

Intel® RealSense™ L515 Camera

Specification Update

Revision 009

March 2021

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Revision History

Revision Number	Description	Revision Date
001	Major Firmware 1.3.15.100 Release	June 2020
002	Minor Firmware 1.4.1.0 Release	June 2020
003	Minor Firmware 1.4.1.2 (Recommended)	July 2020
004	Major Firmware 01.05.00.00	August 2020
005	Minor Firmware 01.05.01.03	October 2020
006	Minor Firmware 01.05.02.00	November 2020
007	Minor Firmware 01.05.03.00	January 2021
008	Minor Firmware 01.05.04.01	February 2021
009	Minor Firmware 01.05.05.00	March 2021

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1 Preface

This document is an update to the specification contained in the [Affected Documents](#) table below. This document is a compilation of device and documentation errata, specification clarifications and changes. It is intended for hardware systems manufactures and software developers of applications, systems or tools.

Information types defined in Nomenclature are consolidated into the specification updates and are no longer published in other documents.

This document may also contain information that was not previously published.

1.1 Affected Documents

Document Title	Location
Intel® RealSense™ L515 Camera Datasheet	https://dev.intelrealsense.com/docs/lidar-camera-l515-datasheet

1.2 Nomenclature

Errata are design defects or errors. These may cause behavior to deviate from published specifications. Hardware and software designed to be used with any given stepping must assume that all errata documented for that stepping are present on all devices.

Specification Changes are modifications to the current published specifications. These changes will be incorporated in any new release of the specifications.

Specification Clarifications describe a specification in greater detail or further highlight a specification's impact to a complex design situation. These clarifications will be incorporated in any new release of the specification.

Documentation Changes include typos, errors, or omissions from the current published specifications. These will be incorporated in any new release of the specification.



2 Summary Table of Changes

The following tables indicate the errata, specification changes, specification clarifications, or documentation changes which apply to the Product Name product. Intel may fix some of the errata in a future stepping of the component and account for the other outstanding issues through documentation or specification changes as noted.

2.1 Codes Used in Summary Tables

Status

Doc:	Document change or update will be implemented
Open:	In engineering assessment
Plan Fix:	This erratum may be fixed in a future firm of the product
Fixed:	This erratum has been previously fixed
No Fix:	There are no plans to fix this erratum

Table 2-1. Errata Summary Table

Number	Status	Errata
N/A	Fixed in Minor Firmware 1.4.1.0	Horizontal shift of depth map
RS5-7338	Fixed in Minor Firmware 1.4.1.0	Camera lost connection to LIBRS after closing all sensors
RS5-7604	Fixed in Minor Firmware 1.4.1.0	Close object invalidation
RS5-7195	Fixed in Minor Firmware 1.4.1.2	Sequential frame drops when simultaneously streaming color, depth, IR, confidence, accelerometer, and gyroscope.
RS5-7898	Fixed in Minor Firmware 1.4.1.2	Preset and control changes
RS5-5250	Open	Occasionally, after resetting the device, the Viewer gets stuck and does not show the camera. The reproduction rate is very low (<100ppm) and has been observed only on Windows 10 RS4 machines. The recovery is by unplugging and replugging the device.
RS5-5104	Open	First two color video streams are incomplete.
RS5-6586	Fixed in Minor Firmware 1.4.1.2	Corrupted Depth and IR
RS5-7374	Fixed in LibRS	LIBRS stuck after camera hardware reset
N/A	N/A	All Windows validation is performed on RS5. Validation and support for RS4 is not planned.
RS5-7693	Open	Initial IMU frames incorrect after setting a new IMU frame rate.

Summary Table of Changes

Number	Status	Errata
RS5-8025	Fixed in Major Firmware 01.05.00.00	Fall detect enabled even if it was previously disabled.
RS5-9994	Fixed in Minor Firmware 01.05.04.01	Noise artifacts in depth image when set to QVGA resolution.

Table 2-2. Specification Changes

Number	Specification Changes
RS5-10226 RS5-10074	Minor firmware 01.05.05.00 includes updates to the USB descriptor for the L515 camera.
N/A	Minor firmware 01.05.01.03 includes support for USB2 as well as support for QVGA depth resolution at 30fps. Note: This firmware needs to be updated on the L515 camera via USB3 first before USB2 support is available.
N/A	Minor firmware 1.4.1.0 is highly recommended as this firmware fixes a horizontal shift of the depth map. Using the combination of FW 1.4.1.0 and Librealsense version 2.35.2 will be the best configuration for L515 cameras since the Librealsense version 2.35.2 is the first official release of SDK that supports L515 cameras.

Table 2-3. Specification Clarifications

No.	Specification Clarifications
	<p>Firmware releases are classified as "Major" and "Minor" Firmware.</p> <p>Major Firmware – This is a production firmware release. Production firmware is recommended and supported for production builds integrating Intel RealSense depth cameras. This is a firmware which is used on the Intel RealSense camera production line. Major Releases are recommended and supported for customers integrating Intel® RealSense™ depth cameras or modules into complete products. The current release cadence is bi-annually.</p> <p>Minor Firmware – These are development firmware releases between the bi-annual Major Releases. The Intel RealSense team continues implementing new features and resolving issues. All the new changes are validated, but a complete end to end system validation is not completed until a Major release. Minor releases are completely acceptable for customer integration. Customers can take advantages of the new features and resolved issues.</p>

Table 2-4. Documentation Changes

No.	Documentation Changes
	None for this revision of this specification update.



3 Errata

3.1 Open

RS-5250	Occasionally, after resetting the device, the Viewer gets stuck and does not show the camera. The reproduction rate is very low (<100ppm) and has been observed only on Windows 10 RS4 machines. The recovery is by unplugging and replugging the device.
Problem:	When restarting the device using the HW Monitor Command RST, the device may not be recognized by RS Viewer. This has only been observed on Windows 10 RS4 machines and happens rarely.
Implication:	The failure is observed on L515 cameras
Workaround:	Unplug and plug the device.
Status:	Refer the Summary Tables of Changes

RS5-5104	First two color video streams are incomplete.
Problem:	In some instances, the first two color video frames are incomplete when Depth, IR, Confidence, and IR streams are simultaneously streaming. This issue only occurs on Intel host controllers.
Implication:	The failure is observed on L515 cameras
Workaround:	None
Status:	Refer the <i>Summary Tables of Changes</i>

RS5-7693	Initial IMU frames incorrect after setting a new IMU frame rate.
Problem:	After setting a new IMU frame rate and restarting the stream, up to 7 of the first frames may be invalid (either old frame rate or dropped). Subsequent restarts show no issue.
Implication:	The failure is observed on L515 cameras
Workaround:	After changing IMU frame rate and restarting stream, discard the first several IMU frames received.
Status:	Refer the <i>Summary Tables of Changes</i>

3.2 Fixed

N/A	Horizontal shift of depth map
Problem:	It is possible for the depth map to shift in the horizontal direction over time.
Implication:	Depth map looks good however it slightly shifted compared to a reference such as the RGB camera image.
Status:	Refer the Summary Tables of Changes

RS5-7338	Camera lost connection to LIBRS after closing all sensors
Problem:	Occasionally camera lost connection after sensor start stop operation
Implication:	N/A
Workaround:	N/A
Status:	Refer the Summary Tables of Changes

RS5-7604	Close object invalidation
Problem:	Camera behavior change, in previous release camera will shut down depth stream once close object is detected after 1 sec. in 1.4.1.0 release the camera will invalidate the frames with the invalid depth
Implication:	N/A
Workaround:	N/A
Status:	Refer the Summary Tables of Changes

RS5-7195	Sequential frame drops when simultaneously streaming color, depth, IR, confidence, accelerometer, and gyroscope.
Problem:	While concurrently streaming color, depth, IR, confidence, accelerometer, and gyroscope, several consecutive frames may drop. This issue happens on rare occasions.
Implication:	The failure is observed on L515 cameras
Workaround:	None
Status:	Refer the Summary Tables of Changes

RS5-7898	Preset and control changes
Problem:	Camera presets and control changes are in effect only if performed after start streaming
Implication:	The failure is observed on L515 cameras
Workaround:	None
Status:	Refer the <i>Summary Tables of Changes</i>

RS5-6586	Corrupted Depth and IR
Problem:	Occasionally, after few hrs of operation a corrupted IR or depth image may happen
Implication:	The failure is observed on L515 cameras
Workaround:	Stop and Start the camera
Status:	Refer the <i>Summary Tables of Changes</i>

RS5-8025	Fall detect enabled even if it was previously disabled.
Problem:	If the Fall Detect feature is manually disabled, it will automatically be enabled on next restart.
Implication:	The failure is observed on L515 cameras
Workaround:	None
Status:	Refer the <i>Summary Tables of Changes</i>

RS5-7374	LIBRS stuck after camera hardware reset
Problem:	LIBRS lost connection to camera after disconnecting and reconnect of the USB
Implication:	Low reproduction rate
Workaround:	Restart LIBRS
Status:	Refer the <i>Summary Tables of Changes</i>

RS5-9994	Noise artifacts in depth image when set to QVGA resolution
Problem:	When setting depth resolution to QVGA, artifacts seen in depth image
Implication:	The failure is observed on L515 cameras
Workaround:	None
Status:	Refer the <i>Summary Tables of Changes</i>