

KINOVA

TOGETHER IN ROBOTICS



MEET GEN3 LITE

v2.3.4

RELEASE NOTES

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Overview

The Release Notes contain information about changes to the Kinova® Gen3 lite robot enabled by Kinova® Kortex™ version 2.3.4. The changes are presented from the most recent to the oldest. The information presented discusses five main areas for each release.

- System requirements
- Firmware components release versions
- Features introduced
- Bugs fixed in release
- Known issues, limitations, and workarounds

System requirements

Browser support

Google Chrome version 64+

Operating system support

Kinova® Kortex™ Web App is supported on various operating systems (OS).

- Microsoft Windows 7/10/11 (32-bit or 64-bit)
- Ubuntu LTS 16.04 (64-bit) and later
- Android 8.1 and higher

Kinova® Kortex™ development computer platform

The hardware and OS requirements for a development computer are multi-platform.

- Microsoft: Windows 7/10/11 (32-bit or 64-bit)
- Linux: Ubuntu 16.04 (64-bit) and later

Third-party software requirements

Third-party software is required to run our Modbus protocol examples.

- Python 3
- PyModbus 2.3.0

V2.3.4 release

Release Date: 2025-12

Release versions for software and firmware components

Kinova® Kortex™ API	2.8.0
Base firmware	2.3.4
Actuators firmware	2.3.2
Gripper firmware	2.3.2

Features introduced or altered in this release

Updated Web App and API

Bluetooth is no longer available through Kinova® Kortex™ Web App and is not mentioned in Kinova® Kortex™ API.

Fixed in this release

In version 2.3.4, the 3D model of the Gen3 lite model displays correctly in Kinova® Kortex™ Web App.

Pending deprecation

`ReachCartesianPoses` is supported for backward compatibility purposes only. It, along with a number of other API methods, is marked for deprecation in future releases.

For more information about the API, see the API documentation on the Kinova® Kortex™ GitHub repository.

V2.3.2 release

Release Date: 2021-09

Release versions for software and firmware components

Kinova® Kortex™ API	2.3.0
Base firmware	2.3.1
Actuators firmware	2.3.2

Features introduced or altered in this release

The Xbox Series S or the Xbox Series X controllers have incompatibility issues with Gen3 lite. So that the Series S and Series X controllers work seamlessly with the Gen3 lite, you must connect the controller to a USB hub and connect the USB hub to Gen3 lite.

Fixed in this release

Version 2.3.2 fixed one issue.

The software supporting the arm may crash during initialization, which prevents the arm from being operational.

Pending deprecation

`ReachCartesianPoses` is supported for backward compatibility purposes only. It, along with a number of other API methods, is marked for deprecation in future releases.

For more information about the API, see the API documentation on the Kinova® Kortex™ GitHub repository.

V2.3.1 release

Release Date: 2021-06

Release versions for software and firmware components

Kinova® Kortex™ API	2.3.0
Base firmware	2.3.0
Actuators firmware	2.3.2

Features introduced or altered in this release

No new features are introduced in this release.

Fixed in this release

Version 2.3.1 fixed one issue.

Gen3 lite 2.3.0 safety thresholds for Hall Magnetic Mismatch, Magnetic Position, and Gripper joint limit low are incorrect.

Pending deprecation

`ReachCartesianPoses` is supported for backward compatibility purposes only. It, along with a number of other API methods, is marked for deprecation in future releases.

For more information about the API, see the API documentation on the Kinova® Kortex™ GitHub repository.

V2.3.0 release

Release Date: 2021-05

Release versions for software and firmware components

Kinova® Kortex™ API	2.3.0
Base firmware	2.3.0
Actuators firmware	2.3.0

Features introduced or altered in this release

Minimal operating voltage

The minimal operating voltage used to be 18V. It is now 21V.

Joint and Cartesian waypoint support

The user can create a sequence of waypoints through the API that can be played without stopping the movement of the arm during the trajectory.

For Cartesian waypoints, a blending radius can be introduced between each waypoint, which causes the arm to deviate from the position of the defined waypoint during the trajectory.

A blending radius of zero cause the arm to reach the waypoint and stop at that point.

Selecting **Optimal blending** maintains the fastest speed at the waypoint while respecting the limits.

Cartesian waypoints replace the old `ReachCartesianPoses`.

For joint waypoints, the user can send joint commands without stopping the movement of the arm between each command. The user can still use `ReachJointPosition`.

Modbus communication protocol support for control commands (slave)

A small set of Kinova® Kortex™ commands are now available through the Modbus protocol. The commands support basic features.

- `Actions` and `sequences`
- `Twist`
- `Read cyclic data`

- Emergency stop
- Stop
- Clear faults

The Modbus watchdog monitors all communication and acts as a fail-safe. When no communication is detected, the internal session closes and Modbus initiates movement stops of the arm.

Others

New **Speed Limits** page in **Web App Configurations** section. Allows configuration of robot speed soft limits from Kinova® Kortex™ Web App.

Simulink Jetson TX2/XAVIER platform support.

Ability to configure, via APIs, soft limits on speed and acceleration as well as desired speeds and accelerations for joystick control modes.

Control device mapping support: ability to edit, create, and delete mappings via API and Kinova® Kortex™ Web App.

Fixed in this release

Version 2.3.0 fixed several issues.

- The **Stop** button does not stop the gripper action play when **Hold to Play** is disabled.
- Need to clear browser cache after robot upgrade.
- Joint error does not always display on the **Web App > Safeties** page.
- Playing a second action while the first is paused causes the first action to resume.
- Robot reboot using Kinova® Kortex™ Web App does not work.
- Memory leak in Gen3 caused arm to crash and require a reboot.

Pending deprecation

`ReachCartesianPoses` is supported for backward compatibility purposes only. It, along with a number of other API methods, is marked for deprecation in future releases.

For more information about the API, see the API documentation on the Kinova® Kortex™ GitHub repository.

V2.1.1 release

Release Date: 2019-12

Release versions for software and firmware components

Kinova® Kortex™ API	2.1.0
Base firmware	2.1.1
Actuators firmware	2.1.1

Features introduced or altered in this release

Kinova® Kortex™ Web App (robot configuration, control and monitoring)

ROS v1 support, including Gazebo and MoveIt! support

APIs: C++ and Python

Control features

- Protection zones
- Singularity avoidance

Servoing modes

- High-level
- Low-level

High level control by

- Cartesian twist command
- Joint speeds command
- Trajectories: reach cartesian pose, reach joint angles, pre-computed joint trajectory

Low-level control by actuators position, angular velocity, current

Sequences and Actions

Event notifications

Safeties management

Fixed in this release

Version 2.1.1 fixed one issue.

There are issues displaying Wi-Fi network information on the Kinova® Kortex™ Web App.

Known issues, limitations, and workarounds

Waypoint limitations

Certain limitations with waypoints are available through the call to `GetTrajectoryErrorReport`.

- The function requires a minimum of two (2) waypoints, including the base.
- The function requires a maximum of 1000 waypoints.
- The first cartesian waypoint must use the base reference frame.
- All durations and blendings must have positive values.
- The specified duration cannot be faster than the optimal duration.
- The joint waypoint duration is valid only from 0-100 seconds.
- Blending cannot overlap.
- The last waypoint must be the stopping point and must have a blending radius of zero (0).

Kinova® Kortex™ Web App shows base communication only

After rebooting the robot or refreshing the **Web App** page, the Kinova® Kortex™ Web App shows communication only on the base. The issue can be seen in the **Configurations and Upgrade** page of Kinova® Kortex™ Web App. Information about the actuators, interface module, and vision are missing.

Workaround

Refresh the page. If this does not work, move the robot around and reboot it.

Accessing `UserProfileHandle` in API notifications

Currently, `Notification Objects` produced by the robot contain both an explicit **`UserProfileHandle`** field as well as a **`Connection Object`** field; the **`Connection Object`** field contains a **`UserProfileHandle`** field with the same data. The data can currently be accessed from either the **`UserProfileHandle`** or the **`Connection Object`** field. Note, however, that in a future release, **`UserProfileHandle`** will be deprecated to remove the redundancy.

Workaround

To access the `UserProfileHandle`, exclusively use `connection.user_handle()`.

Robot may stop if selected speed constraint speed value is too high

When the speed constraint for a Cartesian pose is too high, the robot stops before it can attain the commanded pose.

Workaround

Edit the corresponding action and reduce the constraint speed value.

Robot drops when doing Set Zero Offset on actuators

The robot may drop if Set Zero Offset is performed when the robot is in an unstable position.

Workaround

Use only if the robot is in a stable position.

Need to restore factory settings after robot software update

Sometimes, after performing an update to the robot software, some configuration items do not appear correctly in the **Web App > Configurations** page due to differences in the database schema between the two versions.

It is recommended to always do a factory reset when downgrading versions.

Workaround

Select **Restore Factory Settings** from the **Configuration** page.



Note: All items that are configured, such as protection zones, actions, and user profiles, are reset. To mitigate the effects of this, export actions and protection zones, perform a factory reset, and then re-import the data that was exported.

After flash upgrade, Kinova® Kortex™ Web App will not display Web App and Kinova® Kortex™ versions completely

The Kinova® Kortex™ Web App and Kinova® Kortex™ API versions are displayed in the **Web App - Upgrade** page. The page may show the wrong information after upgrading the robot.

Workaround

Do a force refresh of the Kinova® Kortex™ Web App by pressing CTRL-F5.

IPv4 address not in valid range message sometimes appears while IP address and subnet mask are valid values

Kinova® Kortex™ Web App may report an error when changing both the IPv4 address and the subnet mask.

Workaround

Change one of the two values at a time.

Web App > Actions page Loop and Hold to Play settings not shared across sessions

The **Hold to Play** and **Loop** parameter values on the **Web App > Actions** page are specific to each Kinova® Kortex™ Web App instance. A second Web App instance does not show the same values from the first instance.

Pressing Set Axis Offset Zero in Kinova® Kortex™ Web App causes warnings and errors

Pressing the **Set Axis Offset Zero** from Kinova® Kortex™ Web App may cause warnings and errors.

Workaround

Clear all faults from Xbox gamepad or Kinova® Kortex™ Web App and resume normal operations.

Protection zone limitations due to placement of monitored points

The robot currently detects entry of the robot in protection zones by checking for intersections of a set of discrete checkpoints on the robot with the protection zone volume. This behaves intuitively in most cases but can produce expected behavior for some protection zones with at least one thin dimension such that the robot can wrap around the zone or the zone can end up between two monitored points.

Workaround

Read the User Guide Protection zone information in the robot controls section for more information about the monitored points and limitations of protection zones.

ROS MoveIt! - when joint goes over hard limit, it does not move anymore

MoveIt! cannot plan a trajectory when the robot is inside of its joint limits because the robot is not considered to be in a possible position.

Workaround

Use the virtual joystick of Kinova® Kortex™ Web App to move away from the joint limits before doing a MoveIt trajectory.

Device routing packets are sometimes lost between base and actuators

When communicating with actuators via the Kinova® Kortex™ API, a timeout error may be reported when packets are lost.

Workaround

Ensure that the client code handles timeouts by putting in place a retry on timeout.

Moving in Cartesian after getting into certain angular configuration

When in angular mode, protection zones are not taken into account. If you move the robot in angular mode into a protection zone and then switch to Cartesian and try to move, you will be stuck because protection zones are applied when in Cartesian mode.

Workaround

To get out of the protection zone when in Cartesian, you have to temporarily deactivate the relevant protection zone(s), go into a position that doesn't conflict with any protection zones and reactivate the protection zone(s) that you deactivated earlier.

Arm hesitates in its movement even when the arm is not passing through the protection zone

Modifying protection zones while the arm is moving causes the arm to stop. Protection zones cannot be modified while the arm is in an active mode, only while in idle mode.

Changing parameters of the active protection zone can cause joint fault errors

Modifying protection zone parameters while arm is moving may cause joint fault errors.

Workaround

Do not modify Protection zones parameters while the arm is moving.

Gripper does not initialize when Xbox trigger is held down at bootup

Occasionally, if the gripper is held down during the boot process, it may not function.

While continuously running sequence, robot can disconnect from Web App with notification Reason: Manual Stop

Kinova® Kortex™ Web App may report loss of connection with robot when browser tab in which Kinova® Kortex™ Web App is displayed no longer has focus.

Workaround

Ensure Kinova® Kortex™ Web App has focus and is not minimized.

Robot movement when close to joint angle soft limits

There are soft limits on joint angles for all actuators in the robot. The robot can stop moving when joint angles are close to their soft limits. For some of the actuators (1, 4, and 6) it can be hard to tell visually that the joint angles are close to the limits.

Workaround

Familiarize yourself with the robot joint limits in the User Guide Robot Controls section.

Robot decelerates slowly after movement command stops

When a movement command is stopped or interrupted by the user, the robot decelerates very slowly, often ending up significantly far from its position at the moment the movement command ceased.

Workaround

Use either the physical E-stop (if one is installed) or Xbox gamepad E-stop control if you need to stop the robot quickly to avoid a collision.

When a duplicate user profile is created, the password is set to an empty string

In Kinova® Kortex™ Web App, on duplication of a user, the password will not be copied. The new duplicate profile is created with the password an empty string.

Support

If you have any issues, questions or comments, please feel free to contact us.

Access all technical and product resources on the Kinova website.

Contact us if you have questions at support@kinova.ca.

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