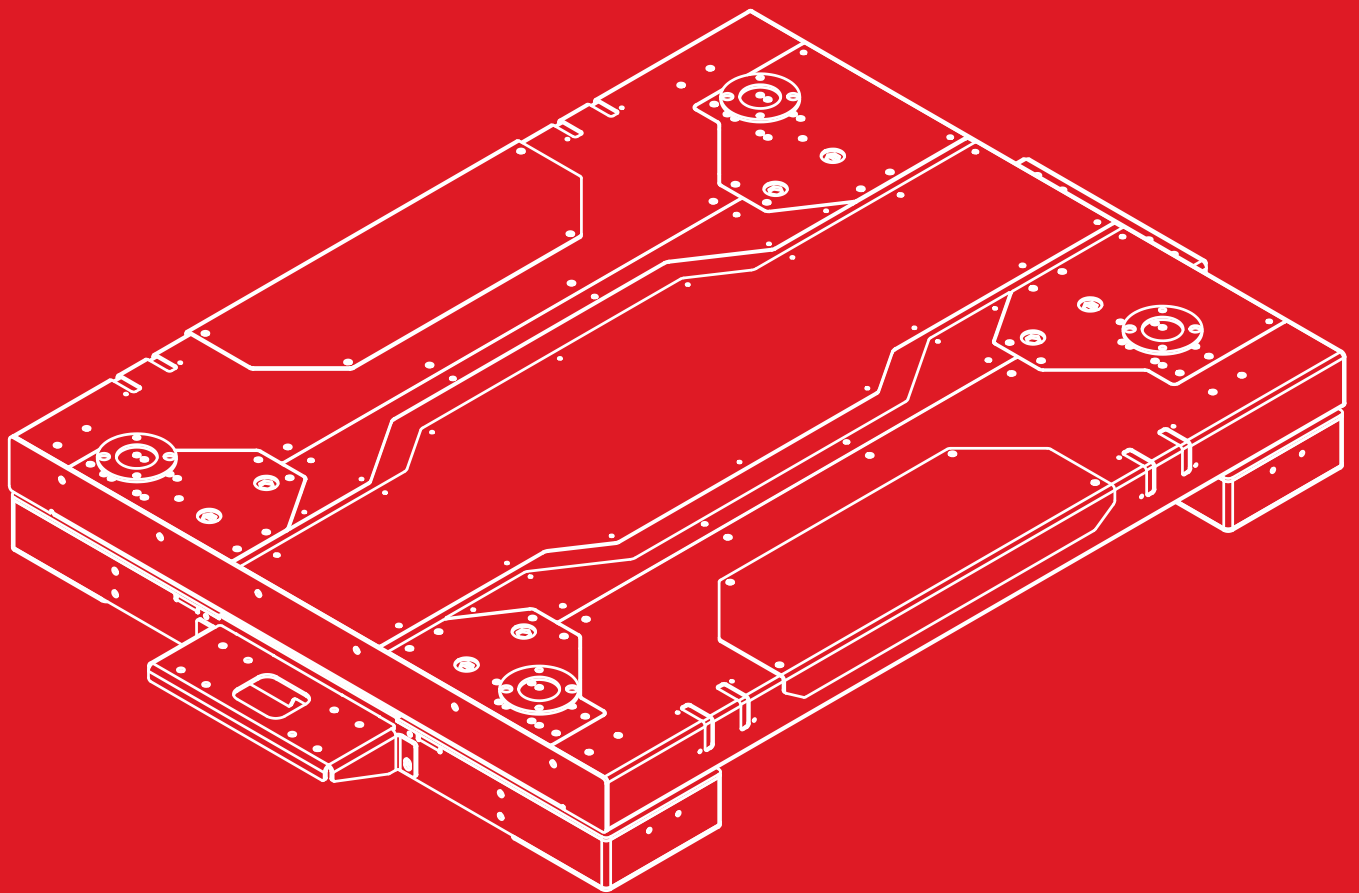


QS-CH2

User Manual



QUBICSYSTEM

The Motion Systems, manufacturer of Qubic System, would like to thank you for choosing the QS-CH2, an innovative product that helps you develop highly reliable training and entertainment solutions that reproduce key immersive elements, such as surface textures, acceleration, engine vibrations and vehicle dynamics for multiple types of land, air or sea vehicles. Our motion system has been designed to deliver the most realistic simulation experience. We hope you enjoy your new Qubic System!

Join our sim racing channel at the Qubic System YouTube

<https://www.youtube.com/c/QubicSystem>



NEWS & EVENTS

The latest news from the simulation world.

[QubicSystem.com/News](https://qubicsystem.com/News)



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SUPPORTED GAMES

Racing games and professional simulation software.

[QubicSystem.com/Supported-Games](https://qubicsystem.com/Supported-Games)

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1. IMPORTANT SAFETY INSTRUCTIONS

INFO

Read all safety instructions before installing and using this product. Save this document for future reference. If ownership of this product is transferred, be sure to include this manual.

WARNING

QS-CH2 is not intended for use by children under 16 years of age. Close supervision and safety instruction is required when this product is used by or near children or people with reduced physical, sensory or mental capabilities. Keep the packaging away from small children as it poses a suffocation risk.

1.1. ESSENTIAL INFORMATION

To reduce the risk of burns, fire, electrical shock, injury or mechanical damage:

WARNING



Always turn all the power switches off before plugging and unplugging the QS-CH2. Dangerous voltages level can be present in power cabinet for a few minutes after turning off the machine.

- Use the QS-CH2 only for its intended purpose, according to instructions.
- Unplug the QS-CH2 from the power supply if it is not used for an extended period or when there is a need to perform hardware installation, maintenance, servicing or repairs.
- Turn off the QS-CH2 when it is not in use.
- The QS-CH2 was designed for indoor use only - **DO NOT** store or use the product outdoors.
- Keep the QS-CH2 away from the heat sources, high humidity, water, and other liquids. **DO NOT** store in cold place where water condensation may occur.
- **DO NOT** disassemble the product. Any tampering with or altering the product will void the warranty, poses a serious risk of electric shock, and may irreparably damage the product.

- **DO NOT** cover the ventilation holes in the QS-SB2 power cabinet.
- Keep the power cord plug and the socket dry, clean and dust-free.
- Protect the power cord from damage caused by being stepped on, rubbed against, or pinched.
- **DO NOT** use the QS-CH2 if the ambient temperature is below 4° Celsius (39° Fahrenheit) or above 45° Celsius (113° Fahrenheit).
- **DO NOT** use the QS-CH2 if it has been damaged, or any component is broken or missing. Please contact technical support.
- **DO NOT** use attachments or replacement parts not recommended or approved by the manufacturer. If you must to replace the power cord use only certified one with the same rating as replaced one.

WARNING

Stop using the QS-CH2 immediately and contact technical support when the machine starts to emit unusual noise, smoke or any other suspicious behaviour indicating the machine is not working properly.

1.2. HEALTH AND SAFETY INSTRUCTION

The safety of Qubic System users is the top priority. To protect users and bystanders against injuries caused by mechanical parts movement and electrical connectivity, the following instructions must be strictly performed.

WARNING

As with any mechanical device, the user is responsible for inspecting the condition of the machine prior to use and adhering to safe operating procedures.

What must be done before turning on the machine:

- Check if cables are mounted properly – they are not stretched or loosely connected to the socket and placed out of the moving range of the system components.
- Check that all elements are properly fixed.
- Check if there are no sharp edges nearby.

WARNING



Dangerous voltage level may occur in the QS-SB2 power cabinet and cables during the operation and for a few minutes after turning off the machine.

How to turn on safely and use the QS-CH2:

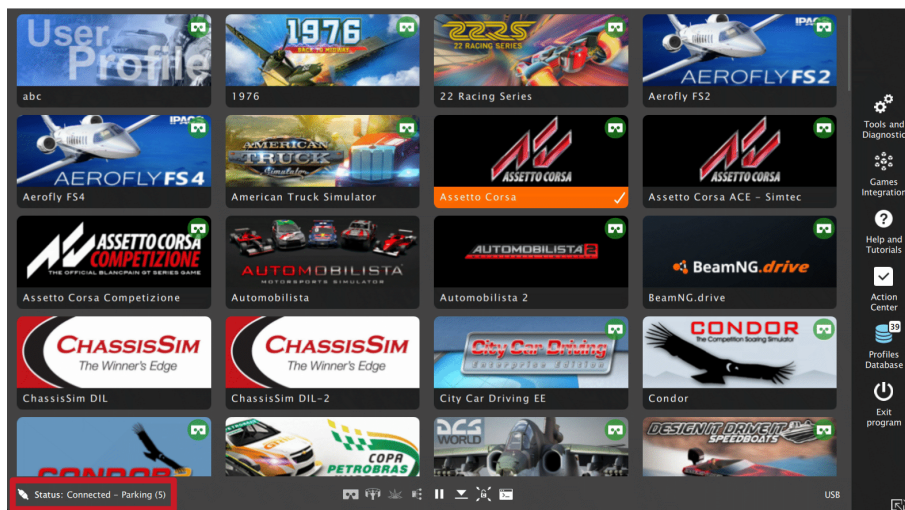
- Check if everyone around is aware of machine rapid movements.
- Make sure that no one stands in the range of motion (minimum 1.5 m).
- Kids should be kept away from the machine.
- Pets should be kept away from the machine.
- When the QS-CH2 is turned on, it performs start-up calibration.

WARNING

QS-220-PL will move automatically after turning it on in order to perform start up procedure. Please be away of that movement and do not try to interrupt it.

- **DO NOT** interrupt or change the weight of payload mounted to the QS-CH2 during start-up calibration.

To check if the platform is in the Motion Lock mode look at the main window of the QubicManager. Status is visible in the lower left corner of the window:



- For VR Headset users:
 - * Remove the VR goggles before entering or exiting the rig.
 - * Check very carefully if cables from VR Headset are not limiting the operation range of QS-CH2.
 - * Check if the whole VR setup is not in range of motion of the machine.
 - * Check if cables are protected from being crushed by the QS-CH2 – **DO NOT** place them loosely under the motion rig.

INFO

Check if connected PC is capable of running the game at stable 90 frames per second or more when VR Headset is used. Lower values can cause VR sickness.

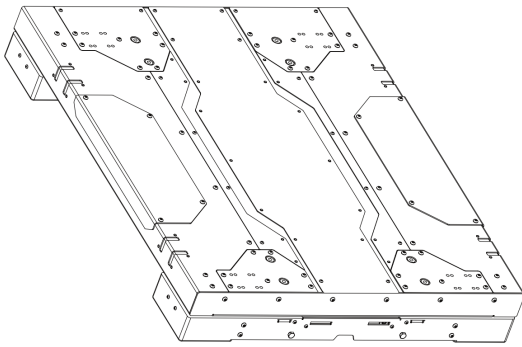
- **DO NOT** use QS-CH2 if you are pregnant, tired, or under the influence of alcohol or drugs.
- **STOP USING** the QS-CH2 immediately if pain, fatigue or any discomfort appears.
- For every two hours of playing, we recommend at least **15 MINUTES OF BREAK**.
- **DO NOT** put your hands or legs in the actuators range of motion!
- **DO NOT** use the QS-CH2 around small children or pets.
- **DO NOT** put any items between actuators and stabilization plates.
- **DO NOT** pull the wires connecting the actuators with the power cabinets.



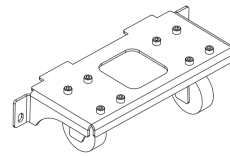
2. SYSTEM DESCRIPTION

The QS-CH2 is intended to be used as additional yaw and surge table which can be placed under motion cockpit. It is suited to work together with the Qubic System QS-CH1 motion cockpit by providing additional over steering effect. Platform is based on the Qubic System linear actuator technology, which is part of the Qubic Ecosystem and it is compatible with other Qubic System products.

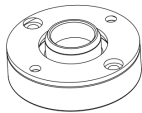
2.1. SYSTEM COMPONENTS



QS-CH2 motion platform
(x 1)



Transportation wheels
(x 2)



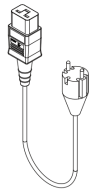
Actuator mounting feet
(x 4)



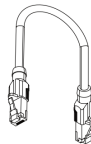
**DIN 933 M10 x 35
Transportation wheels
mounting bolts**
(x 4)



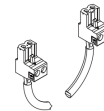
**DIN 912 M8 x 40
Actuator feet
mounting bolts**
(x 16)



Power supply cable
(x 1)

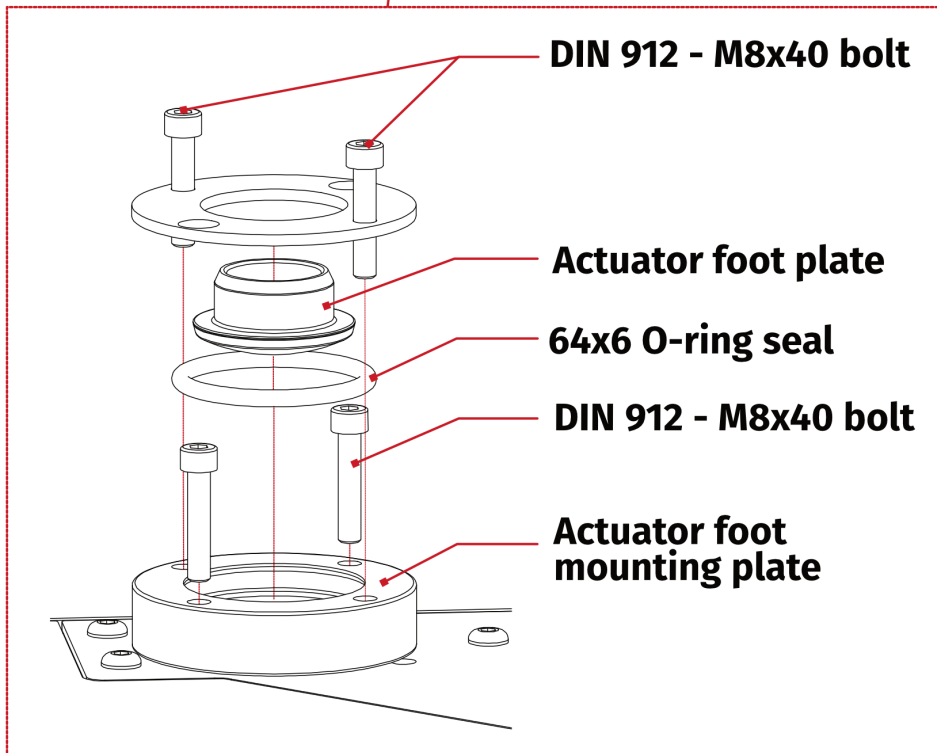
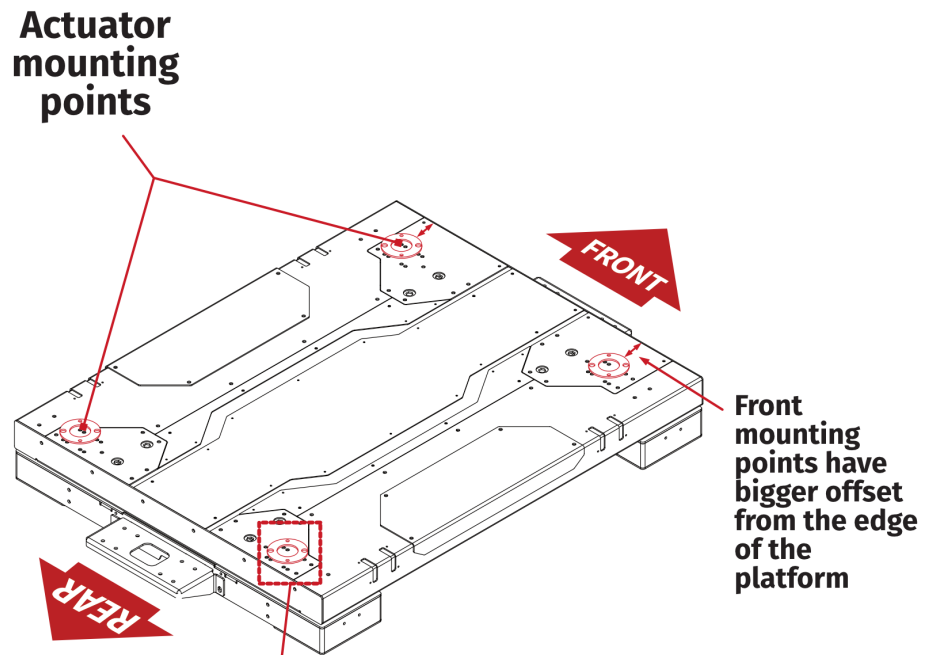


**BUS
communication
cable**
(x 1)

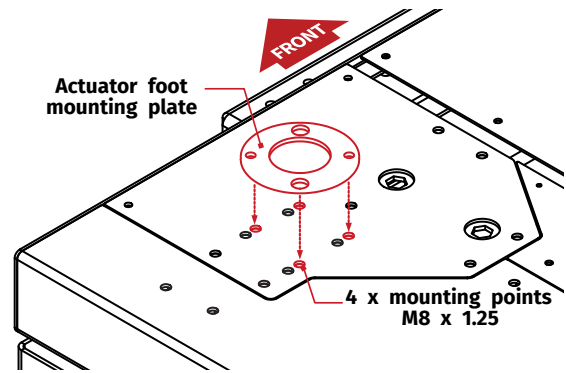
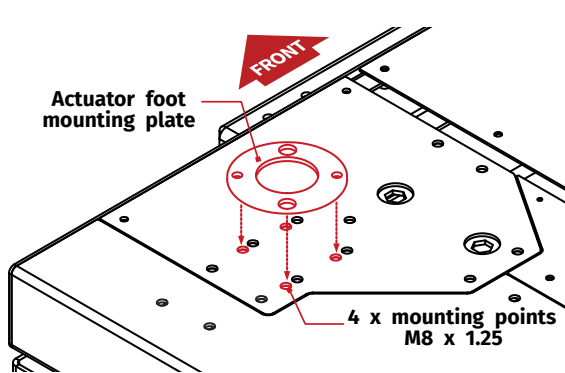


**Motion lock
interlink cable**
(x 1)

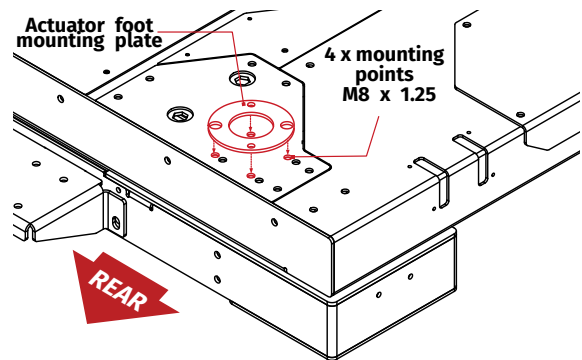
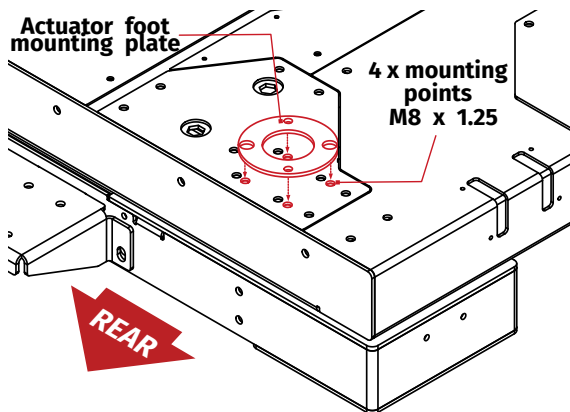
2.2. PLATFORM LAYOUT AND ACTUATORS MOUNTING POINTS



Front side actuator foot mounting points:

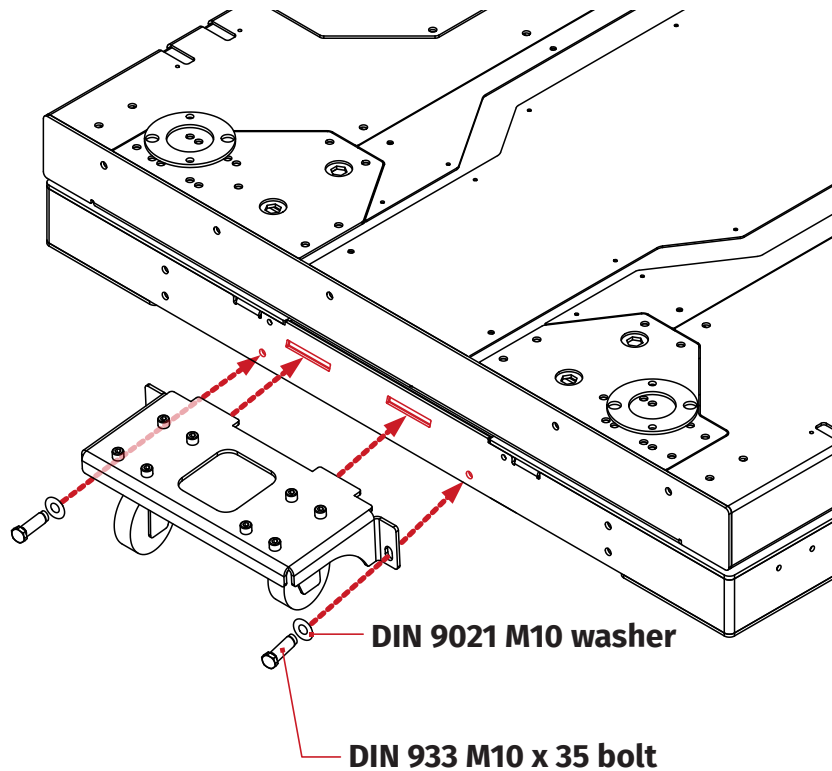


Rear side actuator foot mounting points:



2.3. TRANSPORTATION WHEELS

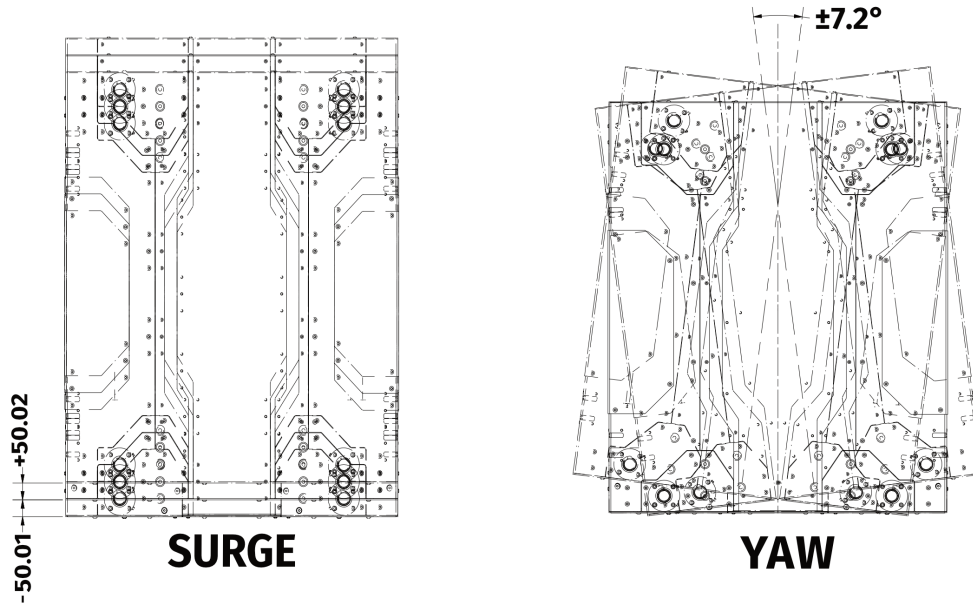
Transportation wheels can be mounted for transportation purposes. Put the transportation wheels mounting bracket to the mounting points in the front and back of the QS-CH2. Screw both bolts with nuts gradually one by one using 17 mm socket wrench until the bracket is flush against the side of the device and platform is high enough to be transported.



INFO

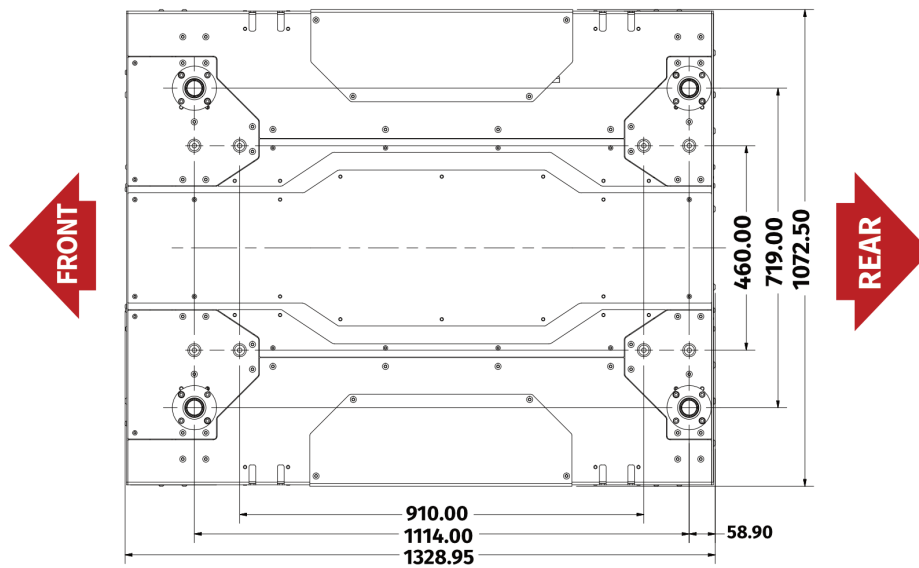
Transportation wheels can be mounted on CH-2 with attached payload.

2.4. EXCURSIONS

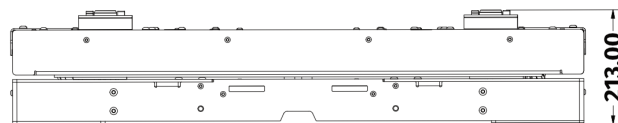


2.5. DIMENSIONS

Topside view



Frontside view



2.6. SYSTEM SPECIFICATION

QS-CH2	
Architecture	2DOF
Actuator stroke	100 mm
Platform weight	160 kg
Gross moving load	300 kg
Excursions	
Yaw	-7.2°, 7.2°
Surge	-50 mm , 50 mm
Maximum velocity	800 mm/s
Maximum acceleration	0.8G*

*Value of acceleration is limited for safety reasons.

2.7. POWER REQUIREMENTS

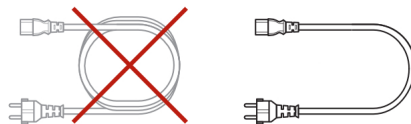
Power Cabinet (QS-SB2) contains the power supply for connected actuators. If there is no certainty if fuses or entire electrical installation can handle QS-CH2, contact a qualified electrician.

Converter specification		Breaker specification	Power consumption	
Average Power [kVA]	Peak Power [kVA]	Peak Current [A]	Average Power (stress test) [kW]	Average Power (typical game) [kW]
120 V power supply				
1	1,5	12,4	0,7	0,06
230 V power supply				
1	1,7	7,4	0,6	0,06

*With heavy payload and /or intensive simulation, average power consumption may rise.

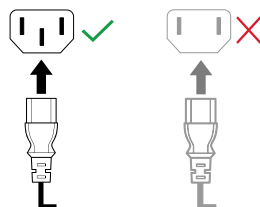
WARNING

Always **UNWIND THE CABLE COMPLETELY** when using a cable reel and untangle an extension cord before connecting the device to the power supply.



WARNING

Check if the power cord plug has grounding connection (with 3 pins). In order to reduce risk of electric shock **DO NOT** use plug without grounding connection (without center pin).



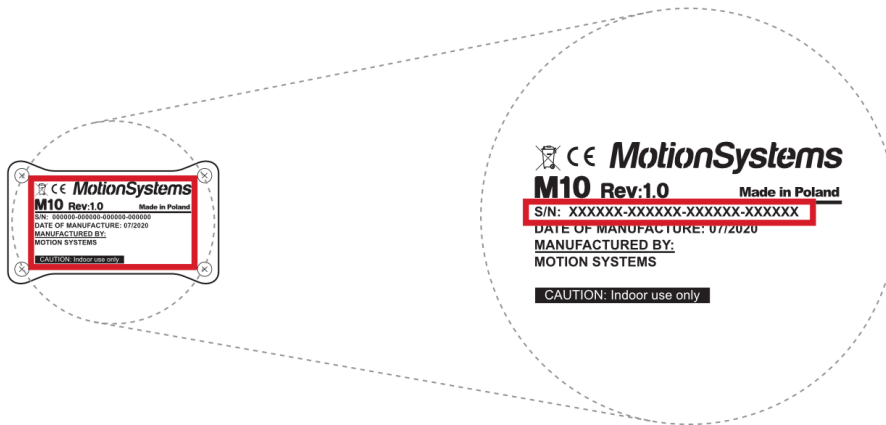
3. INSTALLATION

3.1. SOFTWARE INSTALLATION

INFO

The base QS-CH1 requires MC6 controller set in order to connect it to the user PC and install QubicManager.

The **SERIAL NUMBER** can be found on the M10 identification label in the **XXXXXX-XXXXXX-XXXXXX-XXXXXX** format. This serial number is also used for activation of FSMI (Force-SeatMI) and MT (Motion Theater) licences.



To download the software visit : QubicSystem.com/Download

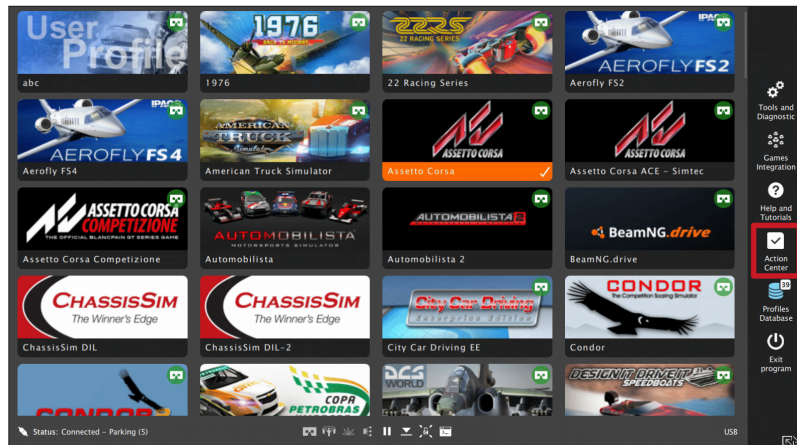
Once the QS-CH2 is installed and connected correctly:

1. Connect power supply cable to the wall socket.
2. Download QubicManager.
3. Proceed with the installation steps and launch the application.
4. Turn on the system by switching on the power switch button on the QS-SB2 power cabinet.
5. The QS-CH2 will perform a start-up calibration.

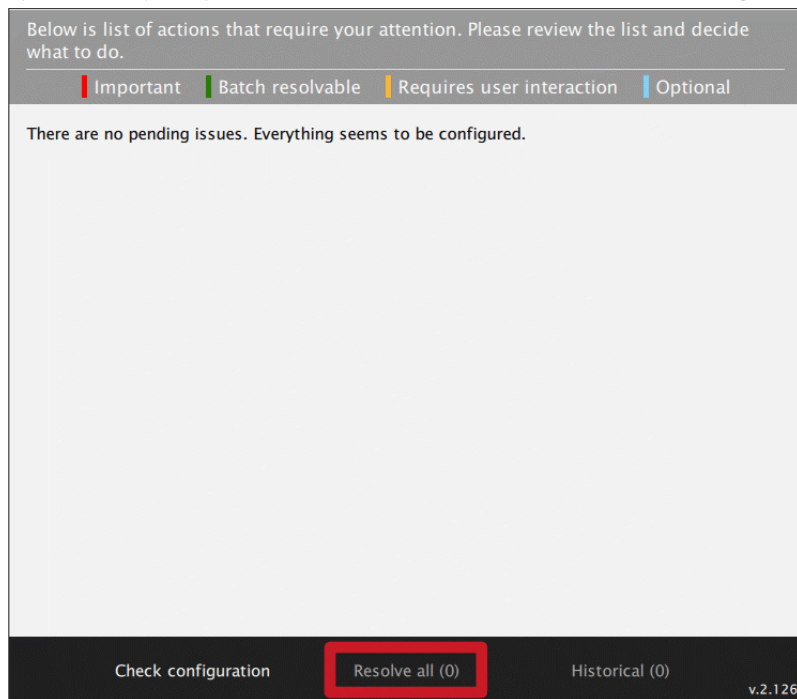
WARNING

DO NOT change the payload during the start-up calibration.

6. If QubicManager has recognized the QS-220-PL correctly, the status of the machine visible in the lower left corner will change to **Connected**.
7. Check **Action Center** on the right side panel for a list of actions that requires attention:



It is possible to solve them one by one or by pressing the **Resolve All** button. Firmware update may require additional confirmation in the dialogue box.



8. Go to Tools and Diagnostics → Devices and select Configure.

Below are all recognized devices including motion platforms and accessories.

Device #1: OS-4xx			Configure
Serial number:	xxxxxx-xxxxxx-xxxxx-xxxxxx	(copy to clipboard)	Levelling
Status:	OK		Quick Codes
Firmware:	141.16	Temperature (C): N/A	
Work time:	1h 05m 17s	Up time: 0h 21m 02s	Hardware ID: 54
Paused:	no	Parking: finished (normal)	Features: default
			Offline: no
Device #1.1: HVFMC100			
Serial number:	xxxxxx-xxxxxx-xxxxx-xxxxxx	(copy to clipboard)	
Status:	OK (33)		
Firmware:	144.30	Temperature (C): 24, 31	Hardware ID: 58
Work time:	-	Up time: 0h 20m 29s	Features: default
Device #1.2: HVFMC100			
Serial number:	xxxxxx-xxxxxx-xxxxx-xxxxxx	(copy to clipboard)	
Status:	OK (33)		
Firmware:	144.30	Temperature (C): 24, 31	Hardware ID: 58
Work time:	-	Up time: 0h 20m 29s	Features: default

9. Choose correct layout from the list (0+T or 4+T)

Select number of actuators

Click button below to select number of actuators your system is equipped with.
Individual actuator's location will be configured on the next screen.

Next

10. Scroll down in the window, you can choose one of the operation modes:

Operation Mode

Operation modes let you flexibly adapt the system configuration to varying requirements, maximizing the use of available system resources. You can define one of the operation mode to increase your device performance.

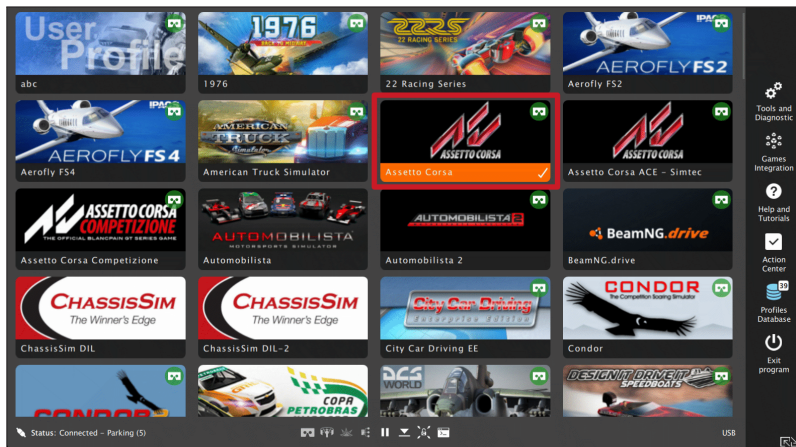
<p>Heavy-Duty</p> <p>Moderate acceleration Moderate speed Increased payload</p> <p>115 / 230 VAC</p> <p><input checked="" type="radio"/></p>	<p>Performance</p> <p>Increased acceleration Increased speed Moderate payload</p> <p>115 / 230 VAC</p> <p><input type="radio"/></p>	<p>Q-MODE</p> <p>Maximum acceleration Maximum speed Reduced payload</p> <p>only 230 VAC</p> <p><input type="radio"/></p>
---	--	---

OK

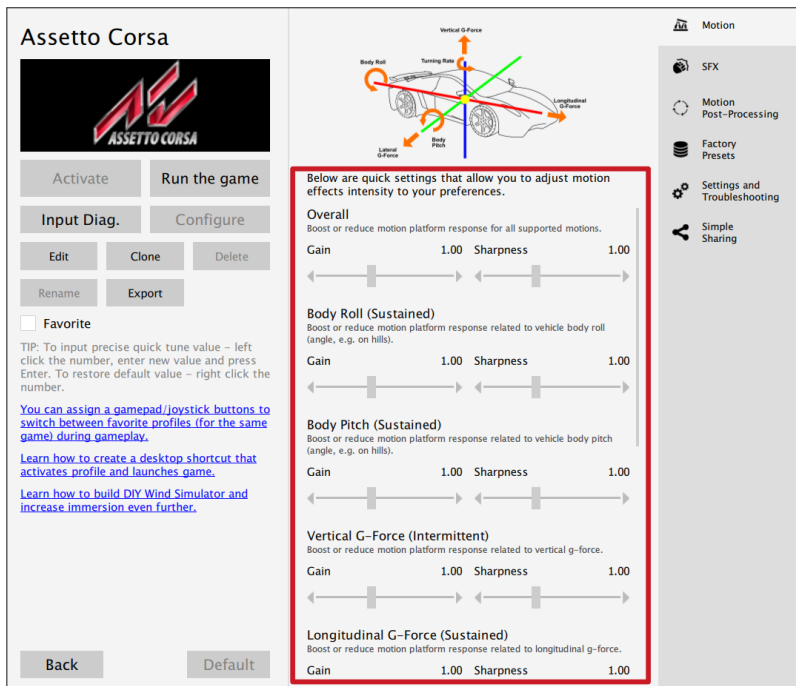
INFO

Q-MODE is unavailable for 120V power supply.

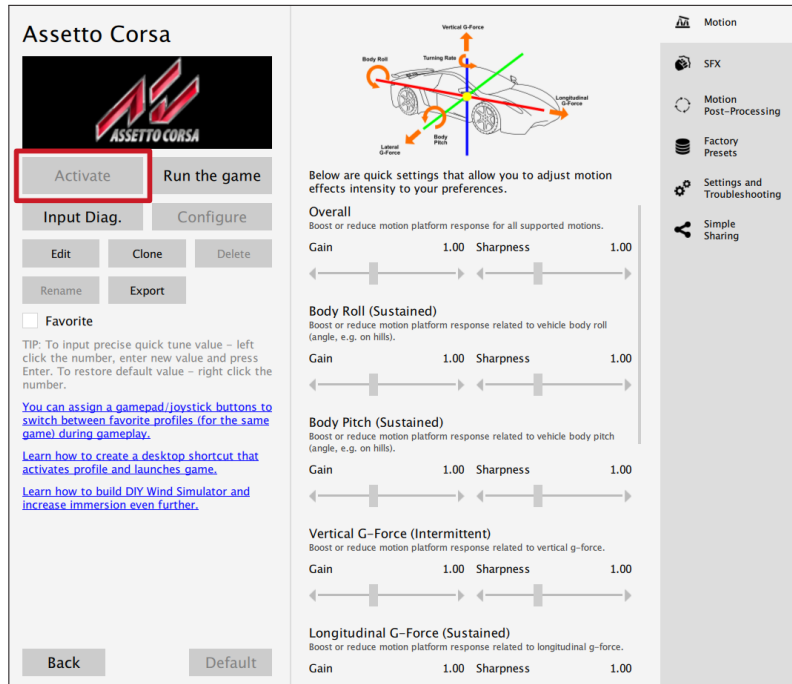
11. Close the configuration and return to the main application window. Choose the game tile, check profile details by clicking on it.



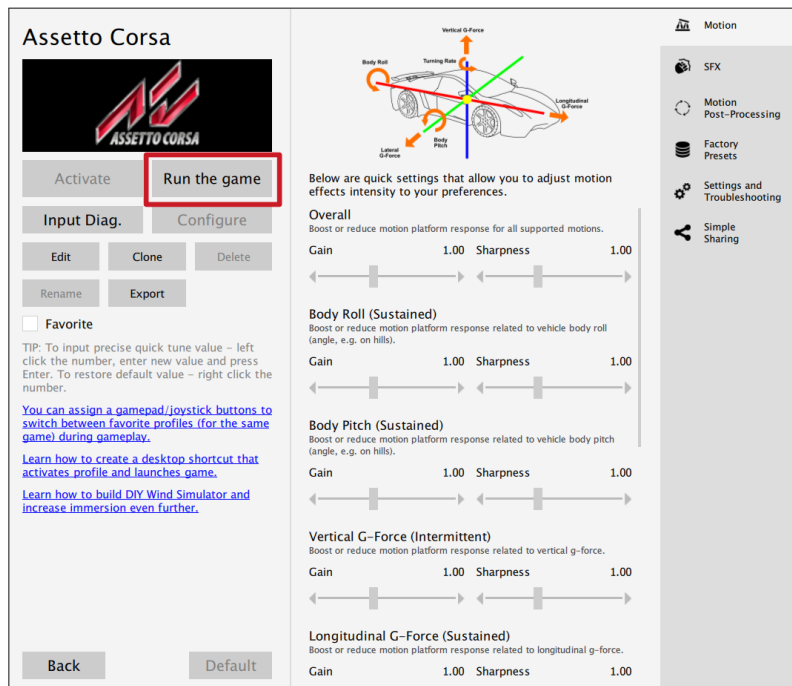
12. Adjust the motion effects intensity to your preferences in the game profile window, scroll down in the window to see all of the settings. You can adjust the settings during the game simulation by pressing **ALT+TAB**.



13. Activate profile by clicking the **Activate** button.

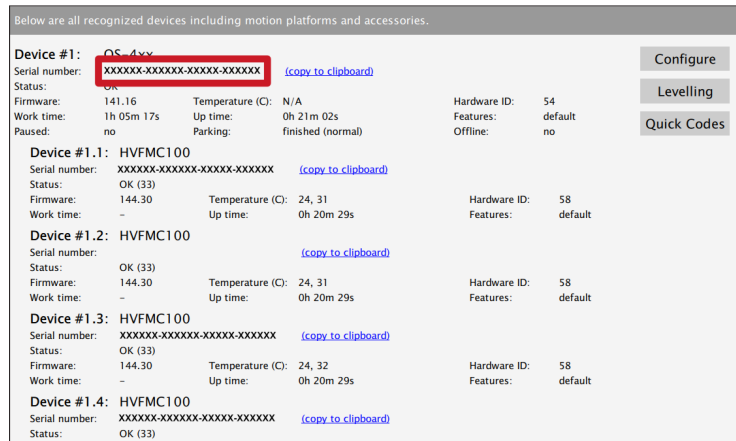


14. Launch on the game by clicking the **Run the game** button.



INFO

If you need the serial number to activate other software licences such as Force-SeatMI or SeatDI, it can be found in the QubicManager. After connecting the QS-CH2 go to **Tools and Diagnostics → Devices**. Serial number is visible under the device name:

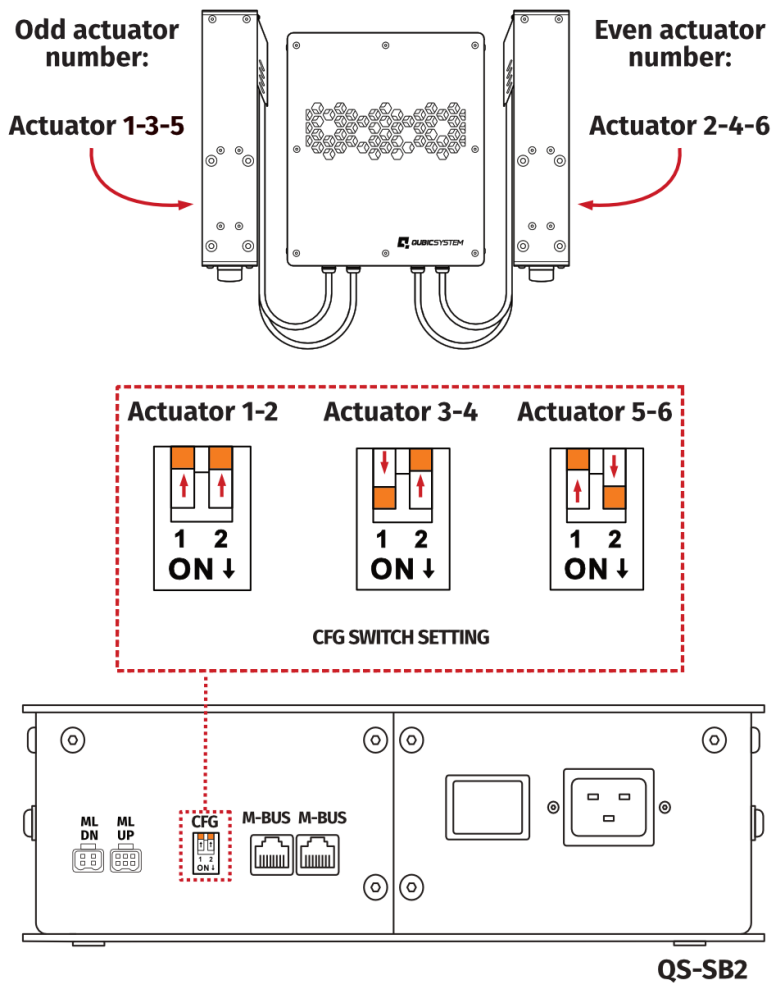


WARNING

The software is provided "as is", without warranty of any kind, express or implied, including but not limited to the warranties of merchantability, fitness for a particular purpose, and non-infringement. In no event shall the authors or copyright holders be liable for any claim, damages, or other liability, whether in an action of contract, tort or otherwise, arising from, out of, or in connection with the software or the use or other dealings in the software. The software sends anonymous usage data to the Motion Systems company. The data is used to improve the software and game profiles. The data is not used for advertising purposes.

3.2. CFG SWITCH CONFIGURATION

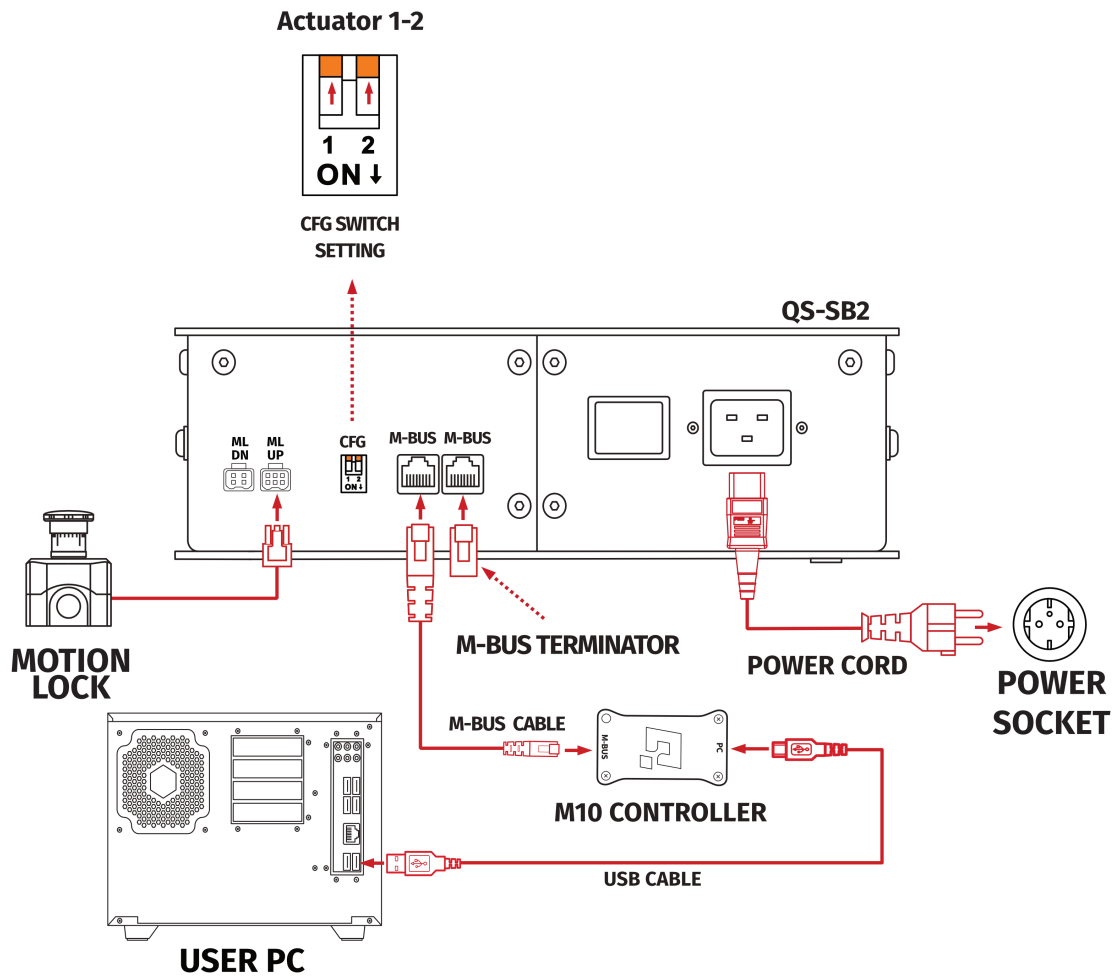
CFG switches needs to be set to appropriate positions in accordance with actuator number. Actuator number can be found on the actuator cables output side in the QS-SB2 power cabinet. By default they are set accordingly to the connected actuator number. If you wish to change the layout of the actuators you need to change the CFG switches setting by switching to number of the actuators they shall represent.



WARNING

- The CFG Switch **CAN NOT** be set in the same position in either of power cabinets.
- When changing CFG Switch setting the main power must be **SWITCHED OFF**.
- When changing the CFG Switch setting **FIRMLY SET THE SWITCH** into lower or upper position. Do not leave the switch in the floating position (neither up or down position), otherwise the device will not work.

3.3. CONNECTING QS-CH2 WITH USER PC

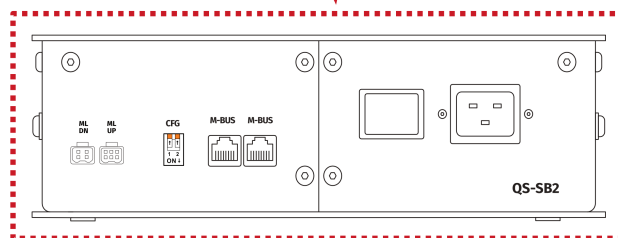
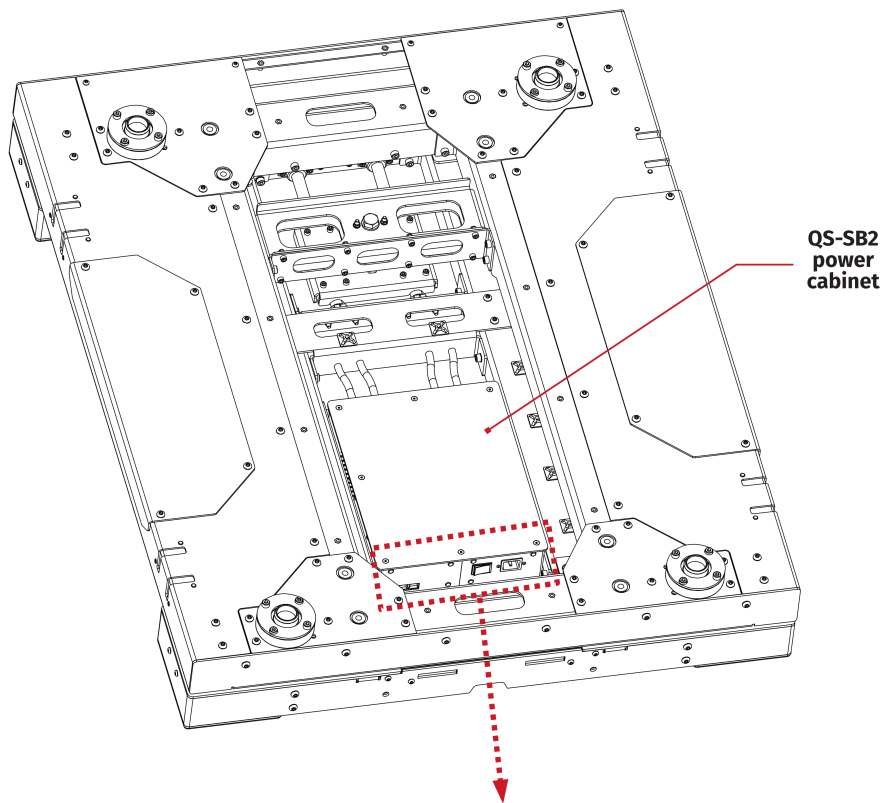
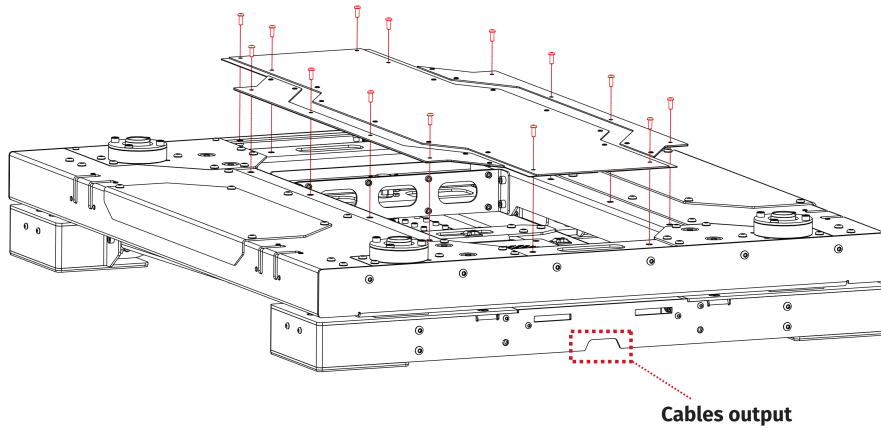


INFO

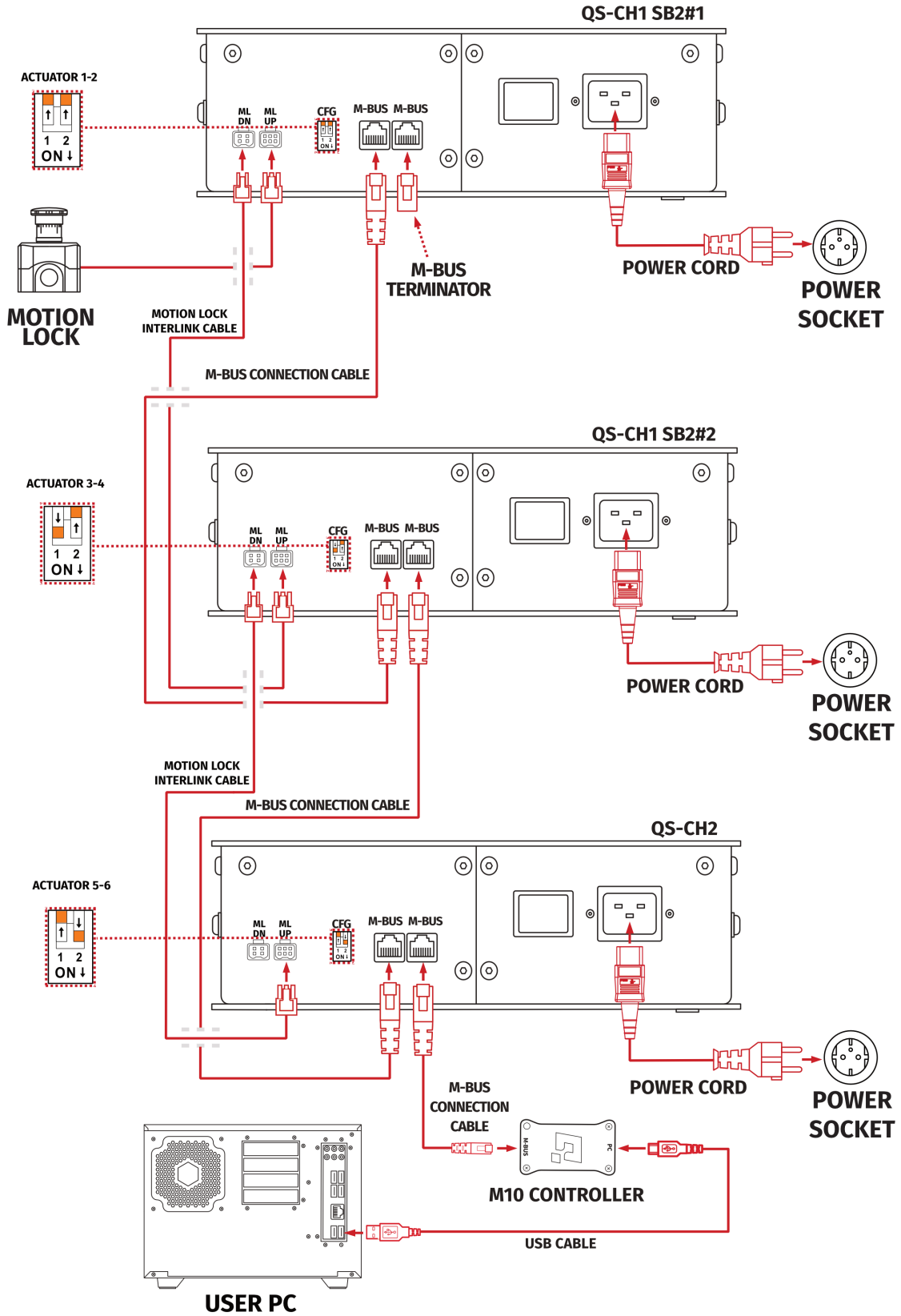
- The base QS-CH1 requires MC6 controller set in order to connect it to the user PC
- Keep the CFG switches according to appropriate layout. Check section 3.2 on page 19
- Insert M-BUS terminator to the unused M-BUS port in the QS-SB2 power cabinet.

3.4. REMOVING TOP COVER

In order to get access to the QS-SB2 power cabinet the top cover needs to be removed. To remove the cover unscrew the 14 x bolts using 4 mm hex key as shown below:



3.5. CONNECTING QS-CH2 WITH OTHER QUBIC SYSTEM DEVICES



INFO

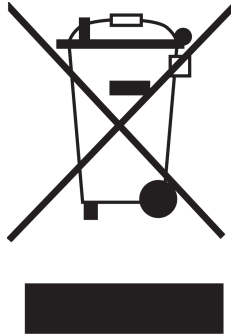
- Order of connecting the cables is not important, you can connect the M10 controller or Motion Lock Switch to either of the QS-SB2 power cabinet.
- When connecting QS-CH2 to other Qubic System devices which uses two QS-SB2 power cabinets the CFG switch on the QS-CH2 must be set to actuator 5-6 position - check section 3.2.

4. CONFORMITY INFORMATION



The QS-CH2 meets the requirements of CE and relevant regulations of the EMC Directive 2014/30/EU and the RoHS Directive 2011/65/EU.

5. ENVIRONMENTAL IMPACT AND DISPOSAL



DO NOT dispose of this product with standard household waste, but dropped it off at a collection point for the disposal of Waste Electrical and Electronic Equipment for recycling.

QS-CH2 is an advanced device and if stored or disposed of incorrectly, it could harm the environment or/and other people. Please contact your local authorities for information about nearest collection point.

6. LIABILITY DISCLAIMER

If permitted under applicable law, Motion Systems and its subsidiaries disclaim all liability for any damages caused by one or more of the following:

- The product has been modified, opened, or altered.
- Failure to comply with a User Manual.
- Inappropriate or abusive use, negligence, an accident (an impact, for example).
- Normal wear.

INFO

If permitted under applicable law, Motion Systems and its subsidiaries disclaim all liability for any damages unrelated to the material or manufacturing defect with respect to the product (including, but not limited to, any damages caused directly or indirectly by any software, or by combining the QS-CH2 with any unsuitable element or not other elements not supplied or not approved by Motion Systems for this product).

7. WARRANTY

Motion Systems warrants to the consumer that this product shall be free from defects in materials and workmanship, for a warranty period which corresponds to the time limit to bring an action for concerning this product.

For commercial customers, there is a one (1) year limited warranty, starting on the original date of purchase.

Within the warranty period, the product will be repaired or replaced free of charge, excluding shipping charges.

This warranty shall not apply:

- If the product has been modified, opened, altered, or has suffered damage as a result of inappropriate or abusive use, negligence, an accident, normal wear, or any other cause unrelated to a material or manufacturing defect (including, but not limited to, combining the QS-CH2 with any unsuitable element, including in particular power supplies, chargers, or any other elements not supplied or approved by Motion Systems for this product).
- In the event of failure to comply with the instructions provided by technical support.
- To software, said software being subject to a specific warranty.
- To accessories (cables, cases - for example).
- If the product was sold at public auction or if the product has suffered damage as a result of force majeure: flood, fire, earthquake, storm.

This warranty is non-transferable. No new warranty period commences if the product is repaired or replaced. Your statutory rights towards the seller are not affected or restricted by this warranty. Motion Systems, and their partners are not liable for any indirect, incidental, or punitive damages from use of this product. In case of malfunction during the warranty period immediately contact technical support.

8. COPYRIGHT

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INFO

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9. MANUFACTURER INFORMATION

Motion Systems

Miedziana 7 Street
55-003 Nadolice Wielkie
Poland



INFO

In support queries please contact your reseller.



QUBICSYSTEM