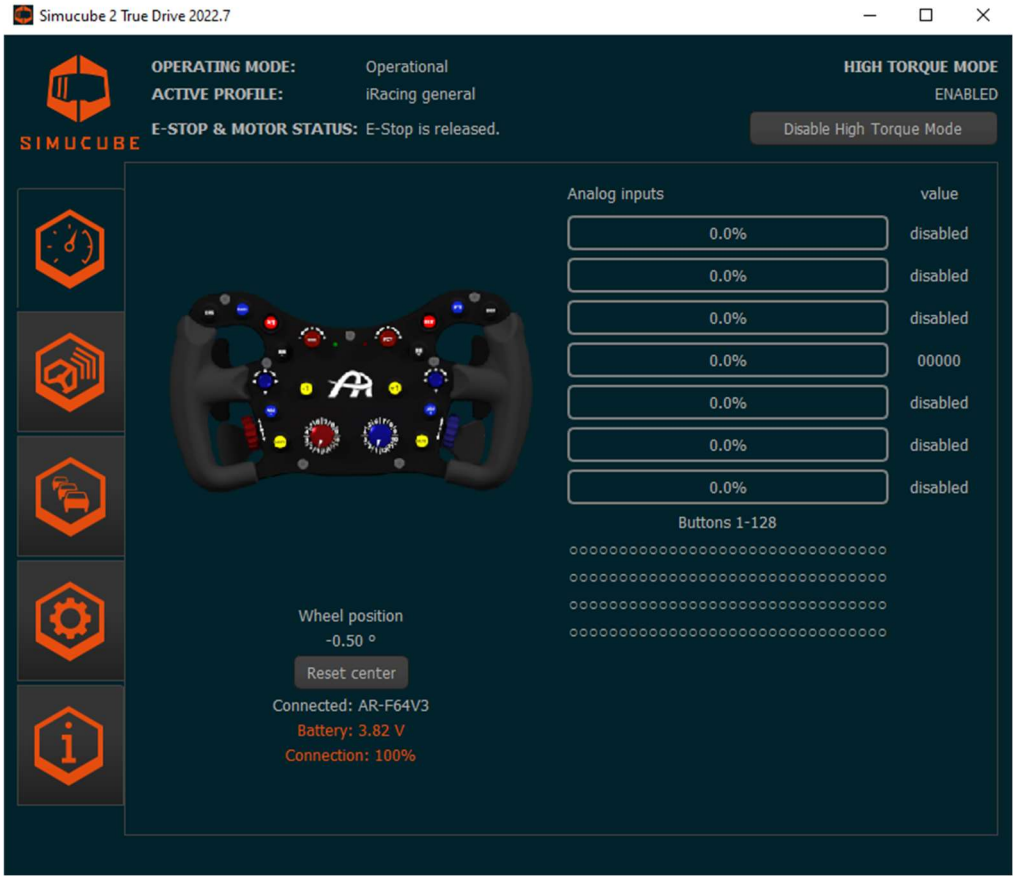
7.1. First Wireless Connection – Pairing

The steering wheel can only be paired (or connected manually) during the first 11s after being switched on. During this time, the left green LED blinks quickly – a successful connection is visualized by 3 slow green blinks.

1. open True Drive / Wireless Wheels Tab
2. (Automatic connection mode: *Connect to previously connected wheel)*
3. switch ON steering wheel
4. double click *Ascher Racing Artura SPORT/PRO*




Simucube 2 True Drive 2022.7
SIMUCUBE
OPERATING MODE: Operational
ACTIVE PROFILE: iRacing general
E-STOP & MOTOR STATUS: E-Stop is released.
HIGH TORQUE MODE
ENABLED
Disable High Torque Mode
Note: Only devices that are announcing can be found when scanning. Hold both shifter paddles pressed for 1 second to start announcing. Wireless wheel announces for 30 seconds after power-on or after pressing paddles to start the announcing mode.
Automatic connection mode:
Connect to previously connected wheel
Double-click the device to connect. Only devices that are still announcing can be connected to.
Clear list and restart scan
Name
Mac
Signal Strength
Connection
Battery
AR-F64V3
ec:1b:bd:f0:20:f7
100
Connected
3.82
4
Connect selected device
Disconnect current device
Disconnect and...


Simucube 2 True Drive 2022.7
SIMUCUBE
OPERATING MODE: Operational
ACTIVE PROFILE: iRacing general
E-STOP & MOTOR STATUS: E-Stop is released.
HIGH TORQUE MODE
ENABLED
Disable High Torque Mode
Analog inputs
value
0.0%
disabled
0.0%
disabled
0.0%
disabled
0.0%
00000
0.0%
disabled
0.0%
disabled
0.0%
disabled
Buttons 1-128
Wheel position
-0.50 °
Reset center
Connected: AR-F64V3
Battery: 3.82 V
Connection: 100%

7.2. Normal Operation

First switch ON the Simucube wheel base and then the wireless wheel. If step 2 (automatic connection mode) is enabled the wheel will connect automatically.

A successful connection is indicated by:

- green connection LED blinks 3 times
- Simucube plays a beep sound (if audible notifications are enabled)
- steering wheel shows up in the True Drive overview tab

The wheel can also be connected by using the paddle shifters in case it's already switched ON:

- pull both shifters to connect immediately
- pull both shifters for 5s to disconnect

Automatic disconnect: The wheel will disconnect automatically after 1h of inactivity to safe energy in sleep mode. Activity is monitored by the following conditions:

- turning the wheel for more than 10°
- FFB effects in use
- pushing any button on the wireless wheel

7.3. Configure Analog Inputs

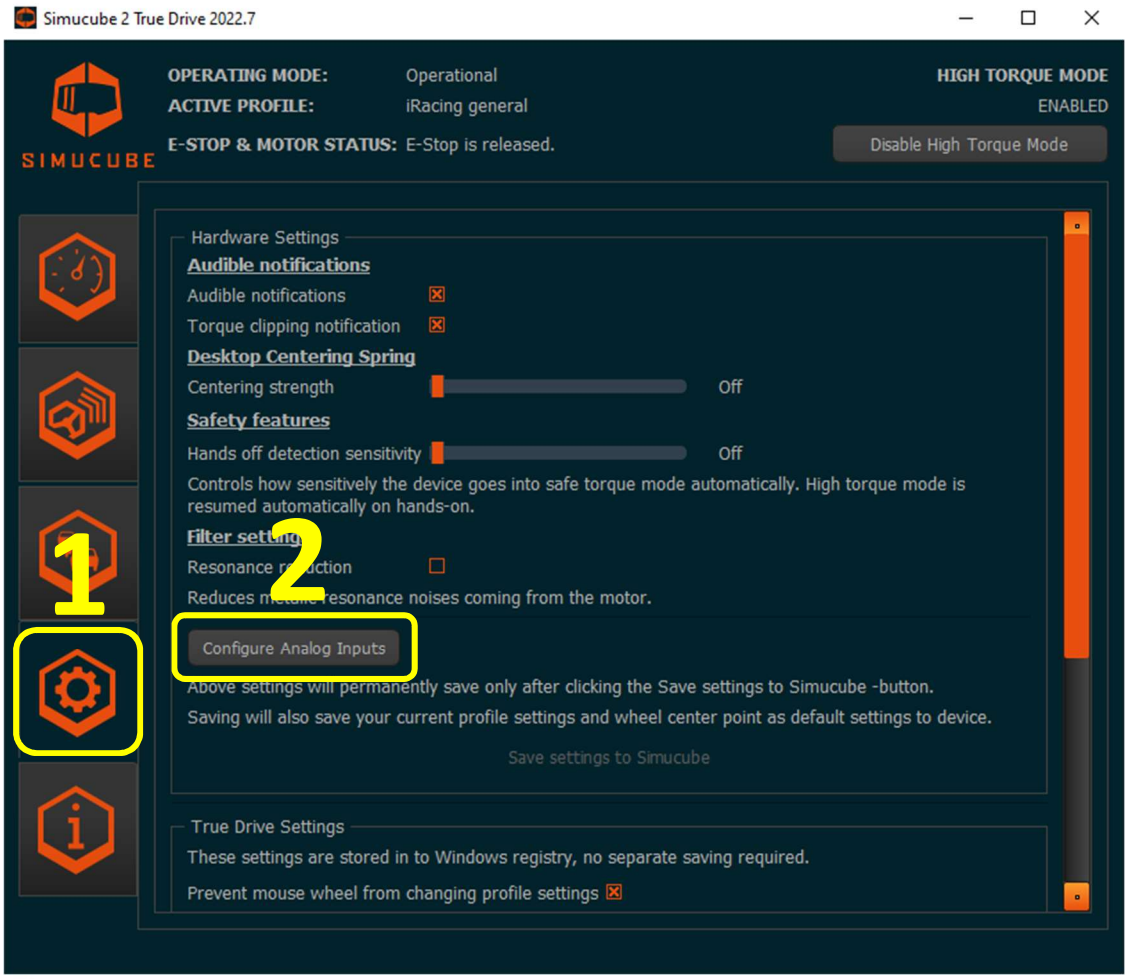
Both analog paddles can be either set-up as individual axis (e.g. throttle and brake) or as combined axis, called dual clutch. This mode compares the output of both axis and uses the momentarily greater value. Additionally, one clutch is defined as **master (m)** - the other one as **slave (s)** with scaled down output.

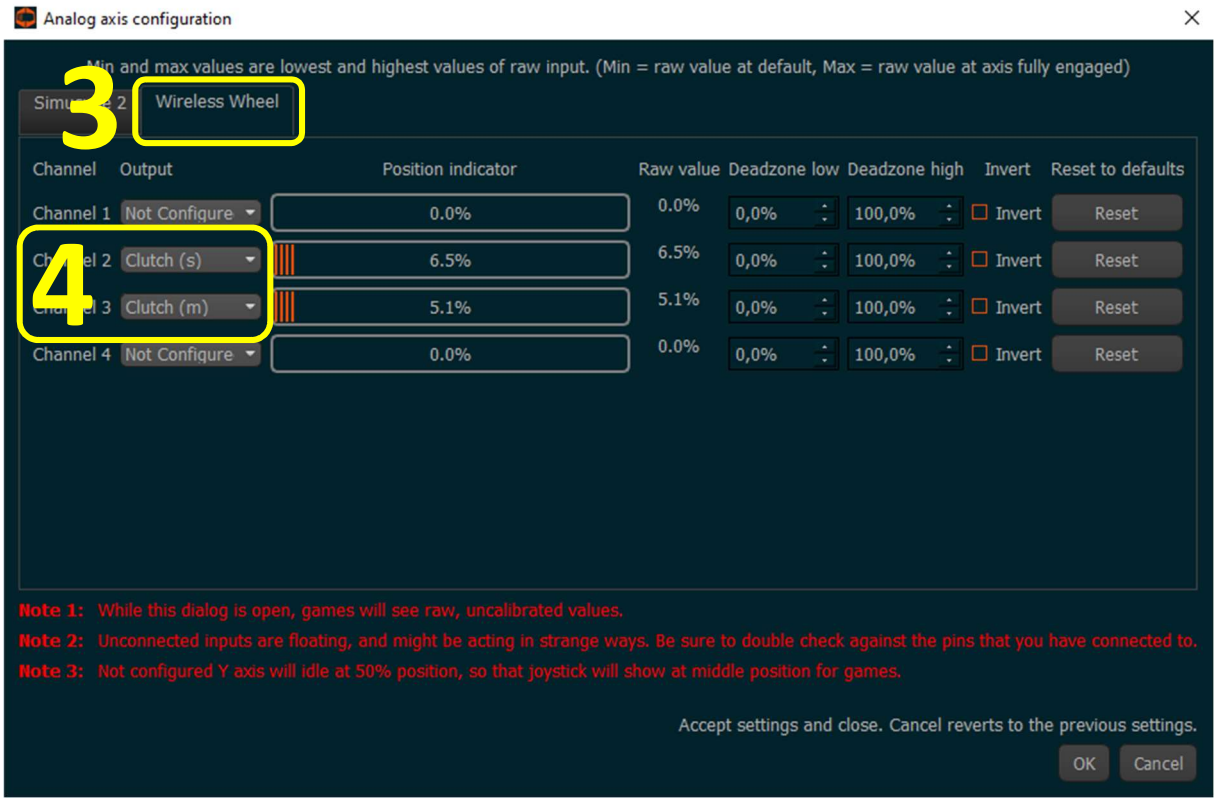
- **master:** 100% physical movement = 100% output
- **slave:** 100% physical movement = **bite-point setting**, e.g. 50% output

If the bite-point is set to 100%, both clutches can be used equally.

Dual clutch functionality offers several advantages; the desired bite-point can be reached:

- **immediately**, within milli seconds (by letting go the master and keeping the slave clutch pulled)
- **precisely**, adjust the value up to 0.1% precision
- **repeatedly**, the exact same value every single time


Simucube 2 True Drive 2022.7
SIMUCUBE
OPERATING MODE: Operational
ACTIVE PROFILE: iRacing general
E-STOP & MOTOR STATUS: E-Stop is released.
HIGH TORQUE MODE
ENABLED
Disable High Torque Mode
Hardware Settings
Audible notifications
Audible notifications
Torque clipping notification
Desktop Centering Spring
Centering strength
Off
Safety features
Hands off detection sensitivity
Off
Controls how sensitively the device goes into safe torque mode automatically. High torque mode is resumed automatically on hands-on.
Resonance reduction
Reduces mechanical resonance noises coming from the motor.
Configure Analog Inputs
Above settings will permanently save only after clicking the Save settings to Simucube -button.
Saving will also save your current profile settings and wheel center point as default settings to device.
Save settings to Simucube
True Drive Settings
These settings are stored in to Windows registry, no separate saving required.
Prevent mouse wheel from changing profile settings
1
2

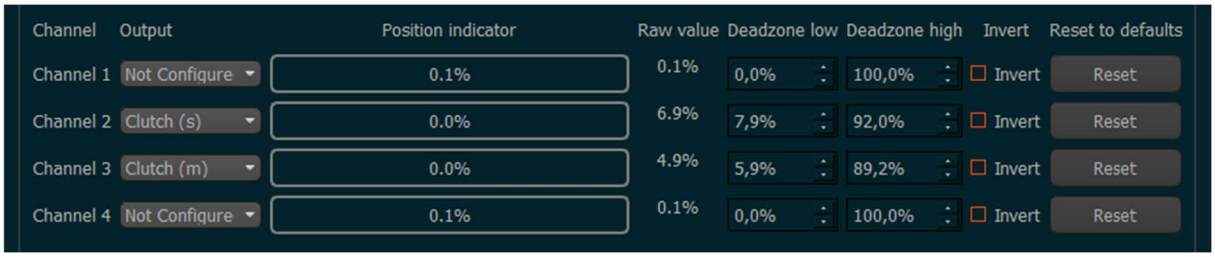

Analog axis configuration
Min and max values are lowest and highest values of raw input. (Min = raw value at default, Max = raw value at axis fully engaged)
Wireless Wheel
3
Channel Output Position indicator Raw value Deadzone low Deadzone high Invert Reset to defaults
Channel 1 Not Configure 0.0% 0.0% 0,0% 100,0% Invert Reset
Clutch (s) 6.5% 6.5% 0,0% 100,0% Invert Reset
Clutch (m) 5.1% 5.1% 0,0% 100,0% Invert Reset
Channel 4 Not Configure 0.0% 0.0% 0,0% 100,0% Invert Reset
4
Note 1: While this dialog is open, games will see raw, uncalibrated values.
Note 2: Unconnected inputs are floating, and might be acting in strange ways. Be sure to double check against the pins that you have connected to.
Note 3: Not configured Y axis will idle at 50% position, so that joystick will show at middle position for games.
Accept settings and close. Cancel reverts to the previous settings.
OK
Cancel

Deadzones need to be adjusted so that a resting paddle has 0% output whereas a fully pulled paddle results in 100% output.
The *position indicator* shows the resulting output which is reported to the simulation. Raw value is the absolute, unaltered value of the paddle.

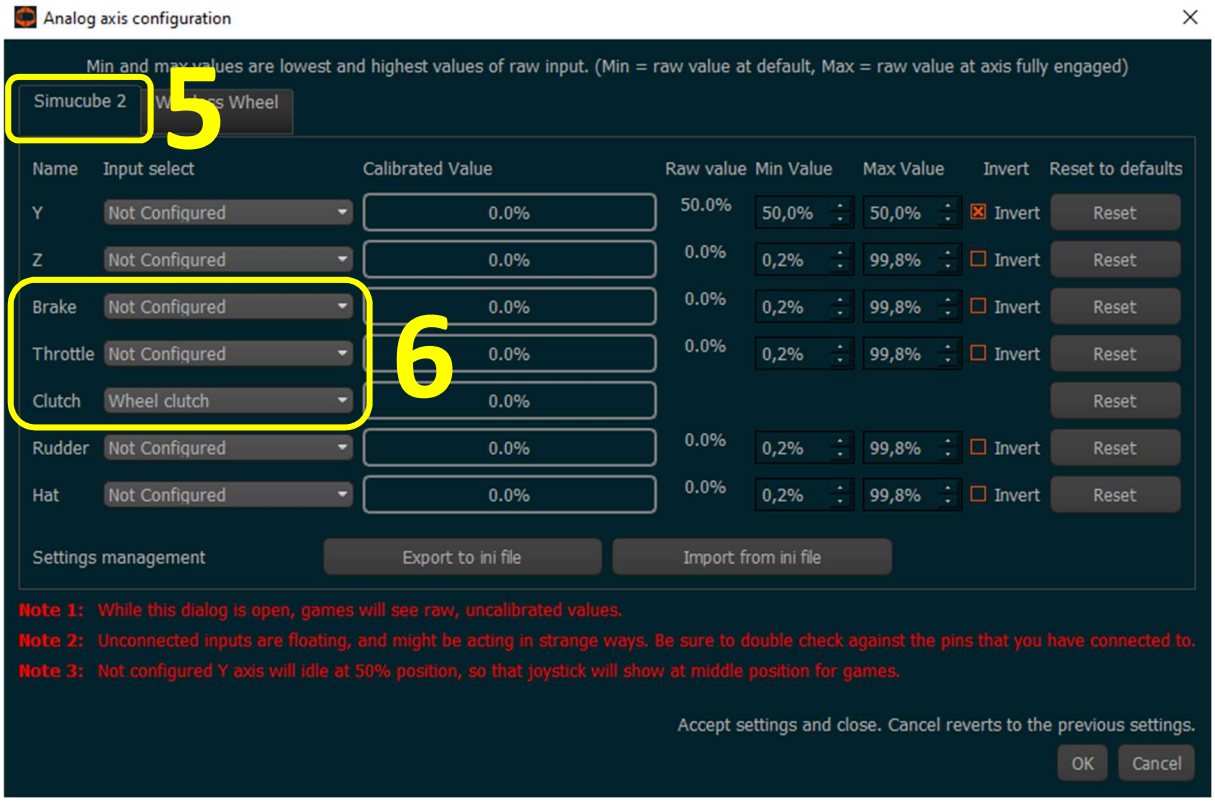
***Deadzone low* defines the Raw value at which the output starts (0%).** Set this value about 1% - 2% *higher* than the Raw value of the resting paddle.

***Deadzone high* defines the Raw value at which the output ends (100%).** Set this value about 1% - 2% *lower* than the Raw value of the fully pulled paddle.

Realistic values are as follows:



The last step is to define the previously configured wheel axis as a Simucube 2 axis:



If the axis doesn't show up correctly in this tab or the overview tab, make a full power cycle of both the wheel base and wireless steering wheel.

7.4. Adjust Clutch Bite-Point

The clutch bite-point (maximum output of the slave clutch) can be adjusted on the steering wheel:

1. push right joystick for 1s to enter bite-point mode
2. right LED lights up orange
3. adjust bite-point in **1%** increments by turning the **left joystick** or **0.1%** with the **right** one
4. push right joystick for 1s to exit bite-point mode

It's recommended to perform this procedure while in the virtual race car from top-down by pulling the slave clutch completely and then lowering the value until the vehicle starts moving. Race starts are performed by pulling both (m) and (s) clutches completely and when the starting lights turn green letting go just the (m) clutch. The overall clutch signal will jump immediately to the set-up bite point value.
Once the ideal bite-point is found and practice starts are performing as expected, the bite-point value is shown in the overview tab (analog inputs) when the slave clutch is pulled completely.

7.5. Mode-Switches

The rear side of the steering wheel features 2 mode switches which change the behavior of the rotary switches (located on the same side of the steering wheel) in order to maximize the performance and functionality.

- **12-pos:** standard mode (each position is an individual output)
- **shift:** (rotary can't be used in the simulation)
    - each rotary position changes the output of the middle thumb encoder
    - adjust 12 controls with one physical encoder
    - e.g. pos. 1 = ABS / pos. 2 = TC / pos. 3 = MAP / pos. 4 = Volume …
    - left rotary switch shifts left middle thumb encoder and vice versa

7.6. Simucube Button

The **left joystick push button** acts as a **Simucube Button** which allows changing of force feedback parameters on-the-fly.

- enter *SC Button Mode* by pushing left joystick button for 1s
- select parameter by pushing joystick in a direction
    - Up: Overall Strength
    - Left: Damping
    - Right: Simucube Force Reconstruction Filter
    - TBD
- increase/ decrease parameter by rotating the joystick encoder
- holding the direction for more than 2s resets the parameter to previous value
- exit *SC Button Mode* by pushing left joystick button for 1s

Each point above will give a recognizable audible feedback (if enabled).

8. Adjust Button LEDs

8.1. Wheel Side Settings

The **LED ON-OFF switch** on the rear side of the steering wheel (see chapter 5) turns the button illumination on and off. Please note that the energy consumption with illumination is much higher than without LEDs in use; for details see chapter 10.3. The switch can be used any time during driving, e.g. to save energy during breaks.

The **ADJ LED ON-OFF switch** changes the functionality of the default plus and minus push buttons (second to last buttons on the bottom left and right). In the ON position, those buttons can be used to do changes on-the-fly:

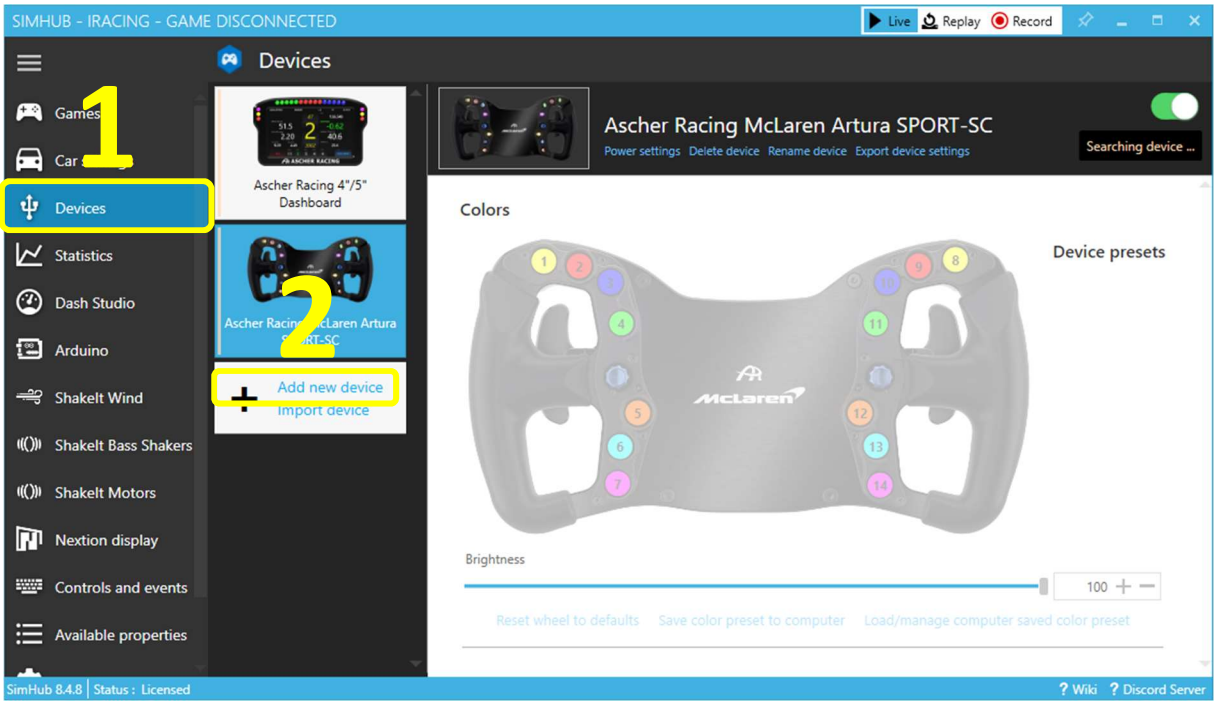
short press: increase/ decrease overall LED brightness
long press: change color profile (as setup in SimHub, see chapter 8.3)

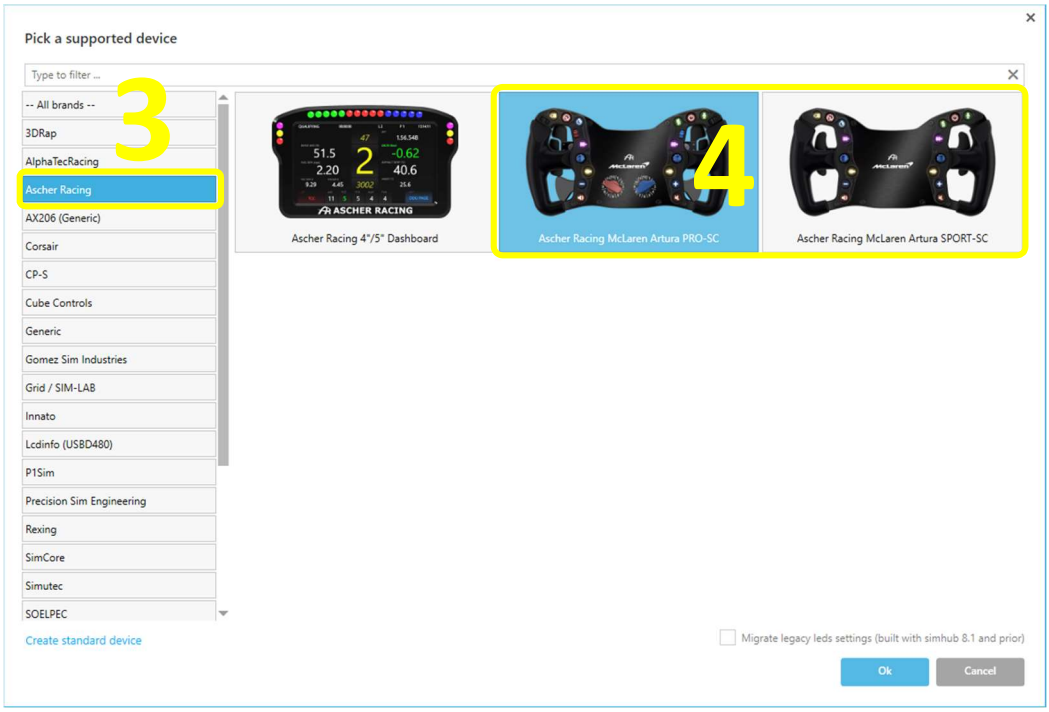
8.2. SimHub Setup

Individual button color and brightness adjustments as well as changes to presets can be made with the SimHub software package.

Download the latest version of SimHub from the official website and follow the installer step by step until SimHub is installed successfully:
https://www.simhubdash.com/download-2/

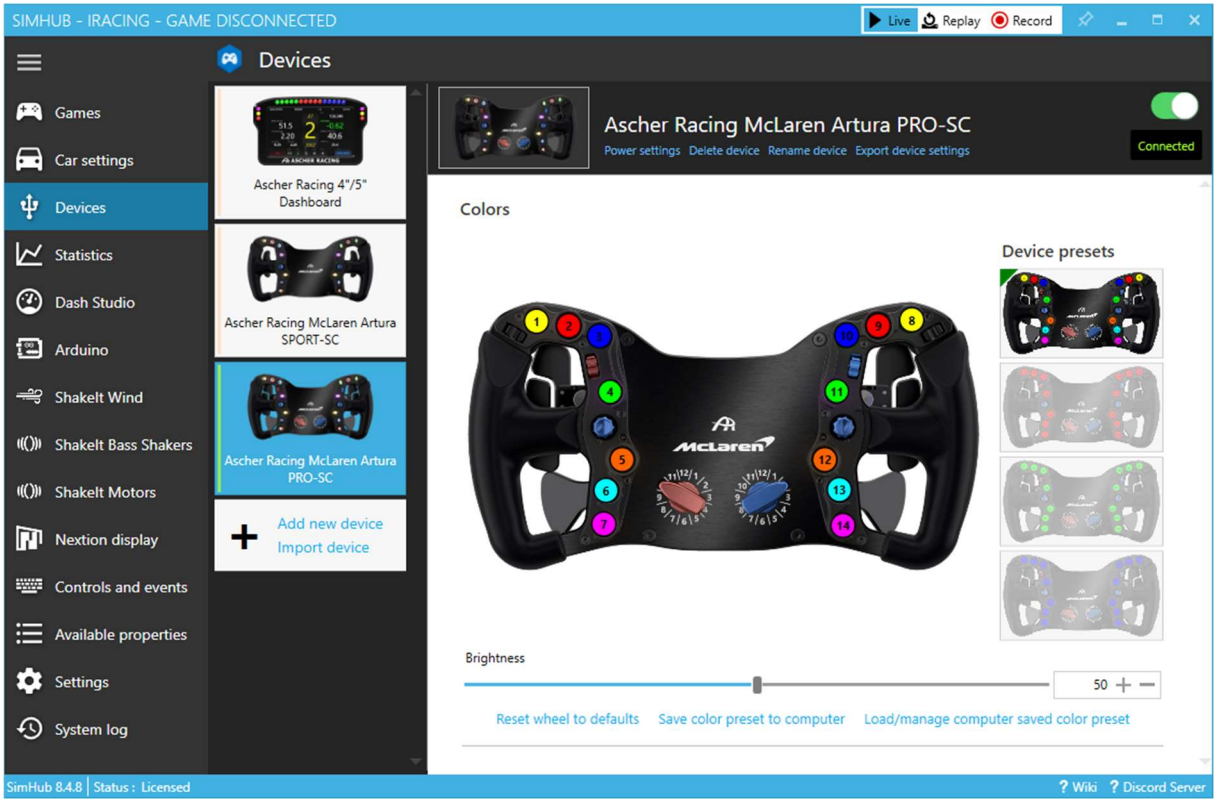
Add the SPORT or PRO steering wheel by clicking **Devices → Add new device** and select the product from the Ascher Racing brand filter as shown below.





8.3. SimHub Settings

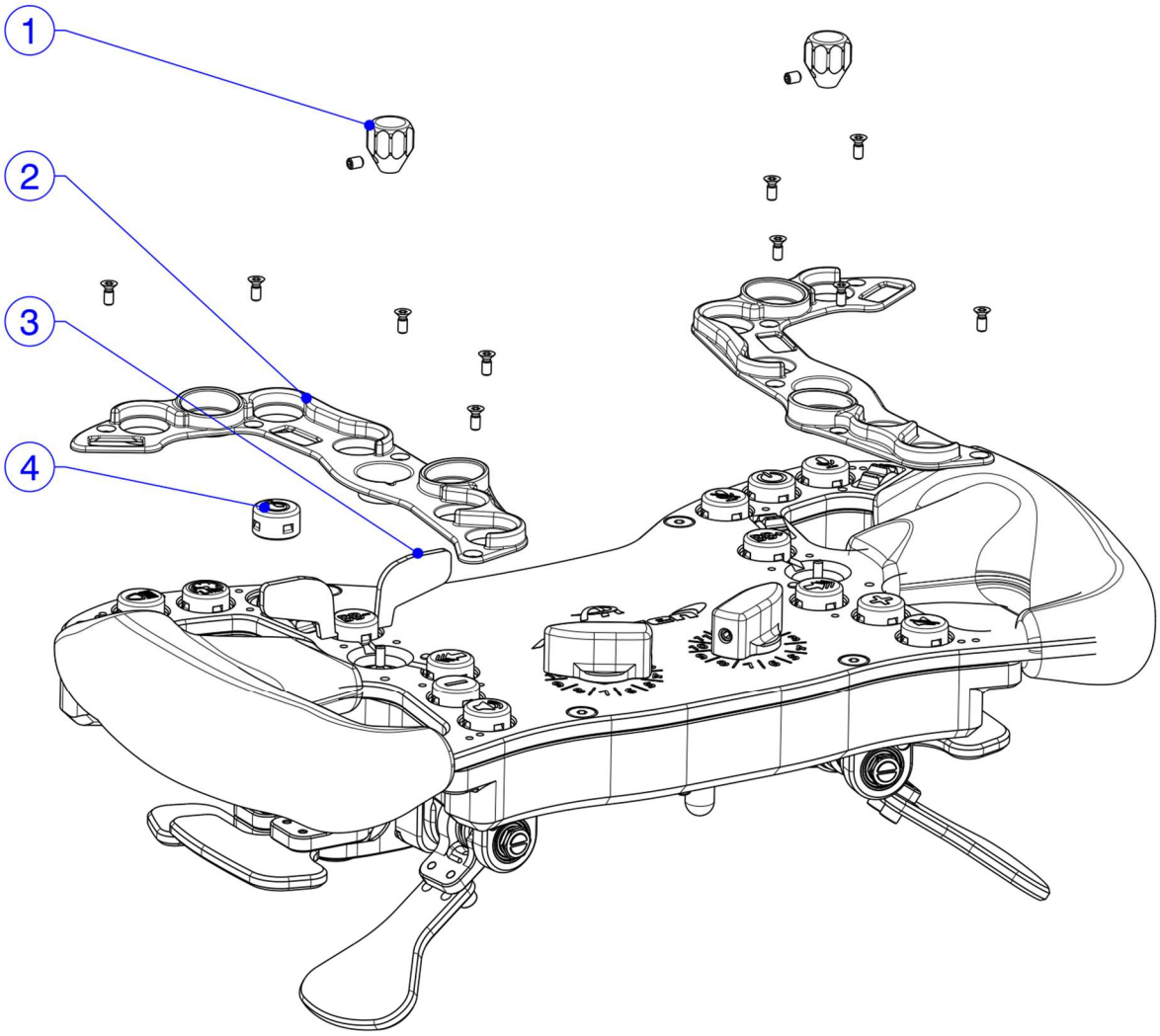
Connect the steering wheel with the computer via the provided USB-C cable and switch both rear side slide switches to the **ON position** (main power switch as well as LED switch).
Adjustments to color and brightness can now be made by clicking the buttons on the displayed wheel and will be saved to the steering wheel. Once finished, remove the USB-C cable and keep racing.



9. How to Change Button Caps

The button caps can be swapped easily without the need for extensive disassembly or opening of the steering wheel. To replace a symbol or change its position, the button cap can be pulled out of its carrier base and a new cap can be pushed in:

1. unmount joystick knob (Allen key: 1.5mm)
    - hold knob with fingers when loosening or tightening the grub screw
    - this avoids any force applied to the joystick shaft and prevents damage/ bending
2. remove the surrounding button cover (Torx key: TX8)
    - unmount all black TX screws and remove the cover
    - pull-out notches can now be accessed for easy removal
3. insert both *button cap removing tools* into notches
4. pull-out the cap
5. push-in a new cap (pay attention to the symbol orientation)
6. mount cover (max. screw torque 0.3 Nm/ 2.6 lbs → easy hand-tight)
7. mount joystick knob (hold knob with fingers)



10. Battery

The steering wheel is equipped with a rechargeable lithium polymer battery. The shipping battery charge is approx. 50%, which is also the optimum storage charge.

10.1. Charging

- The wheel can be charged in both conditions, switched ON and OFF
- Plug-in the provided cable (USB-C to USB-A) to the charging port on the rear side
- Connect the cable with a PC USB port or a 5V USB power supply (phone charger)
- Battery will be charged with 5.0V and 450mA
- A full charge takes about 6 – 7h

The right LED on the frontplate lights up red during charging and goes off once fully charged.

10.2. Battery Life – Without Button Illumination

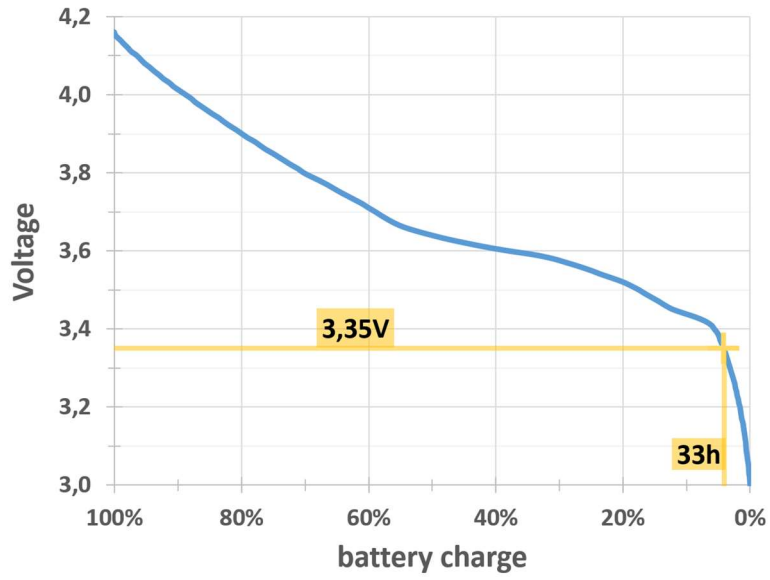
The steering wheel electronics are highly optimized for low power consumption without adding any input lag. The battery Voltage is shown in *TrueDrive – Overview Tab* once connected.

The battery is expected to last at least 800h in a typical use-case. Once the battery crosses **3.35V**, a low Voltage warning is triggered:

- the right LED on the frontplate blinks every 2 minutes (3 fast flashes)
- SC2 gives an audible warning (if enabled)

The remaining driving time without button illumination at this point is approx. 33h. It's recommended to not discharge the battery below 3.0V in order to prevent degradation. Additionally, any seriously harmful deep discharge will automatically be avoided by the battery protection circuit cut-off at approx. 2.7V.
It's recommended to switch OFF the steering wheel for storage or longer periods without use.

The following graph shows the correlation between battery capacity and voltage level. It can be used to estimate the remaining time of the non-linear discharge graph. The data was generated from actual measurements of the battery cell in use.



10.3. Battery Life – Including Button Illumination

The power consumption for push button illumination depends highly on the color profile and brightness of LEDs. A rough estimation for the expected battery life in normal conditions is between 15h and 30h.

10.4. Automatic LED Switch Off Due to Low Battery Voltage

The normal steering wheel operation and wireless connection has the highest priority! Once the battery voltage crosses a certain threshold, LEDs will be turned off automatically as a safety feature. The remaining battery charge will last for several hours of driving and makes sure that no race will be compromised, under any circumstances, due to using the button LED illumination.

If this safety feature is triggered, the top left button will blink red several times to indicate the automatic switch off. LEDs can only be switched on again after a power cycle of either the LED or main power switch to avoid any oscillation around the voltage threshold.

The orange low voltage LED next to the right joystick (see chapter 5 Product Overview) will be triggered well before in order to remind the user of a necessary charge. The automatic LED switch off is the last fail-safe feature to guarantee finishing a race.

11. Upgrade Shifters and Clutch Paddles

Both Ascher Racing Gen6 single and double paddle shifters are interchangeable. The SPORT steering wheel can be upgraded from the default single shifter to the double shifter at any point.

1. open the steering wheel as shown in chapter 6.4
2. unmount paddle shifters (Allen key: 2.5mm)
3. unplug shifter connection cables on both sides
4. guide new shifter connection cable through the casing
5. connect the cable with the shifter
6. mount paddle shifters (torque: 1.8 Nm)
7. adjust the shifter mode switch on the main PCB to DOUBLE
8. assemble steering wheel as shown in chapter 6.4

Ascher Racing Gen4 Clutch Paddles can be added to the SPORT steering wheel as well in the same procedure. Plug-in the clutch paddle cables to the labeled 3-pin connectors next to the paddle shifters and configure both new analog inputs as shown in chapter 7.3.

12. Steering Wheel Dimensions