LYNX

Safety Instructions

Husarion Lynx
Safety Instructions

Applicable to versions: Lynx v1.0.

To avoid malfunction or damage to your Lynx please read this safety manual before use.

1.General precautions

- Keep this product away from children. It is not designed to be used by children. It also has rough edges and contain small parts that could be swallowed.
- The connection of unapproved devices to the internal or external ports (I/O, USB, power supply, Ethernet etc.) may affect Lynx performance or result in damage to the unit and invalidate the warranty.
- The robot enclosure contains a several compartments. The big, upper compartment UC01, if present, is designed to be available for user to allow modifications. Any modifications and interference in other compartments, without guidance from the Husarion support, can possibly cause in damage or warranty void.
- Please follow local regulations when using Lynx. They may forbid or limit the use of autonomous robots in the certain situations.
- The robot cannot be disposed to the regular trash bin. Obey the local recycling requirements and applicable regulations. When the product is no longer in use, discard it at a recycling location.

2. Use of the battery

This product is equipped with and is powered from Lithium-Ion battery pack. Lithium-ion cells and battery packs may get hot, explode or ignite and cause serious injury if exposed to abuse conditions. Be sure to follow the safety warnings listed below:

- The Lynx battery has a handle on the top side. Do not carry the robot using the battery handle. If you need to lift the whole robot, please hold it by dedicated handles (if available) or by the bottom chassis.
- Use only the battery and battery charger that are included with Lynx. The included charger is capable of charging 10S Li-Ion battery configuration (maximum charging voltage: 42,0V), with the maximum current of 5A.
- If you use a dedicated WCH01 & WCH02 kit (Wireless charger) for charging Lynx, do not connect the cable (standard) charger at the same time. It may result in blowing the safety fuse.
- If you need to replace the battery because of wear or damage, please follow the user manual. For obtaining the battery replacement, please contact Husarion at support@husarion.com.

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- Do not connect the positive terminal and negative terminal of the battery to each other with any metal object (such as wire). Do not allow the battery terminals to touch the metal enclosure of the robot or any other conductive part.
- Do not pierce the battery with nails, strike the battery with a hammer, step on the battery or otherwise subject it to strong impacts or shocks.
- Do not expose battery to water or salt water, or allow the battery to get wet.
- Please avoid a deep discharge of batteries which may lower theirs lifecycle. The original software which is provided with Lynx will warn you by pulsating red lights that the battery level is low. Please recharge the battery quickly after you see this warning.
- The battery protection circuit will disconnect the load, when the battery voltage fall below 30V. In this case, Lynx will turn off. In this case, use the rotary switch to turn off the robot anyway and recharge the robot within 12 hours, because a deep discharged battery can be dangerous when charged again. If the battery turns off itself and you do not charge it again within 12 hours, please make sure that the battery voltage is still above 27,5V before charging. If the voltage is lower, do not charge the robot, please move the robot with the battery in the safe place and contact Husarion support as soon as possible.
- The battery would be possible to be at the over-discharged state by its self-discharge characteristics in case the battery is not used for long time. In order to prevent over-discharging, the battery shall be charged periodically to maintain a certain voltage range: 39V~40V, 2 months one cycle.

3. Maintenance and environmental limitations

- Avoid exposing Lynx to excessive dust or moisture for an extended period of time. Lynx is designed for internal and external use and its enclosure has an IP54 or IP66 rating. However, some parts of enclosure are removable and in case of improper assembly by user, the IP rating can be degraded.
- The User Compartment cover, when not assembled or assembled improperly, will cause the IP rating to be not longer valid.
- Depending on the additional equipment chosen, the IP rating of the assembled robot should be considered as the rating of the most vulnerable component.
- Do not expose it to excessive heat from any source; Lynx is designed for reliable operation at normal ambient room temperatures (-20...50°C / -4...122°F).
- The storage or transport temperature range is -20°C...50°C.
- Avoid using Lynx in places where the robot could fall from a considerable height (above 0,4m without load). It is not designed to resist falls from a high steps or cliffs. The maximum height of the stair-type obstacles should allow Lynx to keep touching the ground by 3 wheels at least, for all the time.
- Clean Lynx with a damp cloth and mild detergents.
- Periodically check if the wheels are tightened properly.
- If you see any malfunction in the drive mechanism (gearboxes, wheels, axles, motors) or hear any alarming sounds when the robot drives, please stop using the robot and contact support to avoid further damages.
- All peripherals used with the Lynx comply with relevant standards for the country of use and be marked accordingly to ensure that safety and performance requirements are met. These articles include but are not limited to RC servos, sensors, Wi-Fi USB cards, modems, smartphone/tablet, manipulators and USB cables used in conjunction with the Lynx.
- Lynx contains the internal computer with an Operating System (OS). Please use the Power button to perform a soft power-off. Otherwise, when you use the Battery switch instead, the power is immediately cut off and the filesystem of the OS, or other software components in the filesystem, can be damaged.

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4. Drive and navigation

- Lynx comes with the software that allows you to drive manually. Please drive carefully. Also, Lynx can drive autonomously, and the driving algorithm is designed to be modified by user. Be aware that even the best software can be faulty and we cannot fully predict the robots behavior in all possible scenarios. Husarion is not responsible for any damage which could occur when the robot hit a person or other property.
- The sensors set provided with Lynx may vary. For this reason, also the safety level is different, depending on the sensors type, quantity and quality.
- The quality and safety of robot movements and navigation fully depend on the software. When you receive the robot, it has a basic software included, but it is your role to provide the safety functionalities.

5. End notes

- This product is intended for use only for engineering, development, demonstration and evaluation.
- We do not take responsibility for any damage arising from the use of equipment built or software written by the user on the basis of our device, "reference design", software tools and other educational materials. You have full and exclusive responsibility to assure the safety of your final product or projects made using Lynx.
- Some of information provided in this document can change during product modifications and improvements. Therefore, you should keep all tips and warnings in mind, but you should refer to the product manual for the actual information and instructions.

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