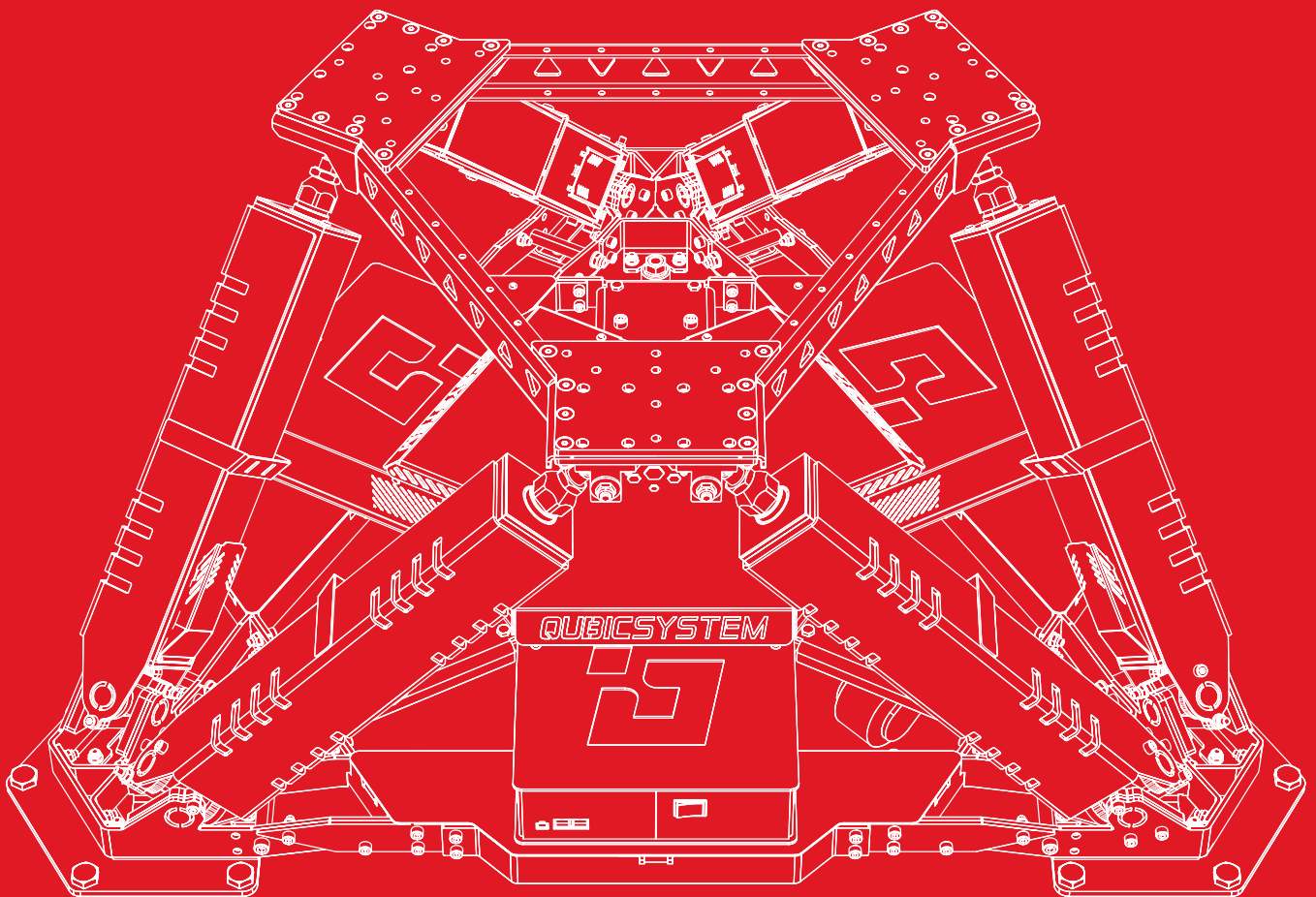


# QS-617/625

User Manual



**QUBICSYSTEM**



The Motion Systems, manufacturer of Qubic System, would like to thank you for choosing the QS-617/625 , 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)



## CHECK OUR SOCIAL MEDIA

Everything you wish to know is here!

[facebook.com/qubicsystem](https://facebook.com/qubicsystem)



## SUPPORTED GAMES

Racing games and professional simulation software.

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



# Contents

|          |   |           |
|----------|---|-----------|
| <b>1</b> | <b>Safety precautions</b>                                       | <b>5</b>  |
| 1.1      | Essential Information   | 5         |
| 1.2      | Before start  | 7         |
| <b>2</b> | <b>System description</b>                                       | <b>10</b> |
| 2.1      | System components   | 10        |
| 2.2      | Voltage system  | 12        |
| 2.3      | Power Requirements  | 12        |
| 2.4      | Grounding Requirements  | 13        |
| <b>3</b> | <b>Product description</b>                                      | <b>14</b> |
| 3.1      | QS-617  | 14        |
| 3.1.1    | Dimensions  | 15        |
| 3.1.2    | Specification   | 16        |
| 3.2      | QS-625  | 17        |
| 3.2.1    | Dimensions  | 18        |
| 3.2.2    | Specification   | 19        |
| <b>4</b> | <b>Installation</b>   | <b>20</b> |
| 4.1      | Interconnections  | 20        |
| 4.1.1    | Connecting power supply to the QS-SB2 power cabinets:           | 21        |
| 4.2      | Software Installation and starting simulation                   | 22        |
| <b>5</b> | <b>Maintenance</b>  | <b>27</b> |
| <b>6</b> | <b>Troubleshooting</b>  | <b>28</b> |
| <b>7</b> | <b>Advanced applications</b>                                    | <b>29</b> |
| 7.1      | Adding additional devices to the motion lock circuit            | 29        |
| 7.2      | Implementing the working zone protection                        | 31        |
| 7.3      | Increasing safety level   | 32        |
| 7.3.1    | Assembling Motion Lock jumper                                   | 32        |
| 7.3.2    | Adding power-cut circuit with E-STOP button                     | 33        |
| 7.3.3    | Implementing the working zone protection with power-cut circuit | 35        |

---

|           |  |           |
|-----------|--|-----------|
| <b>8</b>  | <b>Conformity Information</b>            | <b>36</b> |
| <b>9</b>  | <b>Environmental Impact and Disposal</b> | <b>36</b> |
| <b>10</b> | <b>Warranty</b>                          | <b>37</b> |
| <b>11</b> | <b>Liability Disclaimer</b>              | <b>38</b> |
| <b>12</b> | <b>Copyright</b>                         | <b>39</b> |
| <b>13</b> | <b>Manufacturer information</b>          | <b>39</b> |

# 1. SAFETY PRECAUTIONS

## 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-617/625 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

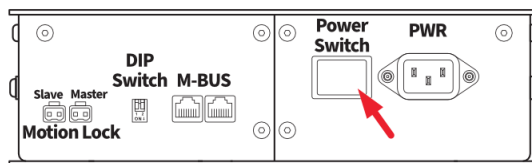
**To reduce the risk of burns, fire, electrical shock, injury or mechanical damage:**

## WARNING



Always turn all the power switches off on the QS-SB2 power cabinets before plugging and unplugging the QS-617/625 . Dangerous voltages level can be present in Power Cabinet for a few minutes after turning off the machine.

### QS-SB2



- Use the QS-617/625 only for its intended purpose, according to instructions.
- Unplug the QS-617/625 from the power source if it is not used for an extended period or when there is a need to perform hardware installation, maintenance, servicing or repairs.
- Turn the QS-617/625 off when it is not in use.
- The QS-617/625 was designed for indoor use only - **DO NOT** store or use the product outdoors.

- Keep the QS-617/625 away from the heat sources, high humidity, water, and other liquids. **DO NOT** store in extremely cold place where 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-617/625 if the ambient temperature is below 4° Celsius (39° Fahrenheit) or above 45° Celsius (113° Fahrenheit).
- **DO NOT** use the QS-617/625 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. **DO NOT** replace the power cables provided with the product. Use certified power and USB cables only.
- Connect the QS-617/625 to a properly grounded outlet only, check section 2.3 and 2.4 for more details.
- If you want to increase safety level of the system you can add external safety devices. For detailed information check section 7 on page 29.

**WARNING**

**DO NOT** transport the device with attached payload. Payload shall be disassembled from the upper frame for transportation purposes.

**WARNING**

Stop using the QS-617/625 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. BEFORE START

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.

Even though possibilities with QS-617/625 are broad, some things should be kept in mind when the place for the rig is chosen. Motion Systems **DOES NOT** approve exceeding or ignoring any of these points and **IS NOT** responsible for malfunctions or failures that, are the results of these actions.

- Ensure that power supply in your facility meets requirements listed in sections 2.3 and 2.4.
- **DO NOT** use the QS-617/625 on very soft or fragile surfaces like rubber, glass, or foam.
- Ensure that all QS-617/625 modules are mounted properly.
- The QS-617/625 shall be anchored using minimum 8.8 grade anchoring bolts.
- **DO NOT** mount the device in tight or cluttered spaces – remember that QS-617/625 moves and nothing should restrict its motion range.
- Seatbelts and other harnesses should be mounted to parts of the motion rig that move in the same way as the seat. **DO NOT** attach them to any static part or ground.
- Cables must not be stretched and should be kept in a way that prevents them from getting under actuator or any part that can crush or tear them.
- If you want to use the QS-617/625 in an unusual application, and you are not sure, that the desired setup is feasible, please contact, the distributor/reseller.
- Check if cables are mounted properly – they are not stretched or loosely connected to the socket.
- Check if there are no objects in the motion range of the platform.
- Check that all elements are properly fixed.
- Check if there are no sharp edges nearby.
- 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-617/625 is turned on, it performs start-up calibration.

**WARNING**

QS-617/625 will move automatically after turning it on in order to perform start up procedure. Stay in the safe distance from that movement and do not try to interrupt it.

- **DO NOT** interrupt or change the weight of payload mounted to the QS-617/625 during start-up calibration.
- Motion Lock Switch should be mounted close to the operator or user of the machine – it has to be easily reachable in every situation.
- Check Motion Lock Switch **AT LEAST** once a month to reduce the possibility of unknown failure – more information available in chapter 5 on page 27.
- Before getting on or off the machine **ALWAYS** activate Motion Lock (press the red button)
- In case of game crash or freeze, the Motion Lock Switch must be pressed before getting off the machine.

**WARNING**

Motion Lock and Park Mode option **DOES NOT** guarantee safety. For more details see section Advanced applications in QS-220-PL User manual.

- For VR Headset users:
  - Remove the VR goggles before entering or exiting the rig.
  - Ensure that VR Headset is not limiting the operation range of QS-617/625 .
  - Check if the whole VR setup is not in range of motion of the machine.
  - **DO NOT** place the connection 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-617/625 if you are pregnant, tired, or under the influence of alcohol or drugs.
- **STOP USING** the QS-617/625 immediately if pain, fatigue or any discomfort appears.
- For every two hours of using the system, 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-617/625 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.

#### INFO

The maximum supported length of cables is 3 meters:

- the maximum supported length of the USB cable is 3 meters
- the maximum supported length of the M-BUS cable between M10 and QS is 3 meters
- the maximum supported length of the M-BUS cable between the QS-617/625 is 3 meters
- the maximum supported length of the Motion Lock cable is 3 meters (both with and without the plug)

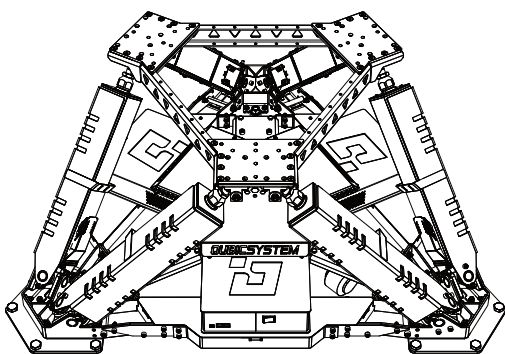


## 2. SYSTEM DESCRIPTION

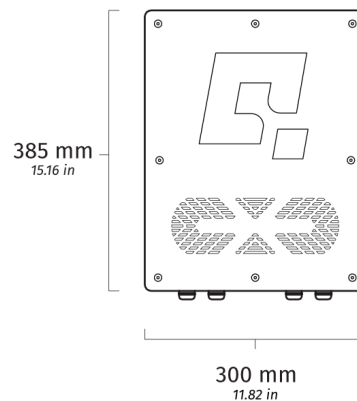
The QS-617/625 motion system consist of:

- QS-617/625 Motion platform including:
  - 6x QS-L1 linear actuator
  - 3x QS-SB2 power cabinet
  - 3x Power supply cable (1,8 m long)
  - 1x Motion Lock switch with connection cable (1,5 m long)
  - 3x QS-SBML-2 – motion lock cable (up-link/down-link) (2 m long)
  - 3x BUS communication cable (3 m long)
  - 2x Motion Lock interlink cable (2 m long)
  - 1x Micro USB cable (0,5 m long)
  - 1x M10 controller
  - 1x QS-MBT-1 BUS terminator
  
- QubicManager software including:
  - Motion SDK - ForceSeatDI
  - Motion SDK - ForceSeatMI
  - Motion Theater
  
- Product Manual

### 2.1. SYSTEM COMPONENTS

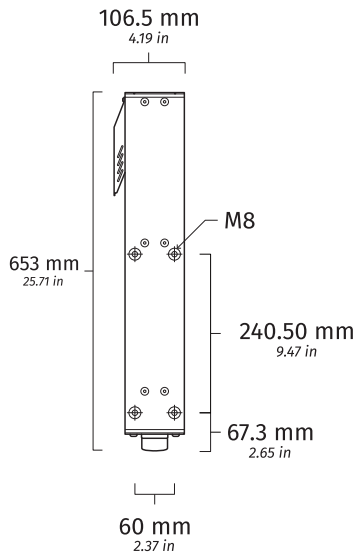


**QS-617/625 Motion Platform (x 1)**

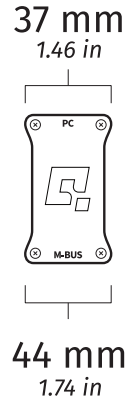


**QS-SB2 power cabinet (x 3)**

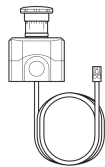




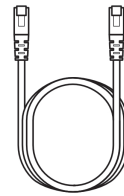
**QS-L1 motion actuator (x 6)**



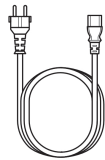
**M10 controller (x 1)**



**Motion Lock switch with connection cable (x 1)**



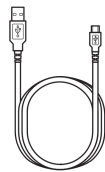
**BUS communication cable (x 3)**



**Power supply cable (x 3)**



**Motion Lock interlink cable (x 2)**



**Micro USB cable**



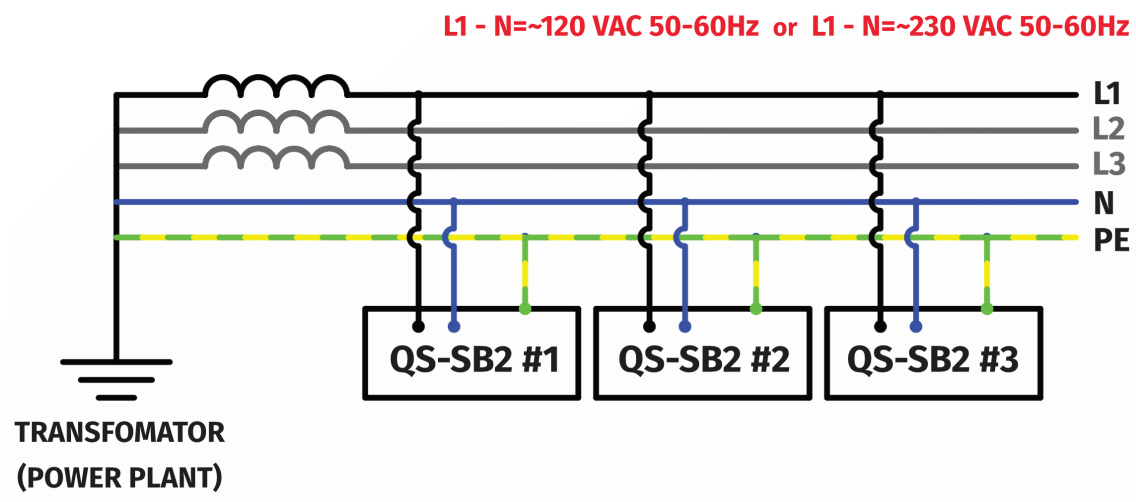
**QS-MBT-1 BUS terminator**

**WARNING**

For safety reasons, **DO NOT** attempt to modify platform components or cables by yourself. QS-617/625 can be used in 120V AC/230V AC, 50~60Hz environment. Remember to use adequate cables with proper grounding in each case!

## 2.2. VOLTAGE SYSTEM

QS-617/625 requires one-phase power line in Wye connection, with ground and neutral connection.



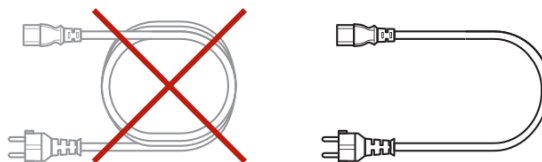
## 2.3. POWER REQUIREMENTS

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-617/625, contact a qualified electrician.

| <b>QS-617/625</b>                                      | <b>230V 50-60Hz</b> | <b>120V 50-60Hz</b> |
|--|---------------------|---------------------|
| <b>Average power consumption [W]</b>                   | 199                 | 238                 |
| <b>Average power for converter specification [kVA]</b> | 2,2                 | 2,2                 |
| <b>Peak current for breaker specification [A]</b>      | 9                   | 18                  |

### WARNING

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



## 2.4. GROUNDING REQUIREMENTS

### INFO

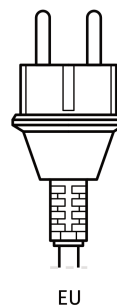
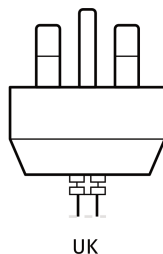
If required, use only a high-quality power plug adapter purchased from trusted suppliers.

In case of a system malfunction or breakdown, grounding provides a path of the least resistance for electric current to reduce the risk of electric shock. If the place (where the QS-617/625 is mounted) can not provide proper grounding, according to the description, please contact a qualified electrician for help.

### WARNING

The QS-617/625 is equipped with an electric cord having an equipment-grounding conductor, and a grounding plug. The plug **must be plugged** into a matching outlet that is properly installed, and grounded in accordance with all local codes and ordinances.

**DO NOT** modify the plug provided - if it will not fit the outlet, contact adequate technical support.



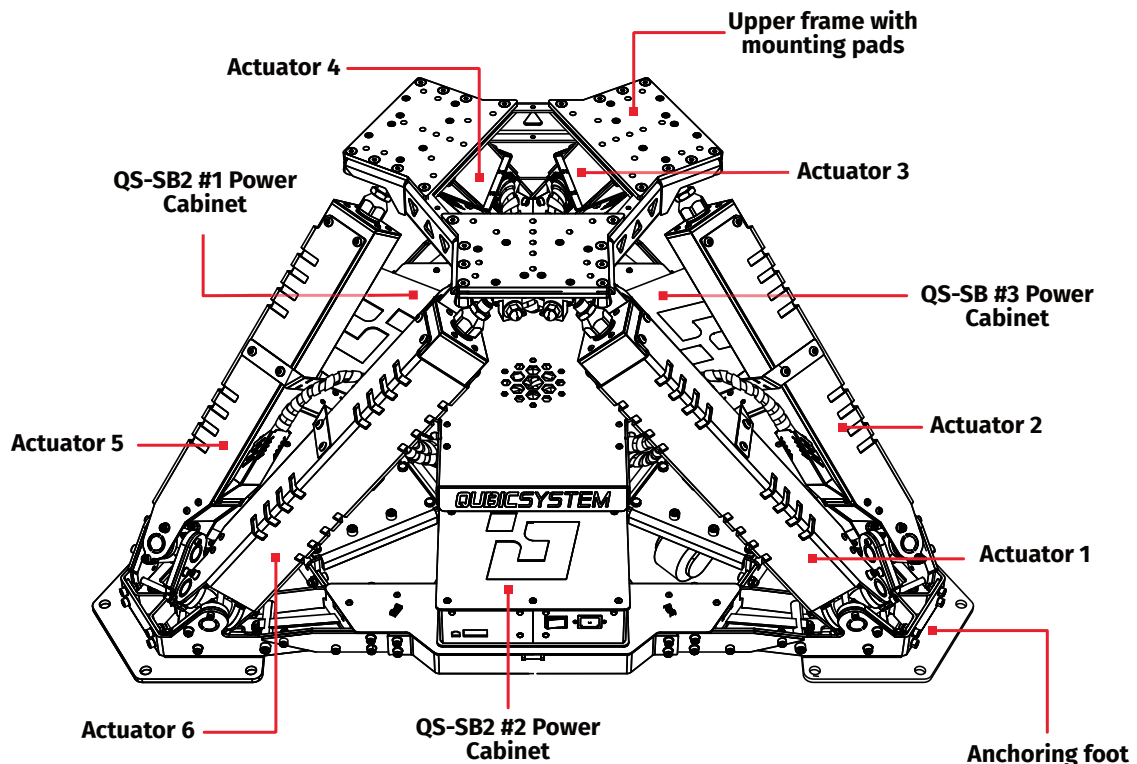
Be sure, to check if the available socket can handle all devices at once from one wall socket. If not, use multiple, separately fused wall sockets.

### 3. PRODUCT DESCRIPTION

#### 3.1. QS-617

The QS-617 motion platform is a perfect base for industrial testing, verification and testing application of camera modules, antennas, telescopes and other optical technology where the high frequencies and velocities are required. Gross moving load up to 250 kg/551 lb, super clean solution, compact size, and ultra-quiet operation, are not the only advantages of a six-axis machine. This 6DoF motion system is equipped with rigidity, high positioning accuracy and real-time vibrations, which is mainly intended for projects in the field of positioning and testing. Moreover, comparing this platform with the QS-625 motion system, it can be easily noticed that QS-617 has an extended motion envelope and increased velocity. Platform is intended to be used as:

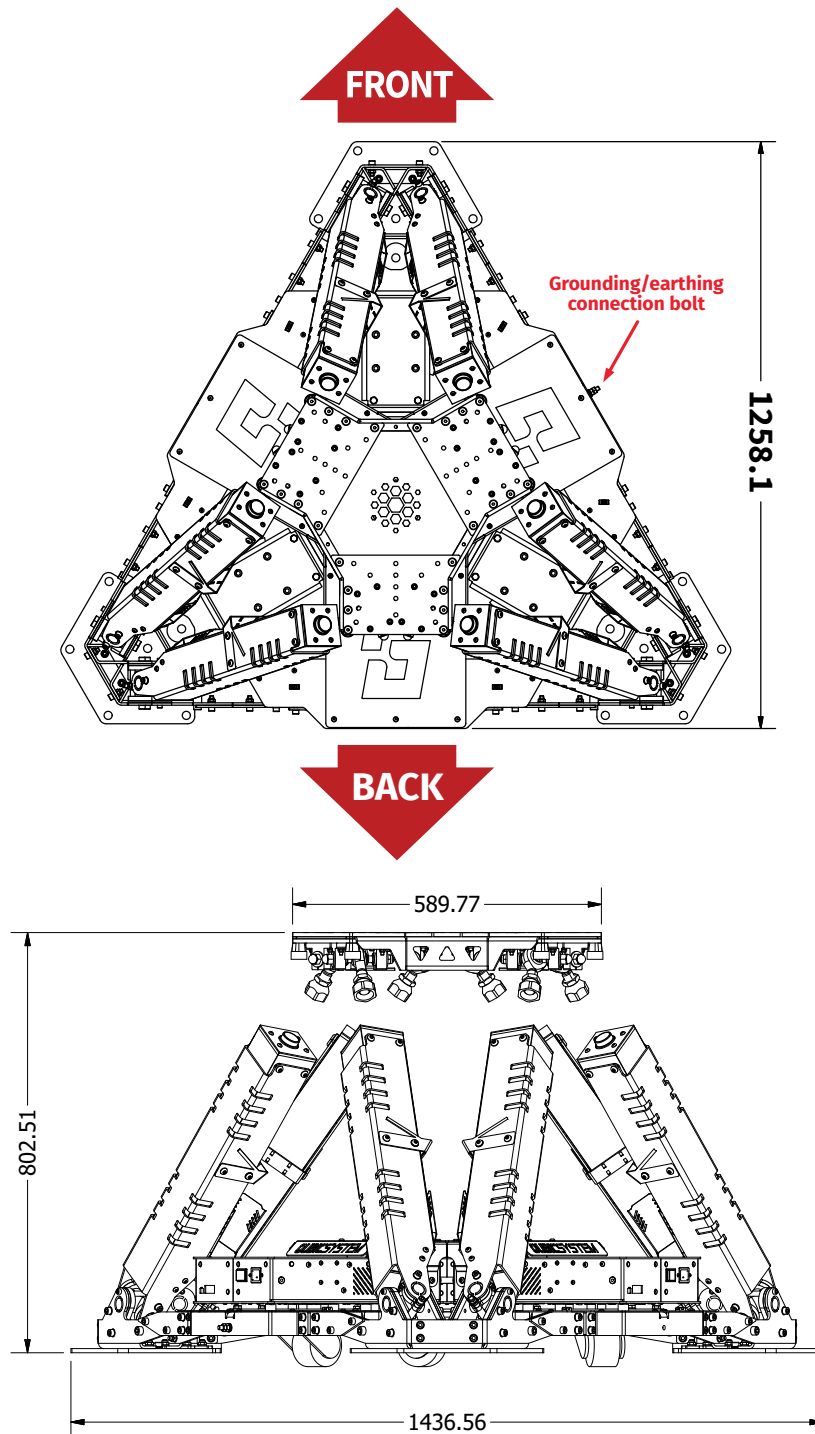
- Automotive components testing
- Optical devices, components testing and verification
- Advanced research and simulators for Universities
- Biomedical and rehabilitation applications
- Industrial testing
- Antennas positioning and verification



### 3.1.1 DIMENSIONS

**INFO**

Use grounding/earthing connection bolt as reference point to establish front and back side of the platform.



### 3.1.2 SPECIFICATION

| QS-617 Motion system   |        |
|------------------------|--------|
| <b>Architecture</b>    | 6 DoF  |
| <b>Actuator stroke</b> | 100 mm |
| <b>Product weight</b>  | 280 kg |
| <b>Payload</b>         | 150 kg |

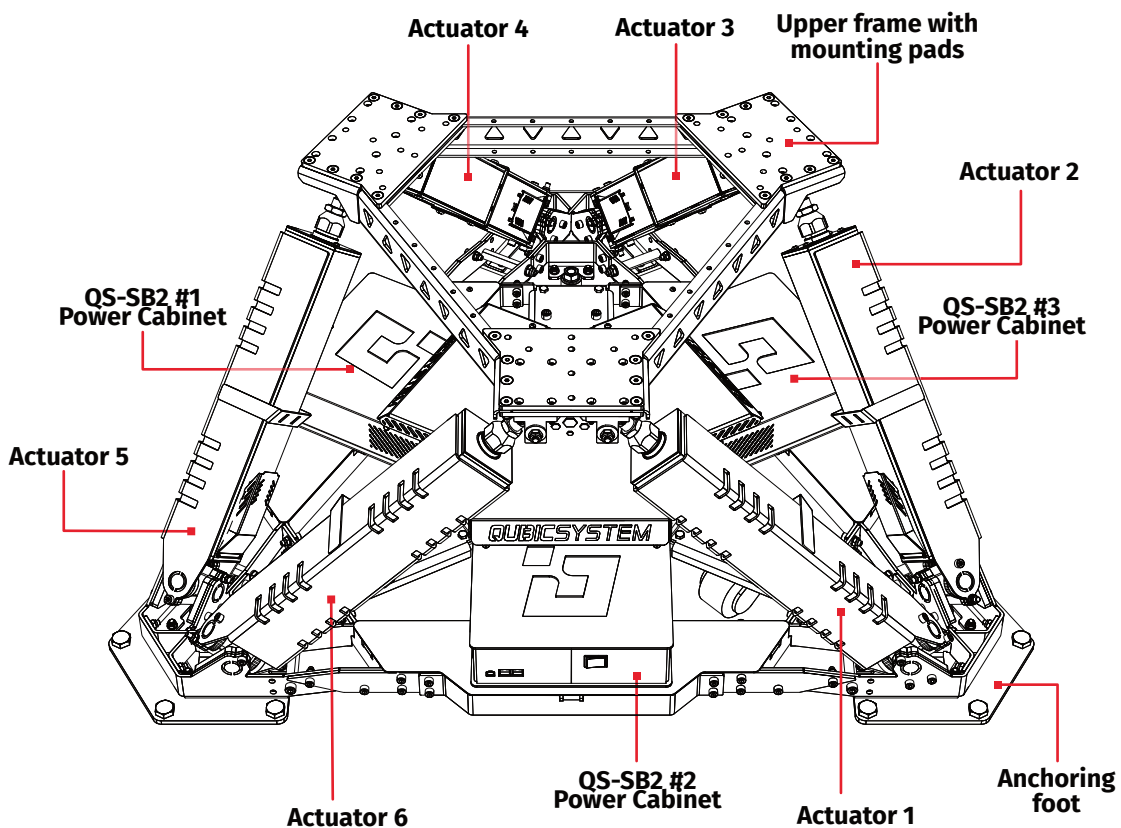
| QS-617 Main dimensions                  |                     |
|---|---------------------|
| <b>Total length</b>                     | 1258 mm   49.5 in   |
| <b>Total width</b>                      | 1436,5 mm   49.5 in |
| <b>Minimum height (without payload)</b> | 802.5 mm   31.57 in |

| QS-617 Excursions |                    |                       |                 |                      |
|-------------------|--------------------|-----------------------|-----------------|----------------------|
|                   | <b>Singe DoF</b>   | <b>Non-single DoF</b> | <b>Velocity</b> | <b>Acceleration</b>  |
| <b>Surge</b>      | - 80.2 mm, 64.9 mm | - 86.4 mm, 69.8 mm    | 0.57 m/s        | 4 m/s <sup>2</sup>   |
| <b>Sway</b>       | - 68 mm, 68 mm     | - 73.1 mm, 73.1 mm    | 0.53 m/s        | 3.6 m/s <sup>2</sup> |
| <b>Heave</b>      | - 61.6 mm, 77.1 mm | - 56.7 mm, 73.7 mm    | 0.44 m/s        | 3 m/s <sup>2</sup>   |
| <b>Roll</b>       | - 20.8°, 20.8°     | - 19.5°, 19.5°        | 150°/s          | 1100°/s <sup>2</sup> |
| <b>Pitch</b>      | - 19.9°, 20.8°     | - 19.1°, 18.0°        | 165°/s          | 1200°/s <sup>2</sup> |
| <b>Yaw</b>        | - 21.4°, 21.4°     | - 22.9°, 22.9°        | 140°/s          | 1000°/s <sup>2</sup> |

### 3.2. QS-625

The QS-625 motion platform as a perfect base for flight and car simulators. Load capacity up to 250 kg/551 lb, compact size, and ultra-quiet operation, are not the only advantages of a six-axis machine. This 6DoF motion system is equipped with rigidity, high positioning accuracy and real-time vibrations, which is mainly intended for professional applications in the field of flight and driving simulation. Platform is intended to be used as:

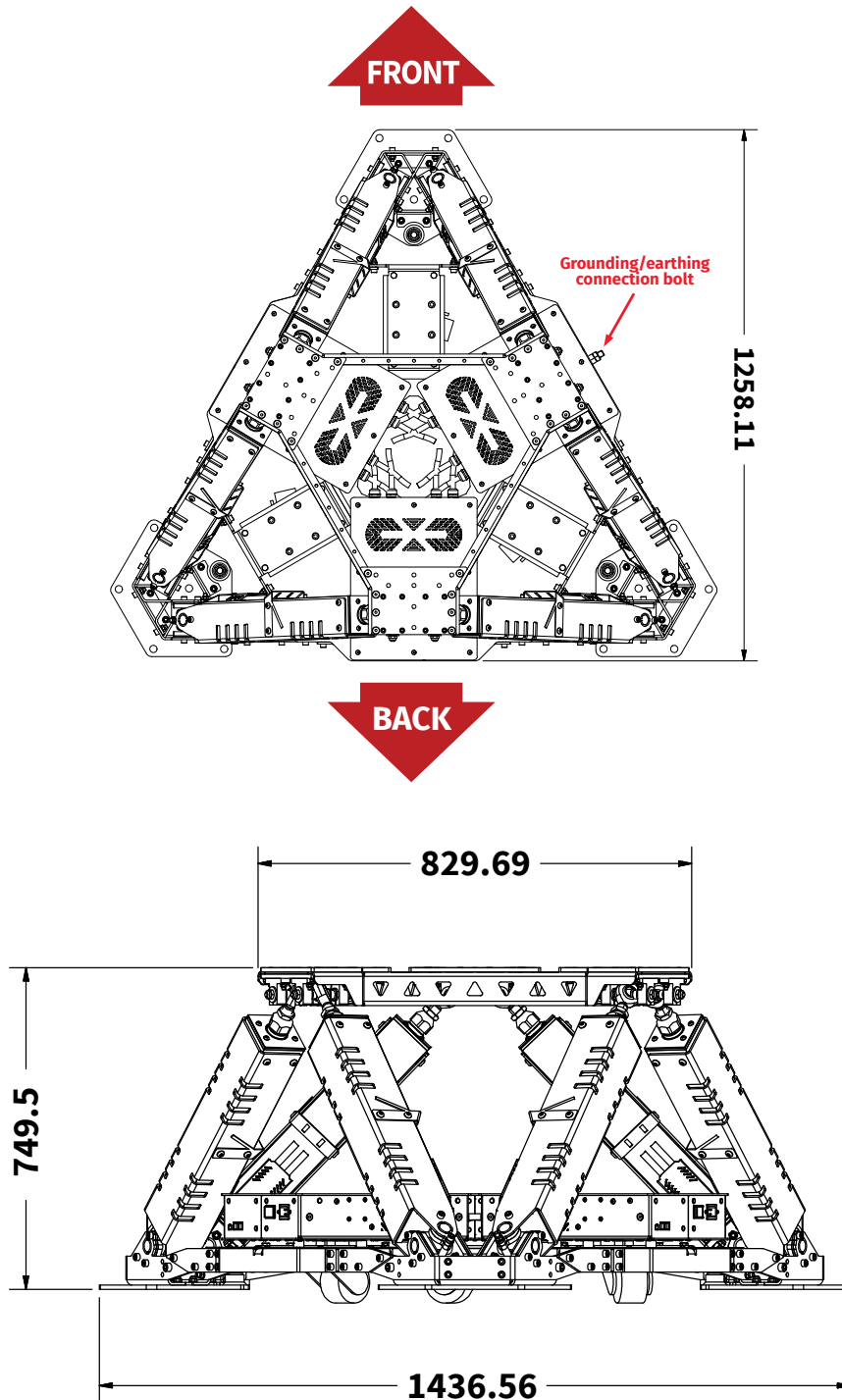
- Flight simulators
- Racing simulators
- Marine simulators
- Advanced research, testing and university simulators
- Industrial testing
- Antennas positioning and verification



### 3.2.1 DIMENSIONS

#### INFO

Use grounding/earthing connection bolt as reference point to establish front and back side of the platform.





### 3.2.2 SPECIFICATION

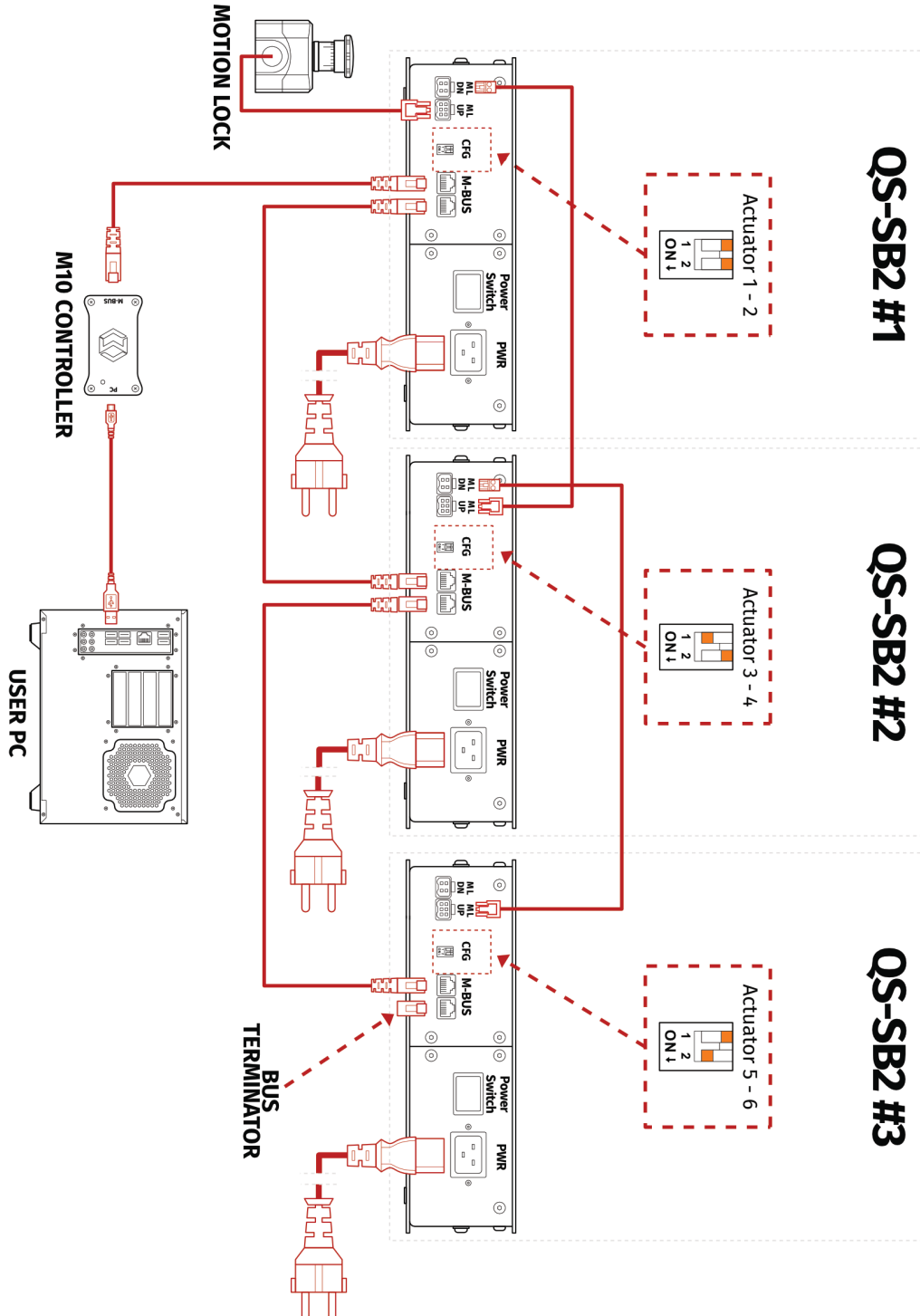
| QS-625 Motion system |        |
|----------------------|--------|
| Architecture         | 6 DoF  |
| Actuator stroke      | 100 mm |
| Product weight       | 260 kg |
| Payload              | 250 kg |

| QS-625 Main dimensions           |                     |
|----------------------------------|---------------------|
| Total length                     | 1258 mm   49.5 in   |
| Total width                      | 1436,5 mm   49.5 in |
| Minimum height (without payload) | 749,5               |

| QS-625 Excursions |                |                |          |                      |
|-------------------|----------------|----------------|----------|----------------------|
|                   | Singe DoF      | Non-single DoF | Velocity | Acceleration         |
| Surge             | - 82 mm, 85 mm | - 94 mm, 94 mm | 0.60 m/s | 4 m/s <sup>2</sup>   |
| Sway              | - 74 mm, 74 mm | - 68 mm, 64 mm | 0.5 m/s  | 3.5 m/s <sup>2</sup> |
| Heave             | - 68 mm, 64 mm | - 88 mm, 88 mm | 0.44 m/s | 3 m/s <sup>2</sup>   |
| Roll              | - 10.8°, 10.8° | - 11.5°, 11.5° | 80°/s    | 540°/s <sup>2</sup>  |
| Pitch             | - 9.9°, 10.9°  | - 13.8°, 13.8° | 60°/s    | 500°/s <sup>2</sup>  |
| Yaw               | - 11.4°, 11.4° | - 12°, 12.5°   | 80°/s    | 510°/s <sup>2</sup>  |

## 4. INSTALLATION

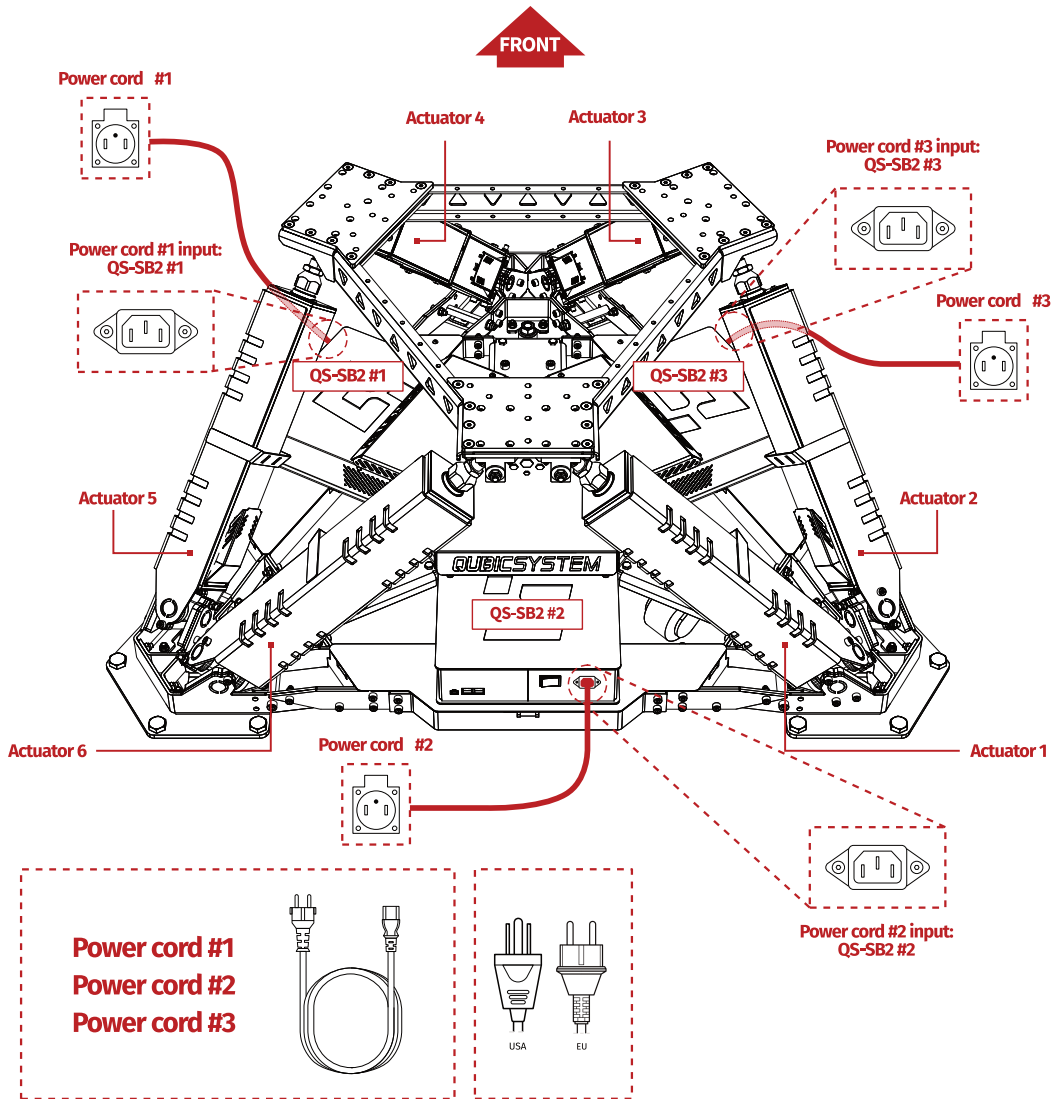
### 4.1. INTERCONNECTIONS



#### INFO

Order of connecting the cables is not important, keep the CFG switches setting according to interconnections scheme.

### 4.1.1 CONNECTING POWER SUPPLY TO THE QS-SB2 POWER CABINETS:

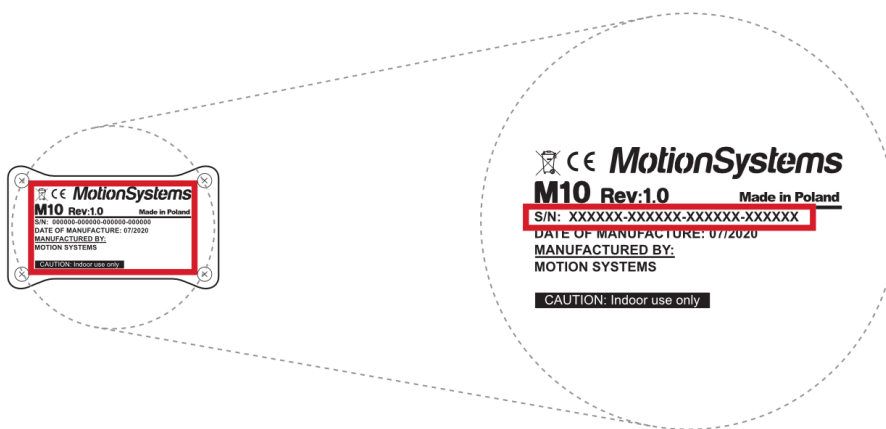


## 4.2. SOFTWARE INSTALLATION AND STARTING SIMULATION

### INFO

Note down the QS-617/625 serial number before installation as it's needed to access software download page.

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 - check information on page 26.



To download the software visit : [QubicSystem.com/Download](http://QubicSystem.com/Download)

**Once the QS-617/625 is installed and connected correctly:**

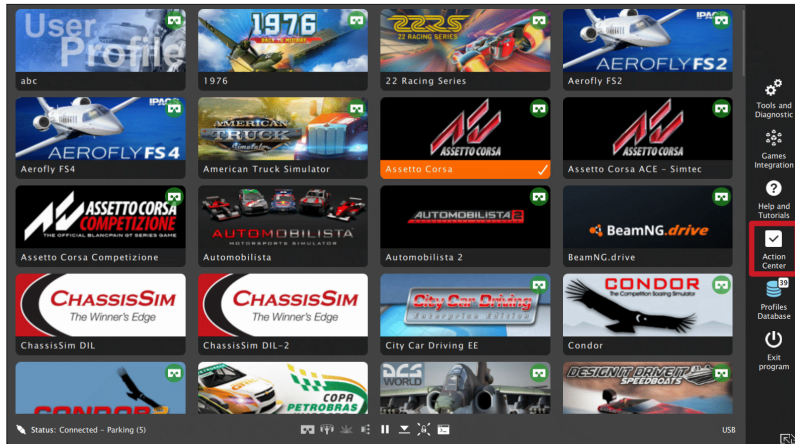
1. Connect power connection cord to the wall socket. If you own extended set connect both power cords.
2. Download Qubic Manager.
3. Proceed with the installation steps and launch the application.
4. Turn on the system by switching on the power switch button on the QS-SB2 power cabinet (on both if you own extended set).
5. Check position of Motion Lock Switch, unpress if needed.
6. The QS-617/625 will perform a start-up calibration.

### WARNING

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

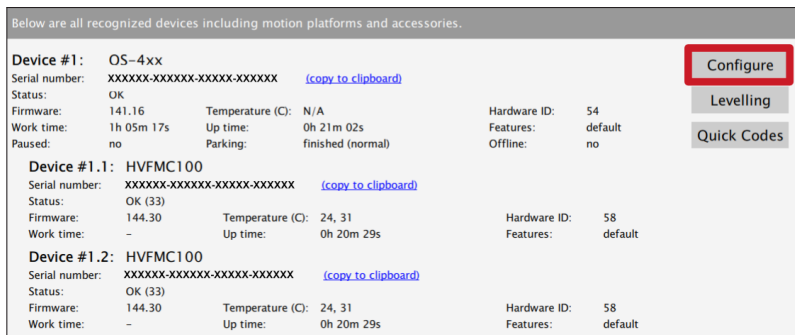
7. If Qubic Manager has recognized the QS-617/625 correctly, the status of the machine visible in the lower left corner will change to **Connected**.

- Check **Action Center** on the right side panel for a list of actions that requires attention:

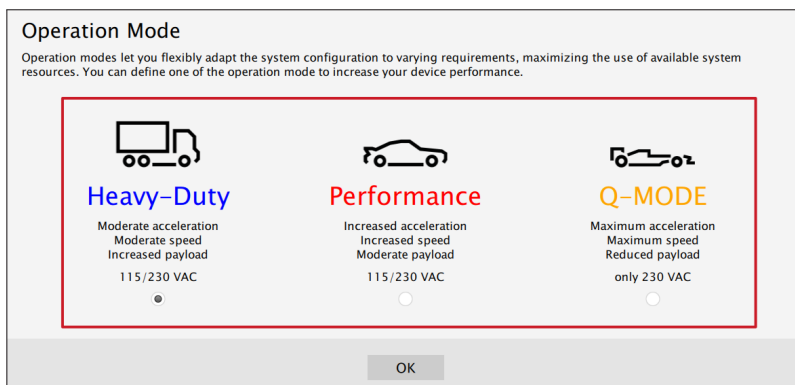


It is possible to solve them one by one or by pressing the **Resolve All** button. Firmware update may require additional confirmation in the dialogue box.

- Go to **Tools and Diagnostics** → **Devices** and select **Configure**.



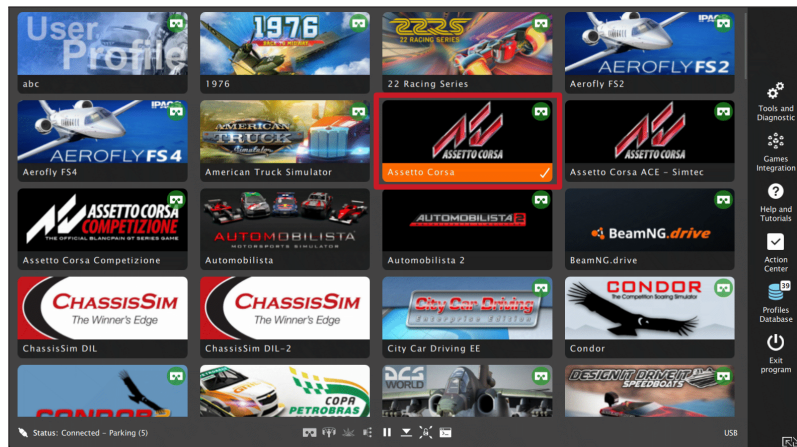
- Choose one of the operation modes:



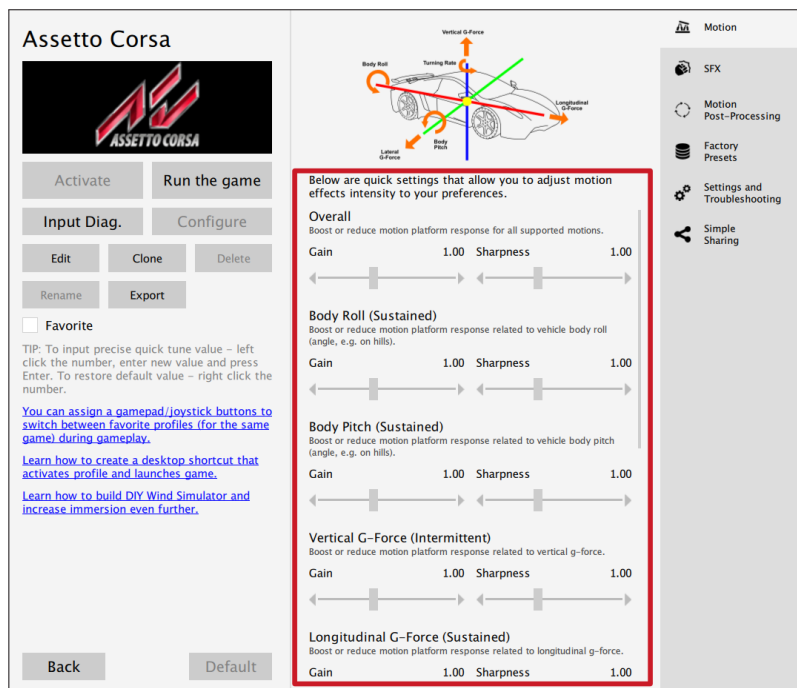
**INFO**

Q-MODE is unavailable for 120V power supply.

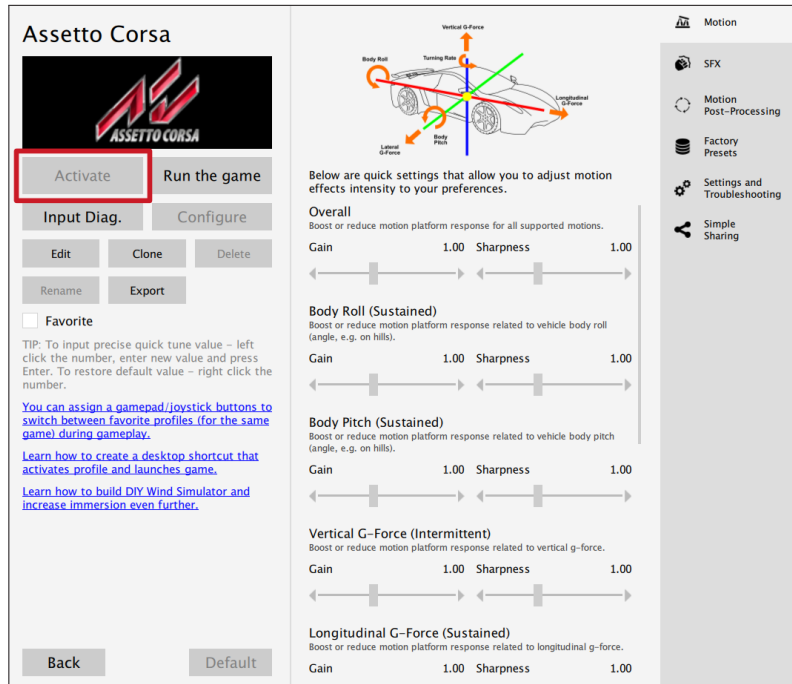
11. Close the configuration and return to the main application window. Choose the game and check profile details by clicking on the game tile.



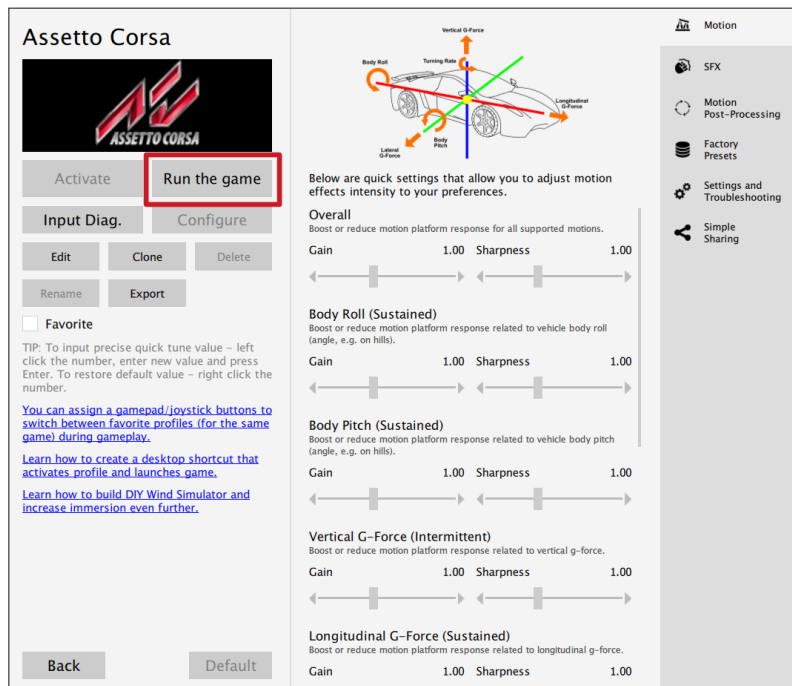
12. Adjust the motion effects intensity to your preferences in the game profile window, scroll down in the window to see all of the settings. You can adjust the settings during the game simulation by pressing **ALT+TAB**.



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

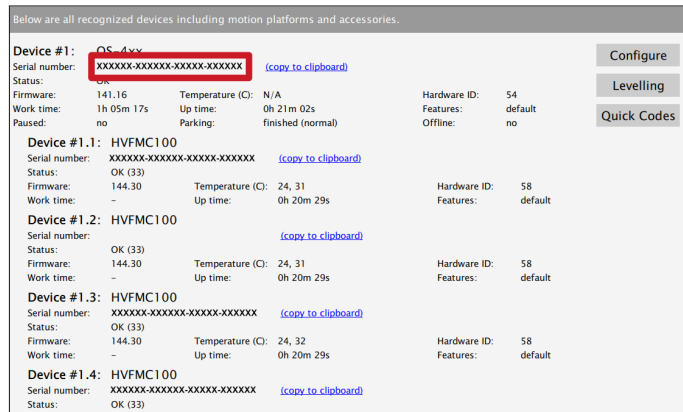


**14.** Launch the game by clicking the **Run the game** button.



**INFO**

If you need the serial number to activate other software licences such as ForceSeatMI or ForceSeatDI, it can be found in the Qubic Manager. After connecting the QS-617/625 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.



## 5. MAINTENANCE

To minimize the risk of abnormal heating that can result in system failure, keep the QS-617/625 uncovered, clean and dust-free. Cleaning the unit should be performed with a soft, dry cloth. **DO NOT** use solvents or cleaners that may corrode or damage materials of parts used in the QS-617/625 in any other way.

At least once a month check if Motion Lock Switch is working correctly – turn on the QS-617/625 (when no one is using the rig) and push the red button. If the machine turns off and does not react to any signal (turn on simulation or game to check it) then Motion Lock Switch works properly. If the machine reacts in any different way stop using it and contact the technical support immediately.

To minimize the risk of QS-617/625 failure, check the condition of the linear actuator's rubber seals once a month, and lubricate them externally, if necessary, using a viscous lubricant spray with dispenser.

## 6. TROUBLESHOOTING

### Before contacting technical support try this:

- Check Action Center in QubicManager.
- Check power cables and PC connection with QS-617/625 .
- Check Motion Lock Switch position and its connection cables.
- Try different USB ports.
- If a problem occurred abruptly, it could be caused by thermal protection. Turn off QS-617/625 , disconnect it from power outlets and wait at least 15 minutes to let it cool down.
- In case of every unclear electrical problem like blown-out fuses or strange behavior contact technical support.
- If abnormal work conditions are observed immediately contact with distributor/reseller for technical support.

#### WARNING

**DO NOT** attempt to do any repairs by yourself. It is dangerous and voids the warranty! Repairs should be consulted with technical support and then performed by a qualified technician.

## 7. ADVANCED APPLICATIONS

### INFO

Examples shown in this section describes optional application of external safety and power cut-off devices. If you wish to expand the functionality of your motion system, read the whole section to have a good understanding of how to apply and what functionality to expect. Apply at your own discretion.

### WARNING

Motion Lock input is not a SIL/PL (safety integrity level/performance level) rated and **DOES NOT** guarantee safety. If you wish to achieve specific SIL/PL ranking, consider introducing a power cut-off device that is controlled by an external safety relay and cuts off the power to all QS-SB2. Example application of the power cut-off contactor can be found in section 7.3.2 and 7.3.3.

### INFO

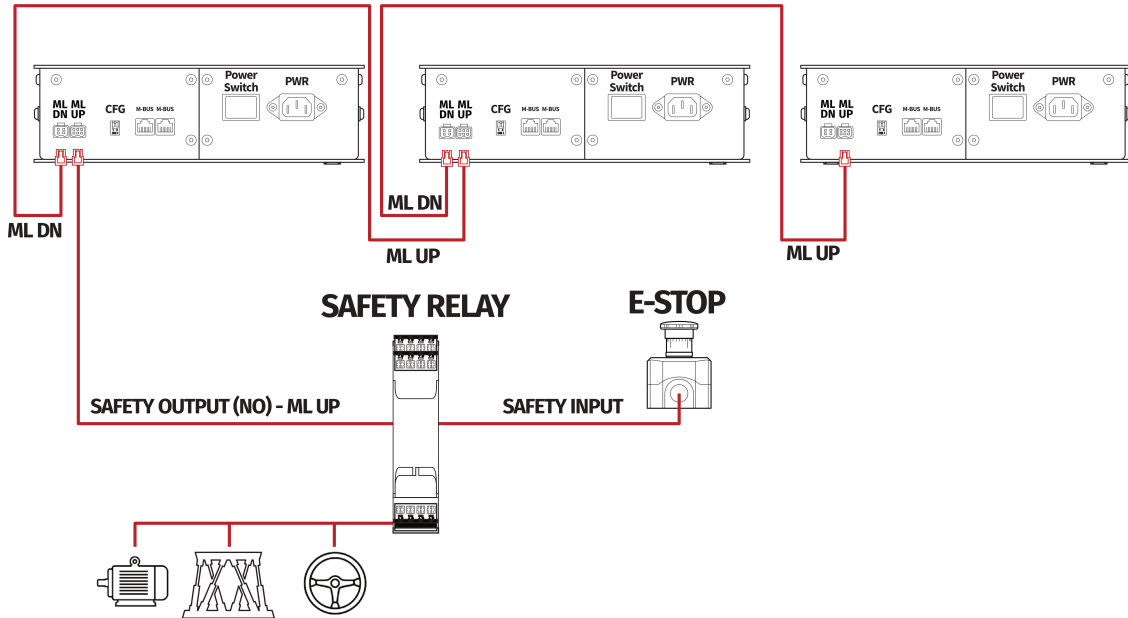
When applying safety relay to the Motion Lock :

- Use input cables according to your safety relay manual.
- Use output cables according to your safety relay manual and cross section no less than 0,75 mm<sup>2</sup>

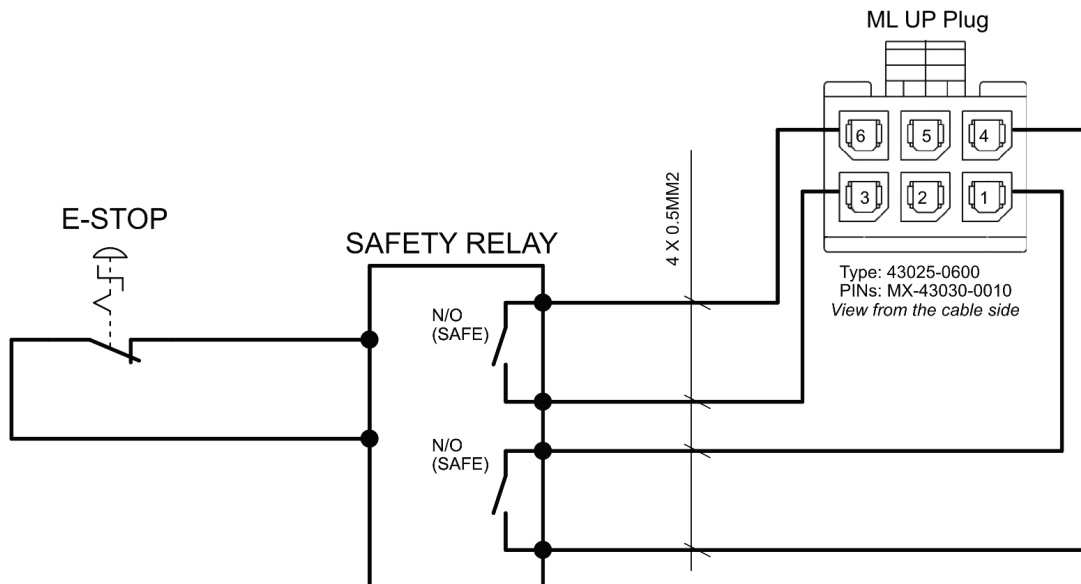
### 7.1. ADDING ADDITIONAL DEVICES TO THE MOTION LOCK CIRCUIT

If there is necessity to stop other devices, apart from the QS-617/625 , ML (Motion Lock) and additional customer devices can be controlled by safety relay outputs. In the example application, the E-STOP button is connected to the external safety relay. When the E-STOP is triggered, the safety relay will activate the Motion Lock function, which will stop motion of the platform and additional devices.

**Example application of single-channel safety relay that controls ML and additional devices :**



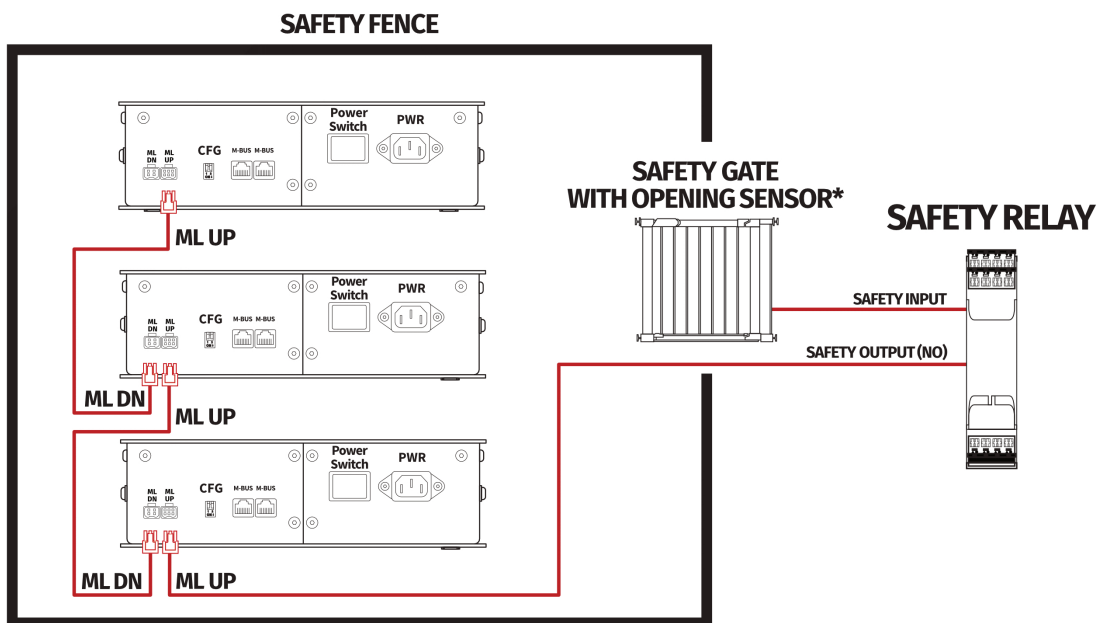
**Example wiring diagram of application of one-channel safety relay with E-STOP button:**



## 7.2. IMPLEMENTING THE WORKING ZONE PROTECTION

For protection against accidental hit from moving parts of the platform, safety gate with opening sensor\* can be connected to safety relay input for activating ML function. When the gate is opened, the safety relay output activates the ML (Motion Lock) function and stops the motions of the platform.

### Example application of safety gate opening sensor:



\*Check your safety relay manual for list of applicable sensors

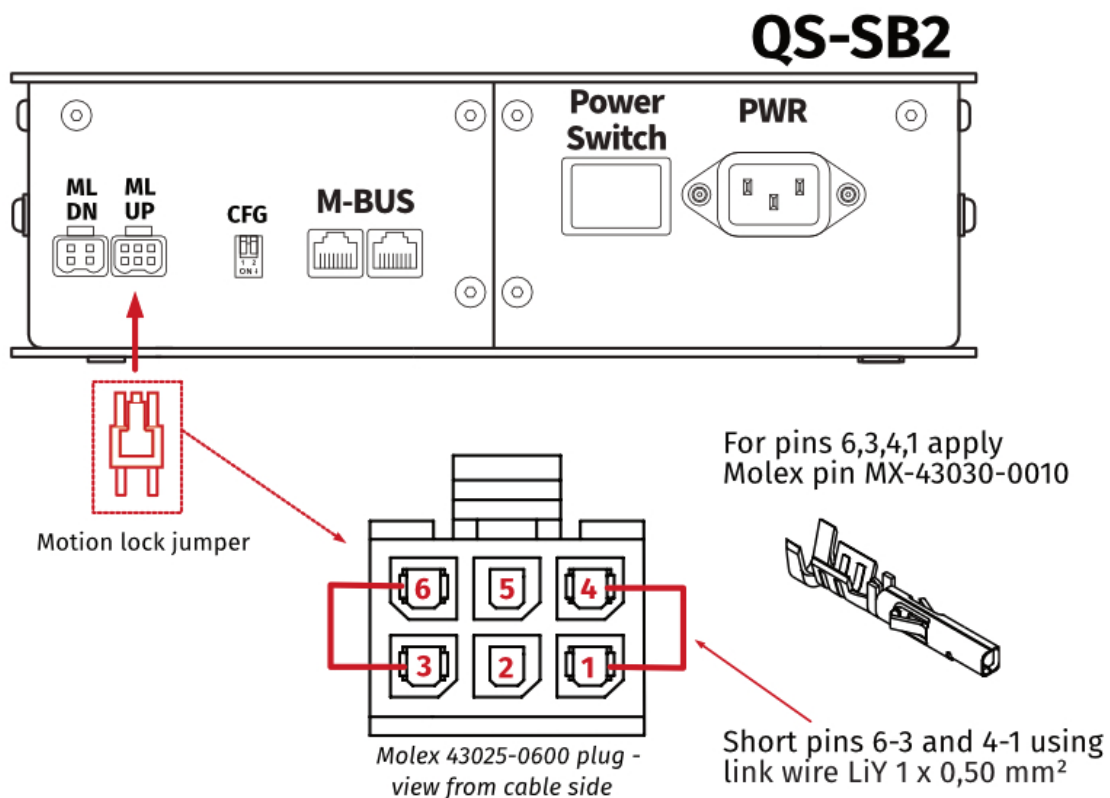
### 7.3. INCREASING SAFETY LEVEL

**WARNING**

Modifications of the safety system, involving application of the power line contactors, shall be performed only by a competent person. A competent person is a qualified and knowledgeable person, who because of their training, experience has the knowledge required to apply those changes. It is customer responsibility to commission modification of the safety system to a competent person, experienced with industrial wiring practices, which will be required to undertake the installation. Commissioning shall be undertaken by a trained electrical technician experienced in safety installations.

#### 7.3.1 ASSEMBLING MOTION LOCK JUMPER

To apply solutions which require to use power line contactors, Motion Lock connection cables in the QS-SB2 power cabinet needs to be replaced with jumpers, which are not provided with the QS-617/625 . To prepare jumper, you need to assemble recommended connector as shown below :



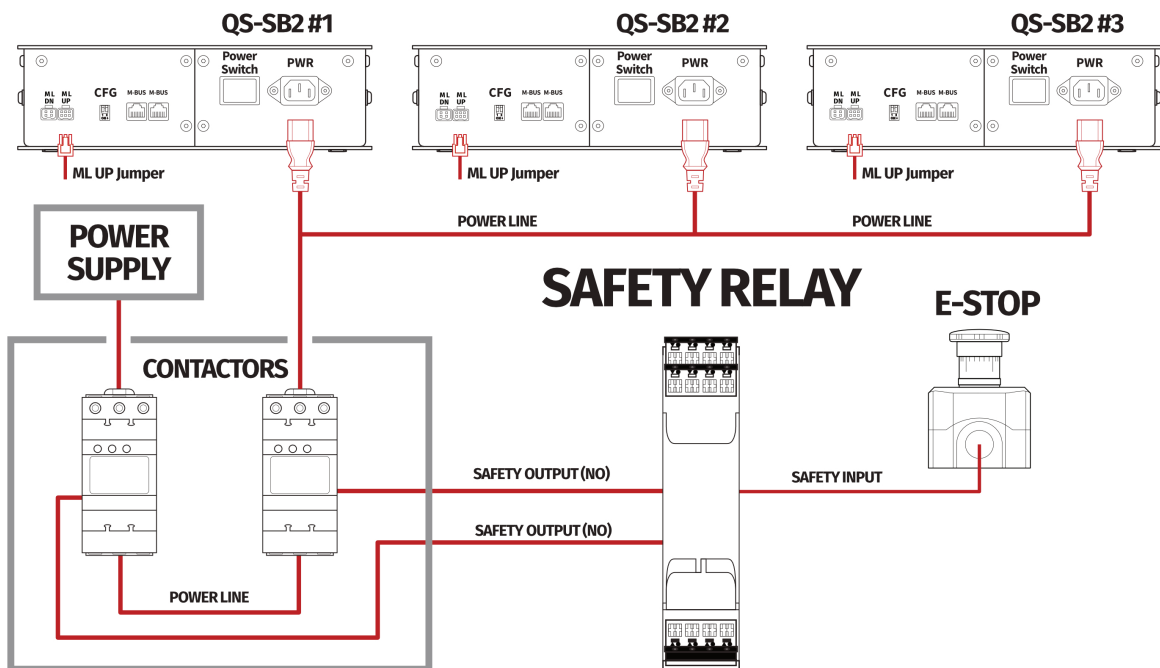
### 7.3.2 ADDING POWER-CUT CIRCUIT WITH E-STOP BUTTON

If specific SIL/PL rated level needs to be achieved, it might be necessary to install a power cut-off device. Two contactors connected in series and controlled by safety relay can be used to provide or cut-off power line to QS-SB2 power cabinets. When safety function on safety relay input is triggered, a safety relay will switch off the contactors, thus cutting-off the power to the platform. To apply this solution, ML UP connection cables needs to be replaced with prepared jumper as described in section 7.3.1

**INFO**

To achieve required safety performance level it is necessary to perform safety risk assessment at customers site.

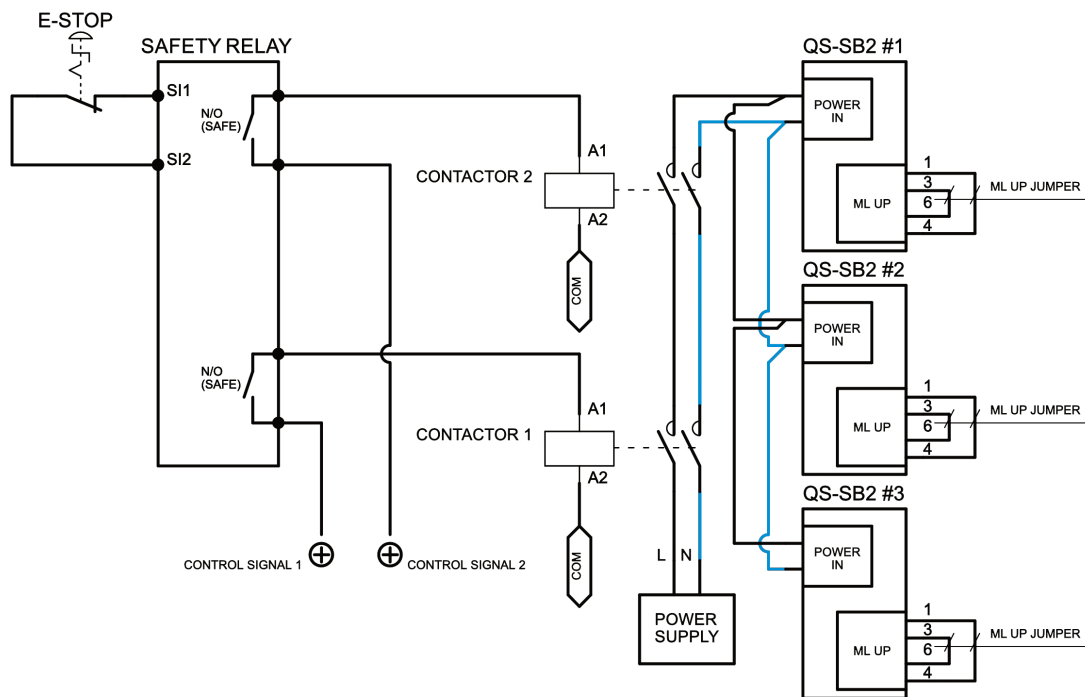
**Example application of power line contactors and E-STOP button:**



**INFO**

In order to increase SIL/PL level it's a good practice to apply well-known contactors of two different manufacturers in order to decrease probability of failure resulting from serial production.

### Example wiring diagram of application of power line contactors and one-channel safety relay with E-STOP



**INFO**

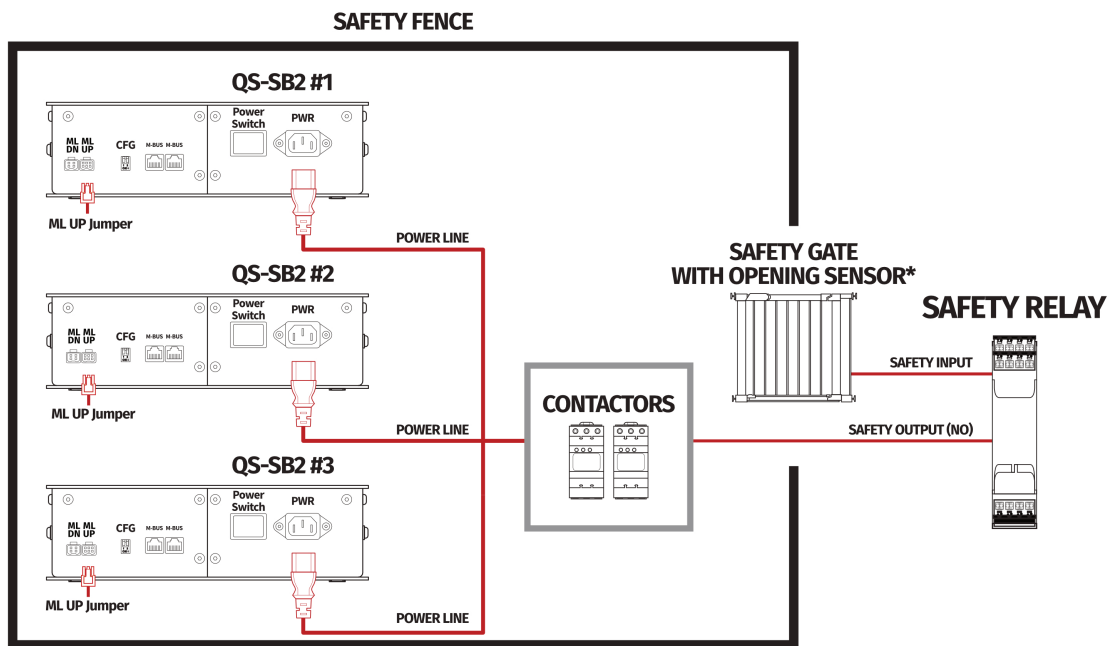
PE (protective grounding/earthing) connection is omitted for better transparency



### 7.3.3 IMPLEMENTING THE WORKING ZONE PROTECTION WITH POWER-CUT CIRCUIT

In example application contactors connected in series provide power line to the QS-SB2 power cabinets. When safety function on safety relay input is triggered, a safety relay will switch off the power contactors, thus cutting-off the power to the platform.

**Example application of power line contactors with safety gate opening sensor:**



\*Check your safety relay manual for list of applicable opening sensors

#### INFO

When applying safety relay and contactors to the power line remember to:

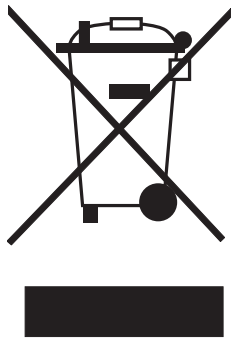
- Use control cables according to your safety relay manual
- Power line cables shall be chosen accordingly to power requirements of motion system. See power requirements of specific motion system.

## 8. CONFORMITY INFORMATION



The QS-617/625 meets the requirements of CE and relevant regulations of the EMC Directive 2014/30/EU and the RoHS Directive 2011/65/EU and REACH Certificate of Compliance.

## 9. 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-617/625 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 on the collection point nearest you.

## **10. 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-617/625 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.

## 11. 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 assembly instructions.
- 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-617/625 with any unsuitable element or not other elements not supplied or not approved by Motion Systems for this product).

## 12. COPYRIGHT

Qubic System is a trademark of Motion Systems. All rights reserved. All the contents in this user manual are the intellectual property of Motion Systems. No part of this manual, including the products and software described in it, shall be modified or translated into any language without the prior written permission of Motion Systems. Specifications and information in this manual are subject to change at any time without obligation to notify any person of such revision or changes. Illustrations are not binding.

### INFO

Trademark Notice - All brand names, icons, and trademarks that appeared in this manual are the sole property of their respective holders.

## 13. MANUFACTURER INFORMATION

### Motion Systems

Miedziana 7 Street

55-003 Nadolice Wielkie

Poland



### INFO

In support queries please contact your reseller.





***QUBICSYSTEM***