

Living Image® 3.2 Software Release Notes

New Features and Improvements

1 Purpose

This document is a brief overview of the new features and improvements in the Living Image® software that accompanies the release of the IVIS® Kinetic instrument.

Living Image® 3.2 also serves as a maintenance release for Living Image® 3.1 supporting all IVIS® instruments except those with Roper cameras. See Section 4 for a list of improvements.

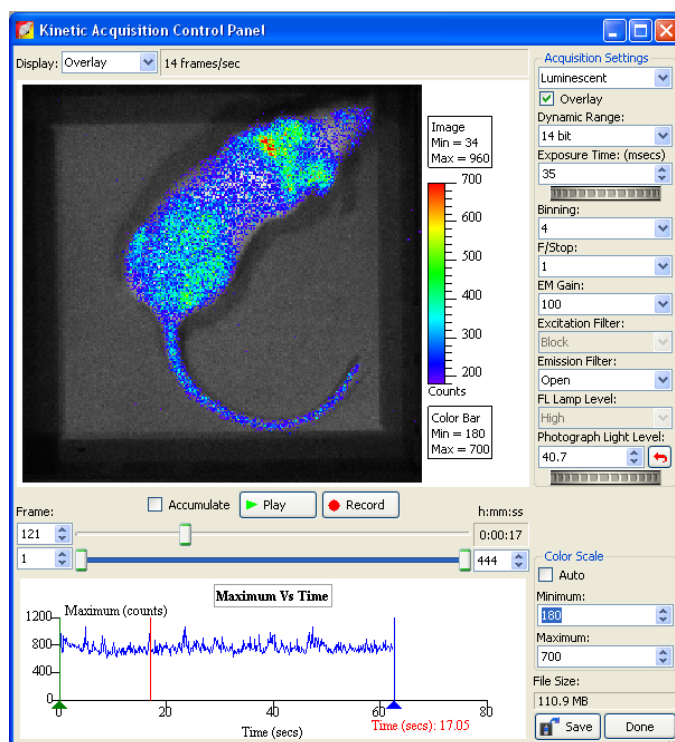
2 New Features

2.1 Kinetic Imaging

The EMCCD camera enables both 14 and 16 bit imaging.

The 14 bit imaging mode has a dynamic range from 0 - 16383 with real time video rates up to 50 frames/second, depending on the imaging parameters. Due to the 14 bit conversion, higher readout speeds are available in this mode. The increase in speed is at the cost of a smaller dynamic range. This imaging allows real time registration and is recommended when imaging non-anesthetized animals.

The 16 bit imaging mode has a dynamic range from 0 – 65535 with real time video rates up to 5 frames/second. In this mode, the readout rates are slow (~x10 slower) which yields better signal to noise ratio and larger dynamic ranges over the 14 bit mode. This mode is recommended for high resolution and high sensitivity imaging of anesthetized animals.



2.2 EM Gain

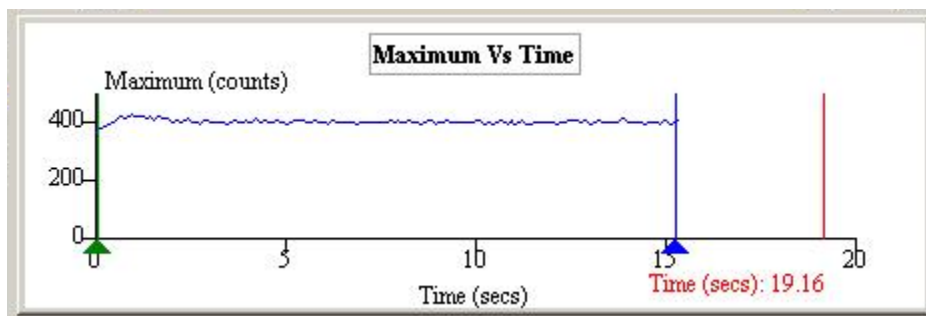
The intensifier of the IVIS Kinetic instrument allows shorter exposure times due to an electronic amplification of the signal. User adjustable amplification is available on the instrument.

2.3 Auto Photo Lights

In kinetic mode, the light levels for the photograph are adjusted automatically. A manual option is still available for extreme cases.

2.4 Real Time Kinetic Plot of Maximum Image Signal Versus Time

In kinetic mode, the maximum signal is plotted in real time to enable a first estimate of the intensity distribution.



2.5 Accumulation mode

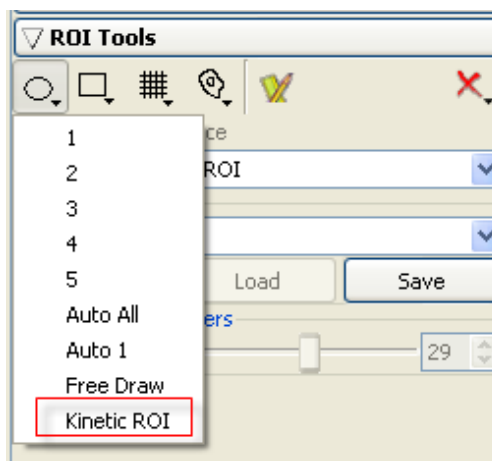
Accumulation mode is for use with anesthetized animals only.

Kinetic accumulation enables visualization of dim signals. In this operating mode, individual images (frames) are summed together into a single image for visualization purposes only. The accumulation mode increases the signal to noise ratio and should be used for demonstration purposes only since the data cannot be quantified.

Offline accumulation allows you to extract a single summed image from a kinetic data stream for publication purposes. This mode can be quantified and provides better images for presentations.

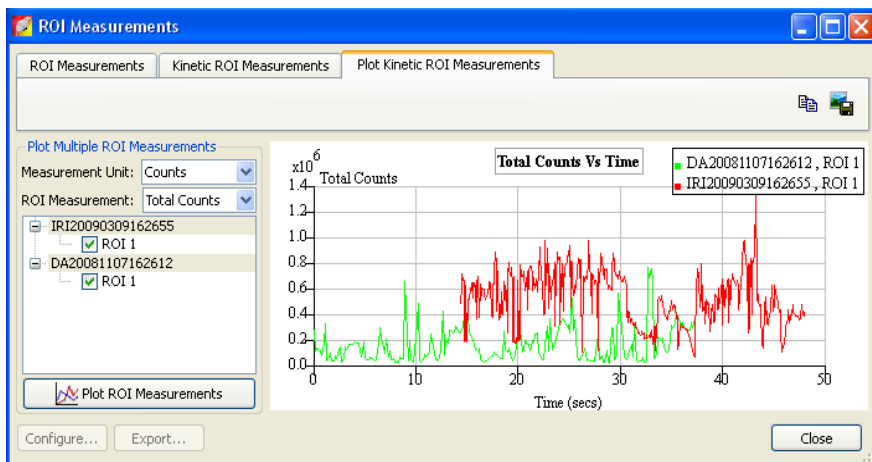
2.6 Kinetic ROI

As with all IVIS instruments, absolute quantification of bioluminescent and/or fluorescent signals is available. This operation is recommended for non-anesthetized animals since the ROI follows the motion of the signal.



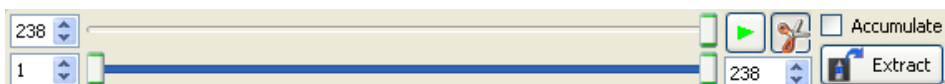
2.7 Kinetic ROI Plot

The kinetic ROI plot provides a convenient way to view and compare kinetic ROI measurements across user-selected image frames from the same or different kinetic data sets.



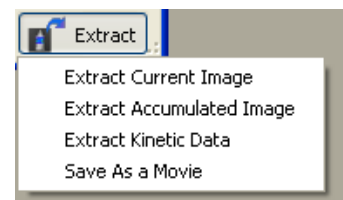
2.8 *Edit Kinetic Data*

This option enables you to playback, measure or extract interesting segments of a kinetic data stream which can also be useful to manage large size kinetic data for analysis.



2.9 *Save kinetic data in DICOM format*

Kinetic data are saved in DICOM format. Once the data is saved and loaded back for analysis, various movie export options are also available, including *.avi, *.mp4, and *.mov.

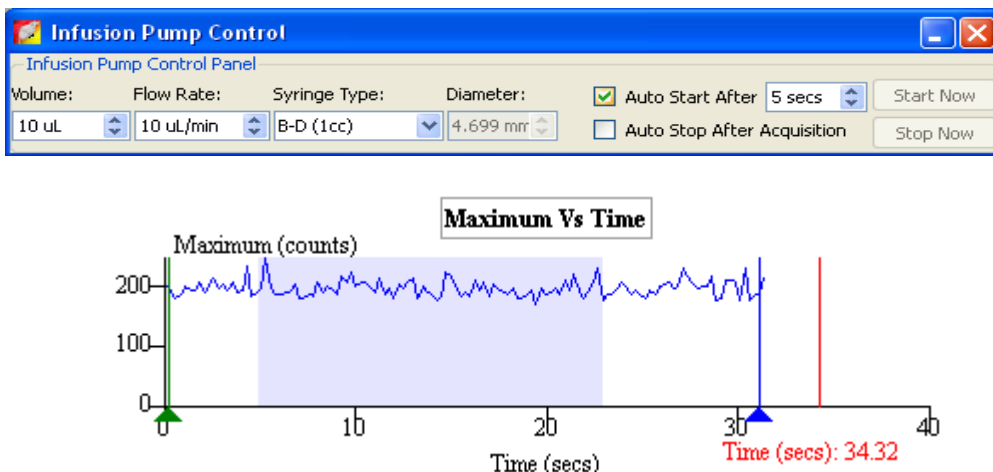


2.10 *Dynamic Saturation Detection of the Photographic and Luminescent/fluorescent Frames in Kinetic Acquisition Mode*

Previously the software warned the user when pixels were saturated after image acquisition. This version of the software displays a real time saturation warning while kinetic data is being captured.

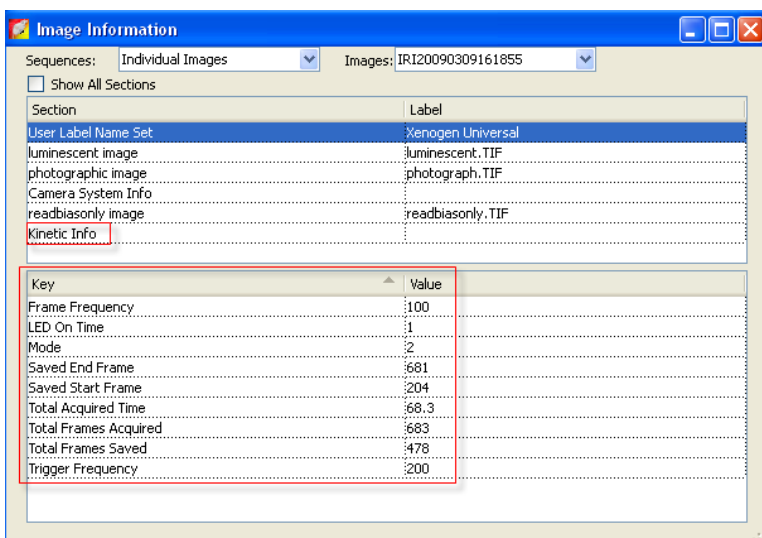
2.11 *Infusion Pump: Harvard*

The software allows manual or computer control of the Harvard infusion pump. In the computer control mode, the software automatically records the infusion start and stop time in clickinfo.txt file and plots the infusion start/stop time of the infusion in a real-time plot during kinetic acquisition as well as for analysis using the Kinetic Plot option.



2.12 Kinetic Image Information

The image information panel includes all of the kinetic imaging information that is saved with the data set.



2.13 Automatic Color Scale adjustments during kinetic acquisition

When Auto Color Scale option is selected during kinetic data acquisition, the software calculates the optimal color scale minimum and maximum.

Note: Manual Color Scale controls are recommended for Accumulation mode.

2.14 Single image Auto Exposure algorithm updated to work with EM Gain setting

An improvement to Auto Exposure algorithm to optimize exposure times when single image or sequence of images is taken with Em Gain amplification setting, introduced in Living Image 3.2.

2.15 Kinetic Data Size Limit

The IVIS Kinetic instrument enables you to acquire a real-time data stream which can generate very large files. The file size limit for DICOM data is 2GB. Kinetic data acquisition automatically stops when 2GB file size limit is reached.

3 System Requirements

Living Image 3.2 supports IVIS 50/100/Lumina/200/Spectrum/Kinetic instruments, except the ones with Roper cameras.

IVIS Kinetic with e-tray firmware version 3.67 or higher is required for kinetic data acquisition with Living Image 3.2 software.

4 Improvements

The following table is a summary of the improvements.

Bug ID	Summary
LI-2208	XFOV-24 (FOV E and f1.2) not compatible with Auto-Exposure
LI-2173	IVIS 200/Spectrum f/stop positioning backlash
LI-2183	Stage Temperature regulation issues in e-tray firmware v.3.48
LI-2291	Auto Exposure: wrong Read Bias image is saved with image, binning differs
LI-2245	AE preferences for f/stop default to f1-f1 range; “Restore Defaults” button is ineffective.
LI-2361	Application crash on clicking the Print button
LI-2193	Contour Auto ROI problem with various threshold values, ROIs are not created as expected
LI-2179	Error in ROI Pixel calculation of Contour Auto ROI