AlliGator Source Code Documentation

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Chapter 1. Project description

AlliGator: Fluorescence Lifetime Imaging Data Analysis

AlliGator is a software dedicated to analyze individual or series of fluorescence lifetime imaging (FLI) datasets by the phasor approach or using nonlinear least-square fit (NLSF) or maximum likelihood estimation (MLE) approaches. Suppported datasets include image series, PicoQuant or Becker & Hickl hardware generated files or custom datasets generated by SwissSPAD Live, a FLI data acquisition software used with SwissSPAD detectors developed by the AQUA lab of Prof. Charbon at EPFL.

The software is released on GitHub at https://github.com/smXplorer/AlliGator, with a comprehensive online manual available at https://alligator-distribution.readthedocs.io/

Chapter 2. Libraries

This section describes the libraries contained in the project.

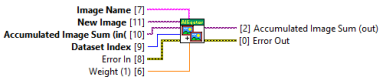
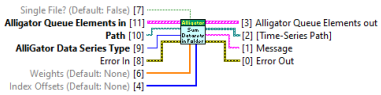
2.1. AlliGator Accumulated Dataset.lvlib

Responsibility: Handles dataset summation tasks (sum or average).

Version: 1.0.0.0

2.1.1. Functions

Table 1. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Add Dataset to Accumulated Dataset		Adds the **Current Dataset** to the **Accumulated Dataset**, if and only if the number of gates and channels are the same as those of the first dataset in the series. If not, the **Current Dataset** is skipped.			
AlliGator Add Image to Accumulated Image		Adds a single **New Image** (gate image) to the **Accumulated Image Sum** (for that gate). If the current **Dataset Index** is 0 (first dataset in the Series), the **Accumulated Image Sum** is cleared first.			
AlliGator Clear Dataset Series Sum		Clears the data structures associated with the Accumulated Dataset and resets the internal variable **Is Displayed Image Accumulated** to False.			
AlliGator Get Temp Accumulated File Name		Builds name of acccumulated or averaged dataset displayed in AlliGator's title bar.			
AlliGator Script Sum All Datasets in Folder		Launches a series of steps loading each dataset in a series (including background correction) and adding them to a reset accumulated dataset. This script is followed by the usual series of steps after a new dataset is loaded (display, phasor plot update, phasor ratio or map overlay in image source and/or image ROI highlight in phasor plot).			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.1.2. Library Constant VIs

NOTE	No Constant VIs Found

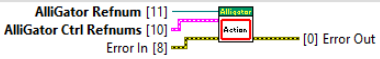
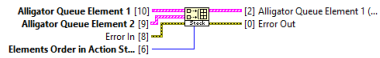
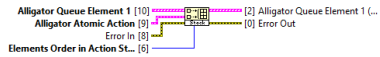
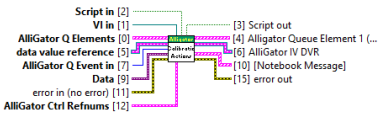
2.2. AlliGator Action Engine.lvlib

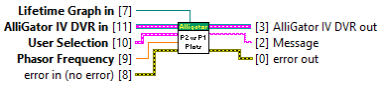
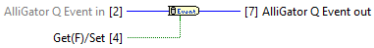
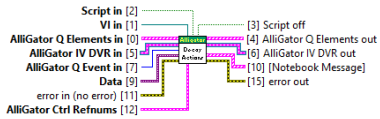
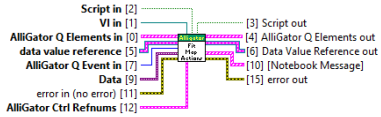
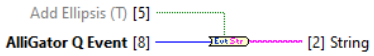
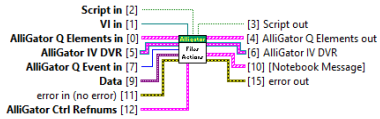
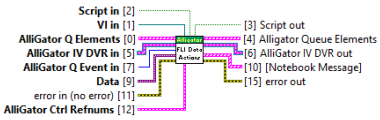
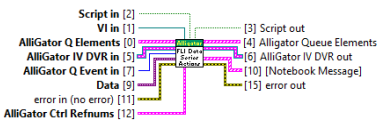
Responsibility: Handles AlliGator Event Queue, dispatching events to different handlers according to their category.

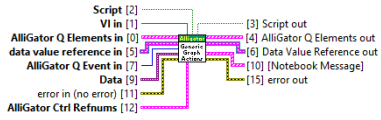
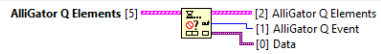
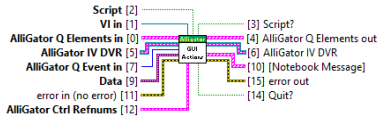
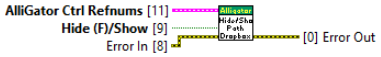
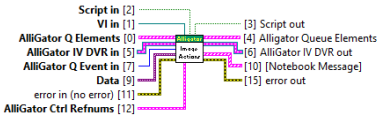
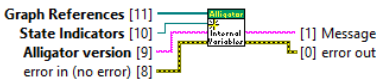
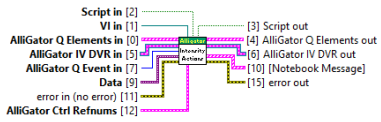
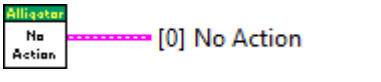
Version: 1.0.0.0

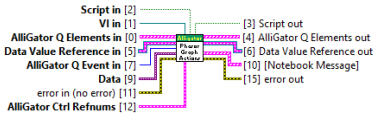
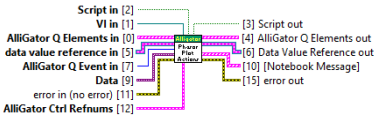
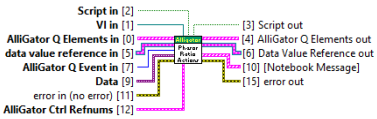
2.2.1. Functions

Table 2. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Action Loop		AlliGator action dispatcher. Each action array is handled as a package, each action in the array being sent to the appropriate category (Files, Image, Phasor Graph, etc.).			
AlliGator Add Action Array to Stack		One of the two options of the polymorphic **AlliGator Add Action(s) to Stack** VI. Appends (or prepends) an array of actions to the current ones being processed or about to be queued.			
AlliGator Add Single Action to Stack		One of the two options of the polymorphic **AlliGator Add Action(s) to Stack** VI. Appends (or prepends) a single action to the current ones being processed or about to be queued.			
AlliGator Add Test Result		No description found (add content in vi description)			
AlliGator Calibration Actions		Processes AlliGator phasor calibration-related actions.			
AlliGator Check for Abort		Checks whether there is any **Abort** action in the input **AlliGator Q Elements**. If so, remove all other action items.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Compute P2 vs P1 Plots		Compute a (P1, P2) scatter plot for all selected phasor plots in the Phasor Graph and send them to the Lifetime & Other Parameters Graph. P1 & P2 are parameters associated with each plasor plot or derived from the phasor and/or phasor ratio references.			
AlliGator Current Event		Get/Set current AlliGator action being processed.			
AlliGator Decay Actions		Processes AlliGator decay-related actions.			
AlliGator Decay Fit Parameter Map Actions		Processes AlliGator decay fit parameter map-related actions.			
AlliGator Event to Event Category		Extracts the category an **AlliGator Q Event** belongs to, in order to dispatch this event to the proper handler.			
AlliGator Event to String		Converts **AlliGator Q Event** enum to the corresponding string.			
AlliGator Files Actions		Processes AlliGator files-related actions.			
AlliGator Filter Event		Prevents adding an event to the main Action Queue if a similar event has been added less than **Timeout** ago, where **Timeout** is part of the **Filtered Event Data**.			
AlliGator FLI Dataset Actions		Processes AlliGator FLI Dataset-related actions.			
AlliGator FLI Dataset Series Actions		Processes AlliGator FLI Dataset Series-related actions.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Generic Graph Actions		Processes AlliGator generic graph-related actions.			
AlliGator Get First Event		Returns the first event (action + data) in the **AlliGator Q Elements** input array in **AlliGator Q Event** and the remaining events in the **AlliGator Q Elements** output array. If there is a GUI:Abort element in the array, or if the abort flag is raised, returns a single GUI:Abort as **AlliGator Q Event** and an empty array as **AlliGator Q Elements** output array.			
AlliGator GUI Actions		Processes AlliGator GUI-related actions.			
AlliGator Hide Path Drop Boxes		No description found (add content in vi description)			
AlliGator Image Actions		Processes AlliGator source image-related actions.			
AlliGator Initialize Images		Initializes AlliGator image structures.			
AlliGator Initialize Internal Variables		Initializes AlliGator internal variables.			
AlliGator Intensity Actions		Processes AlliGator intensity time trace-related actions.			
AlliGator No Action Event		Returns a no-op event.			
AlliGator Package Notebook Messages		Formats Notebook message by adding AlliGator Action header and style.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Phasor Graph Actions		Processes AlliGator phasor graph-related actions.			
AlliGator Phasor Plot Actions		Processes AlliGator phasor plot-related actions.			
AlliGator Phasor Ratio Actions		Processes AlliGator phasor ratio-related actions.			
AlliGator Queue Non Empty Events		Removes consecutive duplicates of any kind of AlliGator action to leave a single copy of each in the array of enqueued AlliGator events. The same action can appear several time, as long as the different copies are separated by a different action.			
AlliGator Queue		Returns the AlliGator Action queue.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.2.2. Library Constant VIs

NOTE No Constant VIs Found

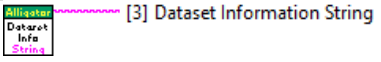
2.3. AlliGator Dataset Information Window.lvlib

Responsibility: VIs handling Dataset Information displayed to the user.

Version: 1.0.0.0

2.3.1. Functions

Table 3. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Build Dataset Information String		Creates **Dataset Information String** based on internal variables and settings.			

Name	Connector pane	Description	S.	R.	I.
Alligator Dataset Information Window		Window displaying the dataset information extracted from internal variables and settings.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.3.2. Library Constant VIs

NOTE No Constant VIs Found

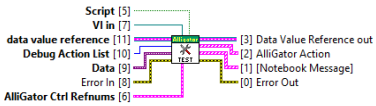
2.4. AlliGator Debug.lvlib

Responsibility: features under test and accessible via the **DEBUG** menu item (when exposed).

Version: 1.0.0.0

2.4.1. Functions

Table 4. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Feature Tests		VI implementing the successive debugged features as individual cases. One feature can be tested per session, and is hardwire-selected.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.4.2. Library Constant VIs

NOTE No Constant VIs Found

2.5. AlliGator Decay Analysis.lvlib

Responsibility: VIs handling decay analysis (preprocessing, processing, Ifit, RF).

Version: 1.0.0.0

Table 5. Nested libraries

Name	Type
AlliGator Decay Fit.lvlib	Library
AlliGator Decay Preprocessing.lvlib	Library
AlliGator Decay Processing.lvlib	Library
AlliGator IRF.lvlib	Library

2.5.1. Functions

This library has no functions set to non private scope.

2.5.2. Library Constant VIs

NOTE	No Constant VIs Found

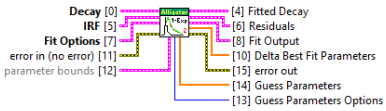
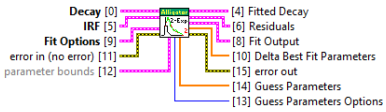
2.6. AlliGator Decay Fit.lvlib

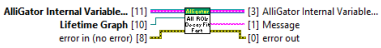
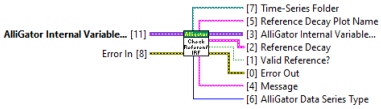
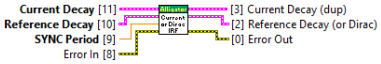
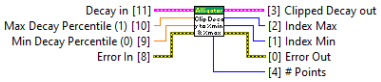
Responsibility: VIs used to fit decays to 1-Exp or 2-Exp models.

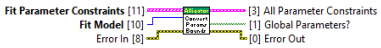
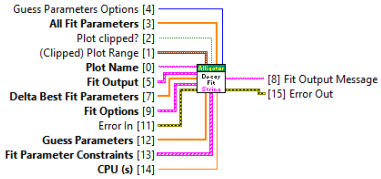
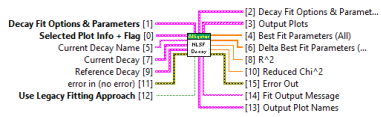
Version: 1.0.0.0

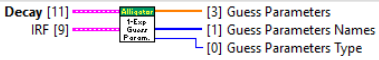
2.6.1. Functions

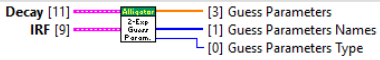
Table 6. Functions (non private scope only)

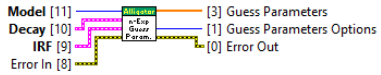
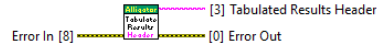
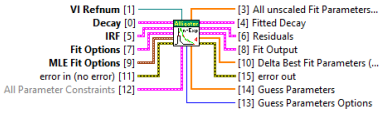
Name	Connector pane	Description	S.	R.	I.
AlliGator 1-Exp + IRF Fit v2		Legacy code for 1-Exp decay fit.			
AlliGator 2-Exp + IRF Convolution Fit v2		Legacy code for 2-Exp decay fit.			
AlliGator All ROIs Decay Fit Non-Interactive (Fast + Individual IRF) v2		Performs multi-ROIs NLSF decay fits for the selected ROIs. Each ROI has its own associated IRF.			
AlliGator All ROIs Decay Fit Script		Series of actions triggered by the **All ROIs NLSF Analysis:Interactive (Slow)** Analysis menu item.			

Name	Connector pane	Description	S.	R.	I.
AlliGator All ROIs Decay Fit		Fits all ROI decays with the selected model, using a common IRF for all ROIs.			
AlliGator Best of All (weights) String		String to append to the fit output sent to the Notebook in the case of a "Best of All" option, to specify which fit was the best (weighted or unweighted).			
AlliGator Check Decay Reference		Obtains the relevant IRF (either common or local) for the subsequent task.			
AlliGator Check IRF		Check whether the provided IRF is a valid plot. If not, builds a mock Dirac IRF as a replacement.			
AlliGator Clear Local IRFs		Clears the internal variable-sored local IRFs.			
AlliGator Clip Decay for Fit		Clips the decay according to the **Min** and **Max Decay Percentile** parameters provided. If the decay range is [I_min, I_max] and the decay percentiles are (f_min, f_max) in [0, 1], we look for: - starting from the location of the maximum (presumably the peak location) and moving forward, the point at which: I_i < I_min + f_max*(I_max - I_min) = F_max - starting from the last point and moving baclwards, the point at which: I_i > I_min + f_min*(I_max - I_min) = F_min			

Name	Connector pane	Description	S.	R.	I.
AlliGator Convert Decay Fit Parameter Constraints v2		Returns constraints for all parameters of the model, even if the user only specified a few (or none at all). This VI assumes that the **Fit Parameter Constraints** involve tau, and returns values with the same assumption. Look for constrained parameters. If present, replace default constraints (-Inf, Inf) by new ones, except for the offset, which is set to the guessed value (or zero if not provided).			
AlliGator Convert New to Legacy Fit Parameter Constraints		version conversion for **Fit Parameter Constraints**.			
AlliGator Create Fit Parameter Plots Script		Creates as many empty parameter plots as there are parameters.			
AlliGator Decay Fit Output String		Creates decay fit output string.			
AlliGator Enforce Lifetime Positivity		Constrains lifetime parameters to be positive (replacing them by zero otherwise).			
AlliGator Fit Decay		VI implementing single decay fit with either a single or double exponential model with IRF convolution (or in the absence of IRF, without convolution).			
AlliGator Fit IRF String		Create the Notebook string specifying what kind of IRF was used in the fit.			
AlliGator Fit IRF to Cubic Spline + Sine		Fits the provided plot by a sum of a sinus function and a cubic spline.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Fit Termination Criteria & Quality Metrics Output String	[AlliGator Decay Analysis.lvlib:AlliGator Decay Fit.lvlib:AlliGator Fit Termination Criteria & Quality Metrics Output String.vi]	Creates a string describing the fit termination criteria and quality metrics.			
AlliGator Get 1-Exp Guess Parameters		Determines **Guess Parameters** for a 1-Exp fit according to the user-specified choices: * Last valid fitted parameters: If the number of available last valid fitted parameters is correct, uses those, otherwise use the estimated parameters. * User-provided parameters: If a parameter is provided by the user, uses it, otherwise uses the estimated parameter. * User-provided (normalized) parameters: If a normalized-parameter (amplitude or baseline) is provided by the user, uses it, otherwise uses the estimated parameter. * Numerically estimated parameters: Use the numerically estimated parameters.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Get 2-Exp Guess Parameters		Determines **Guess Parameters** for a 2-Exp fit according to the user-specified choices: * Last valid fitted parameters: If the number of available last valid fitted parameters is correct, uses those, otherwise use the estimated parameters. * User-provided parameters: If a parameter is provided by the user, uses it, otherwise uses the estimated parameter. * User-provided (normalized) parameters: If a normalized-parameter (amplitude or baseline) is provided by the user, uses it, otherwise uses the estimated parameter. * Numerically estimated parameters: Use the numerically estimated parameters.			
AlliGator Get Fit Options & Parameters	[AlliGator Decay Analysis.lvlib:AlliGator Decay Fit.lvlib:AlliGator Get Fit Options & Parameters.vi]	Gets Decay Fit Options & Parameters.			
AlliGator Get Fit Output Options		Gets Fit Output Options.			
AlliGator Get Guess Offset		Used to get an offset parameter when no constraint is provided: - if "Use last valid fitted parameters", use it. - otherwise, if a guess offset parameter is available, use it, else use zero.			
AlliGator Get IRF Values & Locations	[AlliGator Decay Analysis.lvlib:AlliGator Decay Fit.lvlib:AlliGator Get IRF Values & Locations.vi]	Gets the array of stored **IRF Values** as well as the **IRF Locations**.			
AlliGator Get Last Fitted Parameters		Returns **Last Fitted Parameters** as well as **Last Decay Max - Min**.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Get n-Exp Guess Parameters		Get numerically estimated **Guess Parameters** for 1-Exp or 2-Exp models.			
AlliGator Get Tabulated Results Header (Decay Fit)		Creates the header line for the ASCII ouput of decay fit parameters.			
AlliGator Is Decay Valid		Checks whether the input **Decay** is valid, i.e. is non-zero, does not contain NaN and has more than one element.			
AlliGator Is IRF Valid		Checks that the **Reference Decay** is a valid plot.			
AlliGator n-Exp + IRF Fit v4		Fits the provided decay to 1-Exp or 2-Exp model. This VI assumes that **All Parameter Constraints** involve tau (rather than the square root of lifetime) and returns values with the same assumption.			
AlliGator Update Decay Fit Results (Stats)		Stores basic statistics (algorithm, Chi2/N, R2 and RMSE, where N is the number of evaluation points) for a successful fit. This is used when the "Use All" fit method option is selected, and allows picking the best result out of the 3 methods (LS, LAR, Bisquare)			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.6.2. Library Constant VIs

NOTE	No Constant VIs Found

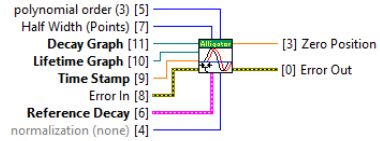
2.7. AlliGator Decay Preprocessing.lvlib

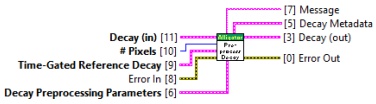
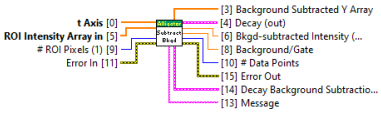
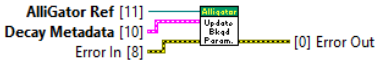
Responsibility: Handles decay pre-processing functions.

Version: 1.0.0.0

2.7.1. Functions

Table 7. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Create Head & Tail Bounding Cursors	[AlliGator Decay Analysis.lvlib:AlliGator Decay Preprocessing.lvlib:AlliGator Create Head & Tail Bounding Cursors.vi]	Creates a **Head** (HE) and a **Tail** (TS) cursor in the **Decay Graph** to be used for the definition of the decay end (the "Head" part) and start (the "Tail" part) when performing decay extrapolation.			
AlliGator Extrapolate Decay		Extrapolates a truncated decay by trying to fit an exponential to the tail part and connect it to the head part .			
AlliGator Find & Plot Threshold Crossing Position	[AlliGator Decay Analysis.lvlib:AlliGator Decay Preprocessing.lvlib:AlliGator Find & Plot Threshold Crossing Position.vi]	Find the location where the decay reaches the provided thresholf (from below), returns that position and adds it to the last plot in the **Lifetime & Other Parameters Graph**.			
AlliGator Find & Plot Zero-Crossing Position v2	[AlliGator Decay Analysis.lvlib:AlliGator Decay Preprocessing.lvlib:AlliGator Find & Plot Zero-Crossing Position v2.vi]	Finds the zero-crossing location for the last decay in the **Decay Graph** using the provided **Shift** and adds it to the last plot in the **Lifetime & Other Parameters Graph**.			
AlliGator Find Cross-Correlation Shift		Computes the shift of the last plot in the **Decay Graph** maximizing the cross-correlation of that plot and the **Reference Decay** and adds this value to the last plot in the **Lifetime & Other Parameters Graph**.			
AlliGator Get Background Subtraction Parameters		Obtains or stores information about **Background Subtraction Parameters** from Settings.			
AlliGator Get-Set Decay Preprocessing Options & Parameters	[AlliGator Decay Analysis.lvlib:AlliGator Decay Preprocessing.lvlib:AlliGator Get-Set Decay Preprocessing Options & Parameters.vi]	Get/Set Decay Pre-processing Options & Parameters (Settings).			

Name	Connector pane	Description	S.	R.	I.
AlliGator Get-Set Decay Preprocessing Parameters		Get/Set Decay Pre-processing parameters.			
AlliGator Preprocess Decay v3		Applies the different selected pre-processing steps on the provided decay in the specified order.			
AlliGator Store Cursor-defined Head & Tail Fractions	[AlliGator Decay Analysis.lvlib:AlliGator Decay Preprocessing.lvlib:AlliGator Store Cursor-defined Head & Tail Fractions.vi]	Sets the head and tail fractions for decay extrapolation based on the corresponding cursor locations. If one cursor is missing, the current fraction is preserved.			
AlliGator Subtract Background from Decay Curve v3		Subtracts background from a decay based on selected options.			
AlliGator Update Background Subtraction Indicators		Updates background subtraction indicators in the **Decay Graph** panel.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.7.2. Library Constant VIs

NOTE	No Constant VIs Found

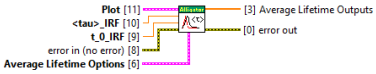
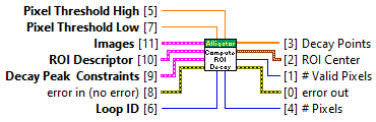
2.8. AlliGator Decay Processing.lvlib

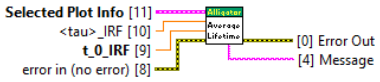
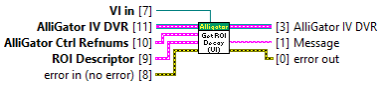
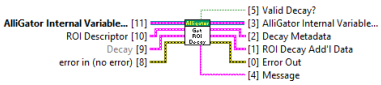
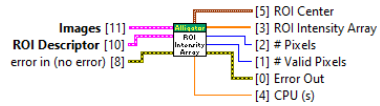
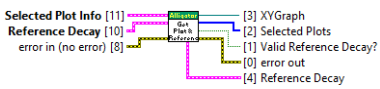
Responsibility: All functions related to decay processing (but not decay PRE-processing).

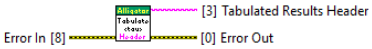
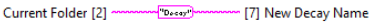
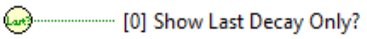
Version: 1.0.0.0

2.8.1. Functions

Table 8. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator All ROIs Average Lifetimes		Computes an approximate average lifetime for all ROI decays, based on the integral under the curve and IRF information.			
AlliGator Compute Decay Average Lifetime		Computes an estimate of the average lifetime of a decay using the formula <tau > = <tau >_F_T - <tau >_IRF_T where F_T is the decay and IRF_T is the IRF. This calculation involves estimating the location of the rising time for both IRF and decay. When the option "Use Local IRF" is selected and a **Decay Location** is provided, the corresponding local IRF (if it exists) is used.			
AlliGator Compute ROI Decay		Extracts the ROI pixel intensities for the different gate images, rejecting pixels not satisfying the intensity-based or peak-intensity based criteria. A different (faster) approach is used for single-pixel ROIs.			
AlliGator Computer IRF t_0 and Mean Lifetime		Computes an estimate of the average lifetime of the IRF and the location of the rising time.			
AlliGator Decay Graph Get-Set Process Plot Target		**Get**: Check which plot(s) to process, and add/remove checkmarks accordingly. In this case, the **Menu** reference is mandatory. **Set**: based on user selection, set which plot(s) to process. In this case, the **Plot(s) to Process**input is mandatory (Single Plot, Selected Plots, All Plots), but not the **Menu**.			
AlliGator Extrapolate Multiple Plots		Extrapolated the selected plots.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Get Decay Average Lifetime		Computes estimated average lifetime for the selected plot.			
AlliGator Get Decay Peak Constraints		Get Decay Peak Constraints.			
AlliGator Get Decay Time Axis v2		Get decay time axis.			
AlliGator Get Pixel Count Constraints		Get intensity constraints.			
AlliGator Get Process Plots Indices		Get indices of plots to be processed.			
AlliGator Get ROI Decay UI		Computes the decay at the provided ROI and adds tje computed intensity (sum of all gates) and estimated background to two separate plots in the **Intensity Time Trace** Graph.			
AlliGator Get ROI Decay		Extract decay from provided ROI (see exception below) and apply pre-processing steps if applicable. Data and metadata are stored internally for further analysis. Option: instead of providing a ROI (which implies a Source Image dataset), a Decay can be provided, which will not be pre-processed but stored as is, with no additional metadata.			
AlliGator Get ROI Intensity Array v4		Gets the intensity array for the provided ROI.			
AlliGator Get Selected Plots and Reference Decay		Get selected plot indices and reference decay.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Get Tabulated Results Header (Average Lifetimes)		Builds string to output results of average lifetime calculation.			
AlliGator New Decay Plot Name		Builds name for new decay plot.			
AlliGator Only Show Last Decay		Returns option of showing only the last plot.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.8.2. Library Constant VIs

NOTE	No Constant VIs Found

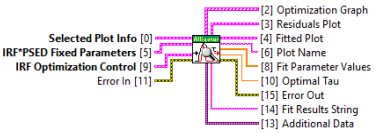
2.9. AlliGator IRF.lvlib

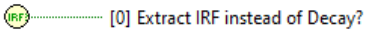
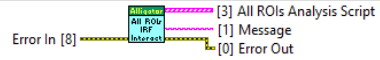
Responsibility: Handles IRF-related functions.

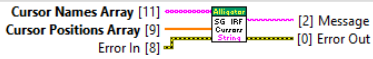
Version: 1.0.0.0

2.9.1. Functions

Table 9. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator All ROIs IRF Analysis		Extracts the decays from all ROIs and stores them as IRFs for subsequent NLSF analysis.			
AlliGator Compute Optimal IRF v2		Extract IRF from provided decay using deconvolution and finding the minimal metrics.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Create Cursors for Square Gated IRF Fit		Creates 5 cursors (tr1, tr2, tf1, tf2 and ten) used to define the different transitions between domains in a square gate.			
AlliGator Extract IRF Instead of Decay Flag		Get the value of the option "Get IRF instead of Decay".			
AlliGator Fit to Logistic Square Gated IRF		Fits the decay to a logistic square gate.			
AlliGator Fit to Model IRF		Fit the selected plot to a Gaussian convolved with a single-exponential decay.			
AlliGator Fit to Tilted Logistic Square Gated IRF		Fits the selected decay to a tilted logistic square gate.			
AlliGator Get Optimal IRF from Decay v2		Extract IRF from single-exponential decay by deconvolution and optimization of the time constant.			
AlliGator Get Reference Decay		Gets the internally stored reference decay.			
AlliGator Get Square Gated IRF Analysis Cursors		Gets locations and names of the 5 cursors needed to define the regions of a square gate fit.			
AlliGator Script All ROIs IRF Analysis		Interactive script computing the decay for all ROIs and storing them as IRFs for subsequent NLSF analysis.			
AlliGator Sort Cursors for Square Gated IRF Fit		Sorts 5 cursors by name (if they exist) corresponding to the 5 boundaries between regions in a square gate.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Square Gated IRF Fit Cursors String		Creates string describing the boundaries between regions in a square gate.			
AlliGator Thresholded IRF		Sets IRF values below threshold to 0.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.9.2. Library Constant VIs

NOTE No Constant VIs Found

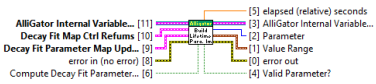
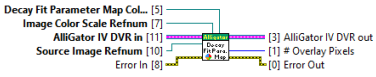
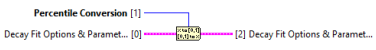
2.10. AlliGator Decay Fit Parameter Map.lvlib

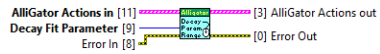
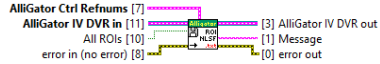
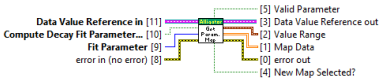
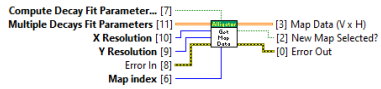
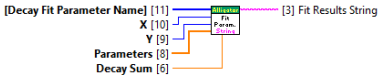
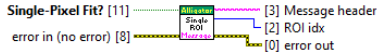
Responsibility: VIs related to the Decay Fit Parameter Map

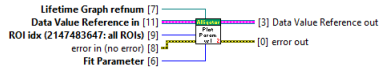
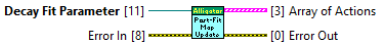
Version: 1.0.0.0

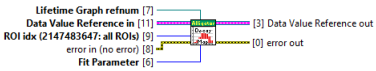
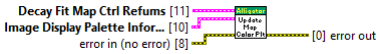
2.10.1. Functions

Table 10. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Build Decay Fit Parameter Map		Builds the selected fit parameter map image.			
AlliGator Color Decay Fit Parameter Map in Original Image		Overlays the Decay Fit Parameter Map on the Source Image.			
AlliGator Convert Decay Range Options		Converts percentiles unit.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Decay Fit Parameter Map Context Menu Handler		Decay Fit Parameter Map contextual menu handler.			
AlliGator Decay Parameter Range Mouse Move Event		Handles mouse move event in the Decay Fit Parameter Map display range control.			
AlliGator Decay Parameters Map Mouse Up Event		Handles Mouse Up event in the Decay Fit Parameter Map image.			
AlliGator Export ROI(s) NLSF Parameters as ASCII File		Exports Decay Fit Parameter Map data to an ASCII file.			
AlliGator Get Decay Fit Parameter Map Data Wrapper		Returns selected fit parameter's map.			
AlliGator Get Decay Fit Parameter Map Data		Fills in matrix with fit parameter wherever it has been computed, NaN otherwise.			
AlliGator Get Local Fit Results String		Builds Decay Fit Parmeters string.			
AlliGator Get Single ROI Message Start		Builds single-ROI Decay Fit Parameters header string.			
AlliGator Load IRFs & Fit Data (Map) HDF5 File v0.3	[AlliGator Decay Fit Parameter Map.lvlib:AlliGator Load IRFs & Fit Data (Map) HDF5 File v0.3.vi]	Loads Decay Fit Parameter Map and associated metadata.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Load IRFs & Fit Data Map v1	[AlliGator Decay Fit Parameter Map.lvlib:AlliGator Load IRFs & Fit Data Map v1.vi]	Old version of Load Decay Fit Parameter Map.			
AlliGator New NLSF Parameter Map Resolution		Map resolution conversion. If **Is Full Image Parameter Map** is true, returns the input resolution parameters. If not, returns -1.			
AlliGator NLSF Parameters to Coordinates		Extracts ROI coordinates from the Decay Fit Parameters array for all ROIs in the map.			
AlliGator Plot Fit Parameter vs Intensity v2		Creates scatter plot of selected parameter vs intensity for all ROIs and sends it to the **Lifetime & Other Parameters Graph**.			
AlliGator Post-Fit Parameter Map Update		Updates Decay Fit PArameter Map image and Profile Plot window.			
AlliGator Read IRFs & Fit Data HDF5 File Metadata	[AlliGator Decay Fit Parameter Map.lvlib:AlliGator Read IRFs & Fit Data HDF5 File Metadata.vi]	Reads Decay Fit Parameter Map metadata from HDF5 file.			
AlliGator Save All Decay Fit Parameter Maps to ASCII		Saves the Decay Fir Parameter Map 2D array to an ASCII file.			
AlliGator Save Decay Fit Parameter Map to ASCII		Saves single Decay Fit Parameter Map data into an ASCII file.			
AlliGator Save IRFs & Fit Data (Map) HDF5 File v0.4	[AlliGator Decay Fit Parameter Map.lvlib:AlliGator Save IRFs & Fit Data (Map) HDF5 File v0.4.vi]	Saves Decay Fit Parameter Map and associated metadata to an HDF5 file.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Save-Load IRFs & Fit Data (Map)	[AlliGator Decay Fit Parameter Map.lvlib:AlliGator Save-Load IRFs & Fit Data (Map).vi]	Load/Save Decay Fit Parameter Map & Metadata from/to HDF5 file.			
AlliGator Send Decay Fit Parameter Map to Lifetime Graph		Send the selected Decay Fit Parameter Map data to a single plot in **Lifetime & Other Parameters Graph**.			
AlliGator Update Decay Fit Parameter Map Palette		Updates the color palette of the **Decay Fit Parameter Map** image.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.10.2. Library Constant VIs

NOTE	No Constant VIs Found

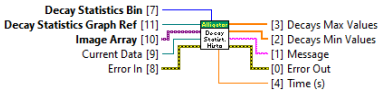
2.11. AlliGator Decay Statistics.lvlib

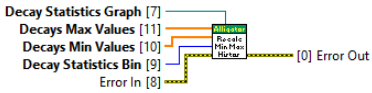
Responsibility: Handles the Decay Statistics Graph.

Version: 1.0.0.0

2.11.1. Functions

Table 11. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Compute Decay Statistics v2		Computes decay min & max histograms.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Recompute Decay Statistics Histograms		Rebins decay Min & Max histograms.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.11.2. Library Constant VIs

NOTE	No Constant VIs Found

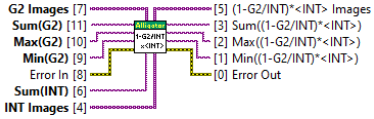
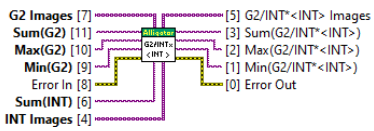
2.12. AlliGator Dual-Channel Datasets.lvlib

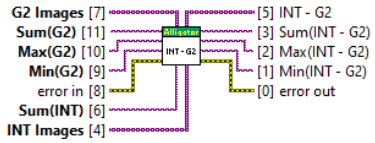
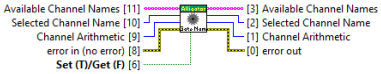
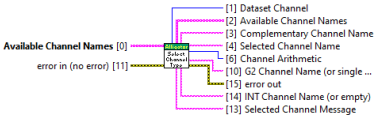
Responsibility: VIs handling dual-channel datasets

Version: 1.0.0.0

2.12.1. Functions

Table 12. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Channel Arithmetic Computation		If selected, computes the arithmetic combination of ING & G2 channel and stores it nito the Dataset 1 structure. If no arithmetic operation is selected, the G2 channel is in Dataset 1 structure, INT in Dataset 2 structure.			
AlliGator Compute (1-G2_INT)xMean(INT) Images		Computes (1 - G2/INT)*<INT>.			
AlliGator Compute G2_INTxMean(INT) Images		Computes G2/INT * <INT>.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Compute INT - G2 Images		Computes INT - G2.			
AlliGator Get Channel Names & Indices	[AlliGator Dual-Channel Datasets.lvlib:AlliGator Get Channel Names & Indices.vi]	Returns information on the dataset file's channel(s).			
AlliGator Get Selected, INT & G2 Channel Names	[AlliGator Dual-Channel Datasets.lvlib:AlliGator Get Selected]	Formats dual-gate channel name and returns selected channel.			
AlliGator Get-Set Channel Selection		Groups access to 3 different types of Dataset Information: - available channel names - channel name - channel arithmetic			
AlliGator Is Selected Channel First Channel		Identifies what type of channel is selected (**First channel** = TRUE: G2 or **First channel** = FALSE: INT). In the case of a single-channel dataset, the output is TRUE.			
AlliGator Select FLI Channel Type		Used when loading a new dataset. If the selected channel name is compatible, use it, if not either open a dialog (dual-channel dataset) or use the default (single-channel dataset).			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.12.2. Library Constant VIs

NOTE No Constant VIs Found

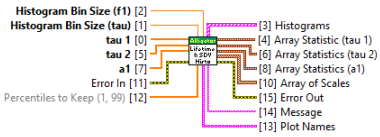
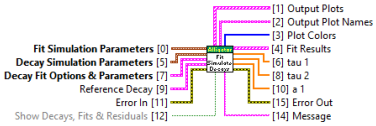
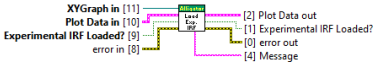
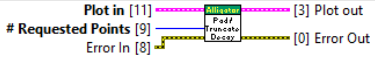
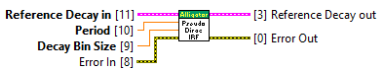
2.13. AlliGator Fit Method Benchmark.lvlib

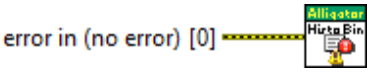
Responsibility: VIs for the Fit Method Benchmark Tool.

Version: 1.0.0.0

2.13.1. Functions

Table 13. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator 2-Exp Decay Model		Computes a 2-#xp decay with the provided parameters.			
AlliGator Baseline Simulation Check		Computes an optimized baseline.			
AlliGator Compute Lifetime Simulation Histograms		Computes fitted parameter histograms and statistics.			
AlliGator Decay Sum		Computes the number of simulated photons in each decay (the other two plots are the fit and the residuals).			
AlliGator Fit Linear Combinations of Exponentials		Simulate a 1-Exp or 2-Exp decay and fits it with the selected model.			
AlliGator Fit Method Benchmark		Fit Method Benchmark GUI.			
AlliGator Get tau1, tau2 & a1	[AlliGator Fit Method Benchmark.lvlib:AlliGator Get tau1]	Outputs tau1, tau2 and a1.			
AlliGator Load Experimental IRF		Load experimental IRF from ASCII file.			
AlliGator Pad or Truncate Decay		Adds or removes decay points for it to match the laser period.			
AlliGator Pseudo Dirac IRF		Computes a decay with a single non-zero bin.			
AlliGator Rescale 2-Exp Fraction		Normalizes decay amplitudes for random timestamp generation.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Save Simulation Outputs to ASCII		Saves simulation results.			
AlliGator Too Many Histogram Bins Message		Too many bins error dialog.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.13.2. Library Constant VIs

NOTE	No Constant VIs Found

2.14. AlliGator Globals, Variables & Constants.lvlib

Responsibility: Globals, refnums, constants, etc.

Version:

2.14.1. Functions

This library has no functions set to non private scope.

2.14.2. Library Constant VIs

NOTE	No Constant VIs Found

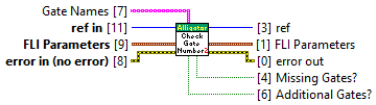
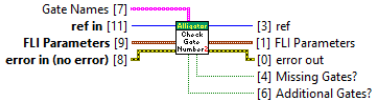
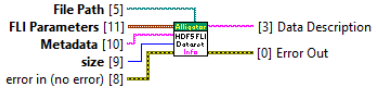
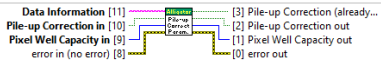
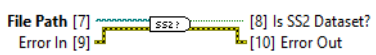
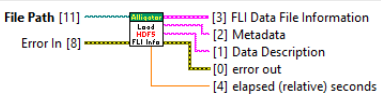
2.15. AlliGator HDF5.lvlib

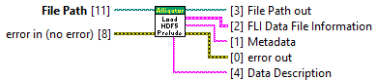
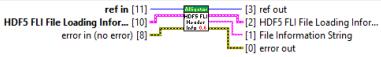
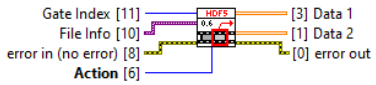
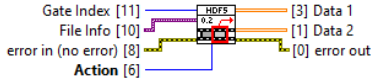
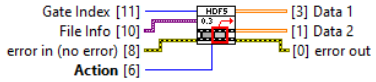
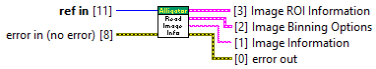
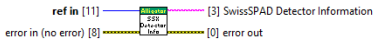
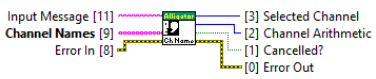
Responsibility: VIs handling HDF5 dataset files.

Version: 1.0.0.0

2.15.1. Functions

Table 14. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Check Gate Number in HDF5 File v2		Checks that the gate images stored in the HDF5 file correspond to the description provided by the **FLI Parameters**. If so updates # **Gates** in that structure and sets the corresponding output flags.			
AlliGator Check Gate Number in HDF5 File v3		Checks that the gate images stored in the HDF5 file correspond to the description provided by the **FLI Parameters**. If so updates # **Gates** in that structure and sets the corresponding output flags.			
AlliGator Check HDF5 File Type		Tries reading the HDF5 file's information for the 3 different supported dataset type, until success, and returns the identified dataset type.			
AlliGator Check HDF5 Image Size v2		Determines the gate image dimension (X, Y) from the provided file information.			
AlliGator Check HDF5 Image Size		Determines the gate image dimension (X, Y) from the provided file information.			
AlliGator Convert FLI Dataset Info to String		Builds HDF5 Dataset Information string			
AlliGator Get DAQ & Metadata	[AlliGator HDF5.lvlib:AlliGator Get DAQ & Metadata.vi]	Gets **DAQ Parameters** and **Metadata** string from internal data storage.			
AlliGator Get Pile-up Correction Parameter		Reads from the metadata whether or not pile-up correction was already applied, and if so, does not repeat it.			
AlliGator Is SS2 Dataset HDF5 File		Checks wether a HDF5 file is a SS2 dataset file (early version).			
AlliGator Load HDF5 FLI Dataset Information		Loads HDF5 FLI dataset information.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Load HDF5 FLI Dataset Prelude		Initial steps of loading a HDF5 FLI dataset file.			
AlliGator Load HDF5 FLI Header File Information v0.6		Loads HDF5 FLI dataset file information (v0.6).			
AlliGator Load Single Gate Image from HDF5 v 0.6b		Loads single gate image (or dual-channel images) from HDF5 FLI dataset file (v0.6b).			
AlliGator Load Single HDF5 Gate Image v 0.2b		Loads single gate image from HDF5 FLI dataset file (v0.2).			
AlliGator Load Single HDF5 Gate Image v 0.3b		Loads single gate image (or dual-channel images) from HDF5 FLI dataset file (v0.3b).			
AlliGator Read HDF5 FLI Dataset Series Timestamps		Loads HDF5 FLI dataset gate images timestamps			
AlliGator Read HDF5 FLI Image Information		Reads HDF5 FLI dataset image information.			
AlliGator Read HDF5 SSX Detector nformation		Reads HDF5 FLI dataset SSx detector information.			
AlliGator Select FLI Dataset Channel Name		Dialog window to select which SS3 channel to display.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Single SS3 Gate Slip Correction		Removes one of two sets of columns of a SS3 dataset to account for common FPGA data transfer issues.			
AlliGator SS3 Gates Slip Correction		Performs the column truncation for SS3 datasets needed to fix a common FPGA data transfer issue.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.15.2. Library Constant VIs

NOTE	No Constant VIs Found

2.16. AlliGator Intensity Corrections.lvlib

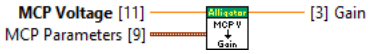
Responsibility: VIs handling intensity correction to the Sum of All Gates image.

Version: 1.0.0.0

2.16.1. Functions

Table 15. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Define & Save Intensity Corrections File	[AlliGator Intensity Corrections.lvlib:AlliGator Define & Save Intensity Corrections File.vi]	UI to enter intensity correction sepcifications.			
AlliGator Get Dataset Series Timestamp & Intensity Correction	[AlliGator Intensity Corrections.lvlib:AlliGator Get Dataset Series Timestamp & Intensity Correction.vi]	Get dataset timestamp and intensity corrections (if available and requested) or use defaults instead.			
AlliGator Load Intensity Corrections		Loads saved dataset series intensity corrections.			

Name	Connector pane	Description	S.	R.	I.
AlliGator MCP Voltage to Gain		Heuristic fit of the relationship between effective ICCD gain G and MCP voltage V_MCP. The function used is a stretched exponential with vertical and horizontal offsets. Parameters need to be fitted independetly with a G(V_MCP) series.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.16.2. Library Constant VIs

NOTE No Constant VIs Found

2.17. AlliGator Internal Variables.lvlib

Responsibility: VIs to access individual (or group of) internal data or variables using a data by value reference (DVR).

Version:

2.17.1. Functions

This library has no functions set to non private scope.

2.17.2. Library Constant VIs

NOTE No Constant VIs Found

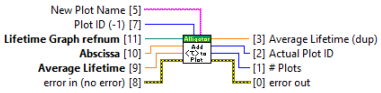
2.18. AlliGator Lifetime.lvlib

Responsibility: VIs handling lifetime plots (Lifetime & Other Parameters Graph).

Version: 1.0.0.0

2.18.1. Functions

Table 16. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Add Average Lifetime to Plot		Adds a single lifetime data point to a plot.			
AlliGator Add Decay Shift to Plot		Adds timestamp and decay shift to internal variables when computing a new decay.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.18.2. Library Constant VIs

NOTE	No Constant VIs Found

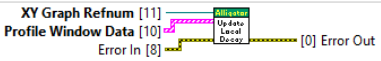
2.19. AlliGator Local Decay Window.lvlib

Responsibility: VIs used with the Local Decay Window.

Version: 1.0.0.0

2.19.1. Functions

Table 17. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Decay Window		Local Decay Window UI. This window displays the decay (and when available, IRF, fit and residuals) at the selected ROI.			
AlliGator Get Local Fit & Residuals	[AlliGator Local Decay Window.lvlib:AlliGator Get Local Fit & Residuals.vi]	Gets the fit and residuals for the selected ROI.			
AlliGator Send Local Decay Plots		Gets the data (decay, fit, IRF, residuals and fit parameters) at the selected ROI and sends it to the Local Decay Window for update.			
AlliGator Update Local Decay Graph		Updates the Local Decay Window graph.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.19.2. Library Constant VIs

NOTE	No Constant VIs Found

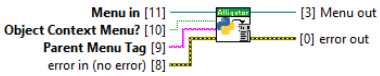
2.20. AlliGator Python Plugins.lvlib

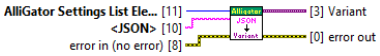
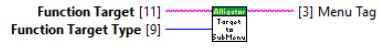
Responsibility: VIs handling python plugins.

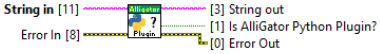
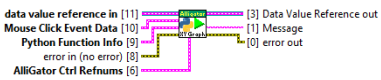
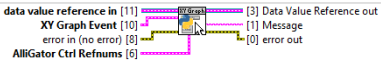
Version: 1.0.0.0

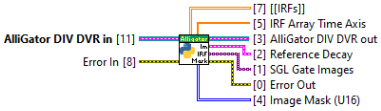
2.20.1. Functions

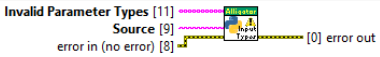
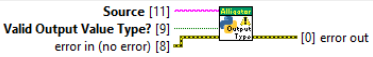
Table 18. Functions (non private scope only)

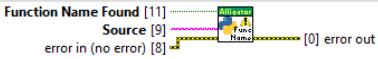
Name	Connector pane	Description	S.	R.	I.
AlliGator Add Python Functions to Menu		Adds python function found in script to corresponding menu in AlliGator.			
AlliGator Add Python Functions to Object Menu		Adds python function to object menu.			
AlliGator Export Plugin Parameters to Clipboard		Sends a string containing all parameters, internal variables and data accessible to python plugins.			
AlliGator Find Object Python Function Information		Gets object's python function's information			
AlliGator Find Python Function Information		Gets python function's information.			
AlliGator Format Path String for Python		Formats path for python function consumption.			

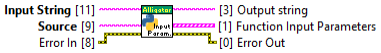
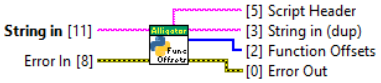
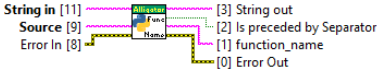
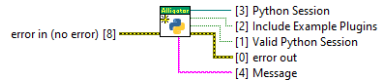
Name	Connector pane	Description	S.	R.	I.
AlliGator Get Message & Parameters from JSON Output	[AlliGator Python Plugins.lvlib:AlliGator Get Message & Parameters from JSON Output.vi]	Interprets JSON string output and formats it to be sent to the Notebook.			
AlliGator Get Python Function Parameter Values Dialog		Dialog to allow user to enter python function parameters.			
AlliGator Get Python Session ID		Gets the current (or creates a new) python session ID.			
AlliGator JSON Output Warning		Formats error message with python function information.			
AlliGator JSON String to Settings Parameter		Decodes JSON python ouput string.			
AlliGator Parameter Type to Default Value String		Returns default value of input parameter type.			
AlliGator Plugin Target to Submenu		Convert Plugin Target to Menu Tag for insertion of the menu item. For plugins associated with objects such as Source Image or Decay Graph, the insertion takes place at the bottom of contextual menu and thus an empty string is provided. For plugins associated with data not exposed to the user (such as the Gate Series), the plugin menui is added to the main menu, and thus the tag of the submenu in which it will be inserted needs to be provided.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Python Plugin Function Doc String		Extracts doc string from python function.			
AlliGator Python Plugin is Function a Plugin		Checks for the presence of the # IsAlliGatorPythonPlugin # tag in the python function.			
AlliGator Python Plugin Plot Data Type		Looks at the python function name to figure out whether it acts on "All Plots" or "Selected Plots".			
AlliGator Python Plugin Valid Input Datatype		Checks whether the input datatype is valid.			
AlliGator Python Plugin Valid Output Datatype		Checks whether the output datatype is valid.			
AlliGator Python Plugin Valid Output Destination		Checks whether the output destination is valid.			
AlliGator Send Python Function Doc String to Notebook		Sends python function doc string to Notebook.			
AlliGator Run XY Graph Python Function		Calls a XY Graph-associated python function.			
AlliGator XY Graph Python Function Handler Core		Calls XY Graph-associated python function.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Add Missing Parameter Map Parameters		Complements python function output parameter map by adding "NaN" instead of the missing parameters. The map needs to be complete to be displayable in AlliGator, even though the python function might only ouput a few parameters.			
AlliGator FLI Dataset Python Function Handler Core		Calls FLI Dataset python function.			
AlliGator Parameter Names to Parameters List		Converts parameter names to an array of enums.			
AlliGator Pythin Plugin Get FLI Dataset		Gets FLI Dataset and related information to pass to a python plugin.			
AlliGator Python Plugin Get FLI Dataset Data		Gets FLI Dataset Images and additional information for python plugin call. - IRFs: array of decays (IRFs) preceded by the (X, Y) coordinate of the corresponding pixel. Each decay is an array of DBL. - IRF Time Axis: common array of time points (DBL) corresponding to the IRF values - Reference Decay: in the case where the IRF is common to the whole dataset, it is provided as a single decay plot structure comprised of a Plot Name, X Array (DBL) and Y Array (DBL). - Image Mask is a U16 array defining the different ROIs by different pixel values.			
AlliGator Run FLI Dataset Python Function		Runs FLI Dataset python plugin function.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Pythin Plugin Get Reference Decay		If **AlliGator Parameter Names in** contains 'Reference Decay', returns the **Reference Decay** cluster and removes 'Reference Decay' from **AlliGator Parameter Names out**. Sets the **Found?** flag to TRUE. Otherwise, do nothing and returns the default cluster and set the **Found?** flag to FALSE			
AlliGator Add Plugins to Main Menu		Adds python functions to the corresponding AlliGator submenus. If a submenu is empty, deactivates it.			
AlliGator Check Invalid Python Plugin Input Parameter Types		Formats error with invalid input parameter message.			
AlliGator Check Invalid Python Plugin Output Destination		Outputs warning message with invalid destination.			
AlliGator Check Invalid Python Plugin Output Value Type		Outputs warning with invalid output value type			
AlliGator Check Missing Python Plugin Doc String		Outputs warning with missing doc string message.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Check Missing Python Plugin Function Name		Outputs warning with missing function name.			
AlliGator Check Missing Python Plugin Input Section		Outputs warning with missing input section.			
AlliGator Check Missing Python Plugin Output Section		Outputs warning with missing output section.			
AlliGator Check Valid Python Plugin Target		Outputs warning with missing python plugin target.			
AlliGator Clear Unknown Python Error		Clears unknown python function error (i.e. code != 1672).			
AlliGator Close Python Session		Closes python session with message.			
AlliGator Decode Python Plugin Output Section		Looks for Python Plugin Header and Footer and returns: - String before Header - **Output Type** - **Output Destination** **String before Header**: isf the section is not found (no header or no footer), the input string is passed unchanged. If the section is found, the part that preceded that section is returned,			

Name	Connector pane	Description	S.	R.	I.
AlliGator Get Python Plugin Function Parameters String		Gets requested parameter names from the python function description, opens up a dialog window to allow the user to enter the required parameters, and builds a JSON string to pass those parameters (names and values) to the python function.			
AlliGator Get Python Plugin Functions List		Extracts list of python plugin functions from the Python Plugin folder.			
AlliGator Get Python Script Function List		Extracts list of python plugin functions and their information from python script.			
AlliGator Get Python Functions List in Scripts		Gets python functions list in scripts array.			
AlliGator Parse Python Function Input Parameters		Looks for Python Plugin Input Paramater Section Header and Footer and returns the parameter names, types and descriptions If the section is found, the part that follows that section is returned.			
AlliGator Python Plugin Function Offsets		Finds function definition section **Offsets**. Returns the script part preceding the first function as **Script Header**.			
AlliGator Python Plugin Get Function Name		Returns function name and whether the function should be preceded by a separator in the menu.			
AlliGator Python Plugin Target Information		Extracts information on the python plugin target(s).			
AlliGator Reset Python Session		Resets python session.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Unzip Python Plugins		Unzips python plugin archive provided with AlliGator installation.			
AlliGator Image Python Function Handler Core		Runs image-related python plugin function.			
AlliGator Run Source Image Python Function		Runs image-related python function.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.20.2. Library Constant VIs

NOTE	No Constant VIs Found

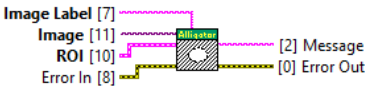
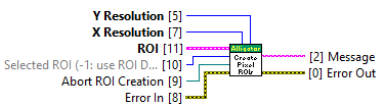
2.21. AlliGator ROIs.lvlib

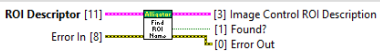
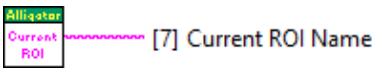
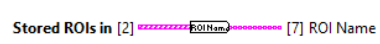
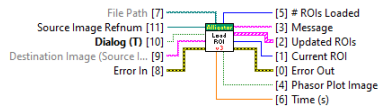
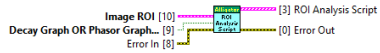
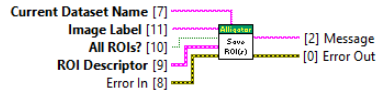
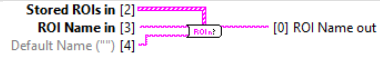
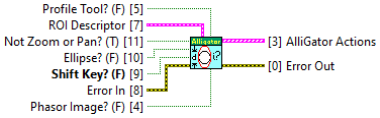
Responsibility: VIs handling ROI actions.

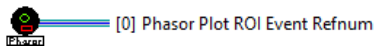
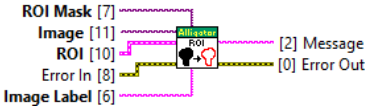
Version: 1.0.0.0

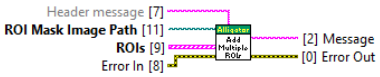
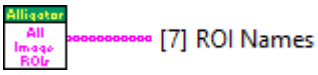
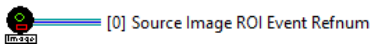
2.21.1. Functions

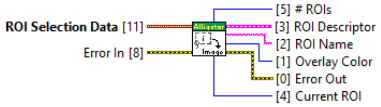
Table 19. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Create Complementary ROI		Computes complementary ROI and adds it to the ROI list.			
AlliGator Create Individual Pixel ROIs from ROI		Converts a closed ROI into a series of single-pixel ROIs.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Find ROI Name		Looks for the stored ROI having thes same definition as the input ROI and returns its name if found.			
AlliGator Get Current ROI Name		Returns the current ROI name.			
AlliGator Get ROI Components		separates stored ROIs information into arrays of: - ROI Descriptors - ROI Names - Overlay Colors			
AlliGator Get ROI Names		Returns list of ROI names.			
AlliGator Load ROI v3		When invoked from a context menu, used Dialog for file selection: the Dialog flag should be set to True (default) and the Destination Image string is ignored. When invoked from a drag & drop event, the Dialog flag should be set to False and the Destination Image (Source Image or Phasor Plot Image) should be provided.			
AlliGator Preview ROI File		Returns information on ROIs stored in the file.			
AlliGator ROI Analysis Script		Actions needed to extract the decay corresponding to the current ROI or input ROI and compute its phasor.			
AlliGator Save ROI(s)		Saves one or more ROIs.			
AlliGator Save Multiple ROIs v3		Save multiple ROIs.			
AlliGator Save ROI v3		Saves single ROI.			
AlliGator Set New ROI Name		Sets new ROI name (verifies that the input name is not already used).			
AlliGator Update ROI After Mouse Release		Builds list of actions handling ROI update following a mouse release event.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Get Phasor Plot ROI Event Refnum		Returns the Phasor Plot Image ROI Event refnum.			
AlliGator Get Phasor Plot ROIs, Names & Current ROI	[AlliGator ROIs.lvlib:AlliGator Get Phasor Plot ROIs]	Returns all ROIs and their names as well as the index of the current ROI.			
AlliGator Phasor Plot Image Edit ROI Name		Changes current Phasor Plot image ROI name.			
AlliGator Phasor Plot Image ROI Storage [MULT] v3	[AlliGator ROIs.lvlib:AlliGator Phasor Plot Image ROI Storage [MULT] v3.vi]	Handles multiple Phasor Plot image ROIs storage.			
AlliGator Phasor Plot Image ROI Storage [SGL] v3	[AlliGator ROIs.lvlib:AlliGator Phasor Plot Image ROI Storage [SGL] v3.vi]	Handles single Phasor Plot image ROI storage.			
AlliGator Phasor Plot ROI Manager		Phasor Plot image ROI list display UI.			
AlliGator Quit Phasor Plot Image ROI Manager		Handles Phasor Plot image ROI Manager quit event.			
AlliGator Select Phasor Plot ROI		Handles Phasor Plot image ROI selection.			
AlliGator Compute & Plot All ROIs Characteristics	[AlliGator ROIs.lvlib:AlliGator Compute & Plot All ROIs Characteristics.vi]	Computes all Source Image ROI characteristics and sends them as plots to the Lifetime & Other Parameters Graph.			
AlliGator Create Source Image Contour ROI		Create new Source Image ROI consisting of the contour of the input ROI.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Create Source Image ROI Grid		Creates a series of Source Image ROIs layed out on a grid.			
AlliGator Add Multiple Source Image ROIs		Adds multiple Source Image ROIs to ROI storage.			
AlliGator Get All Image ROIs		Returns all Source Image ROI names.			
AlliGator Get Source Image ROI Event Refnum		Returns the Source Image ROI Event refnum.			
AlliGator Get Source Image ROIs, Names & Current ROI	[AlliGator ROIs.lvlib:AlliGator Get Source Image ROIs]	Returns list of store Source Image ROIs, their names and the index of the current ROI.			
AlliGator is Full-Frame ROI		Checks whether the Source Image ROI is a full-frame ROI.			
AlliGator Mask Image to ROIs		Define ROIs as sets of **Mask Image** pixels with identical integer values. If the **Mask Image Name** parameter is left unconnected (or is an empty string), the file name of the loaded Mask Image is used as a prefix to all ROI names.			
AlliGator Quit Source Image ROI Manager		Handles Source Image ROI manager quit event.			
AlliGator Reject Source Image ROIs based on Characteristics		Computes ROI characteristics and compare them to the conditions defined by the user in a dialog box. Keeps only the ROIs that meet those conditions.			

Name	Connector pane	Description	S.	R.	I.
AlliGator ROIs to Mask Image		Uses existing ROIs to build a mask image summarizing their information. Define ROIs as sets of **Mask Image** pixels with identical integer values.			
AlliGator Select Source Image ROI		Selects Source Image ROI(s).			
AlliGator Set Source Image ROI ID		Change the selected Source Image ROI ID.			
AlliGator Source Image Edit ROI Name		Changes current Source Image ROI name.			
AlliGator Source Image ROI Manager		Source Image ROI list display UI.			
AlliGator Source Image ROI Storage [MULT] v3	[AlliGator ROIs.lvlib:AlliGator Source Image ROI Storage [MULT] v3.vi]	Handles multiple Source Image ROIs storage.			
AlliGator Source Image ROI Storage [SGL] v3	[AlliGator ROIs.lvlib:AlliGator Source Image ROI Storage [SGL] v3.vi]	Handles single Source Image ROI storage.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.21.2. Library Constant VIs

NOTE	No Constant VIs Found

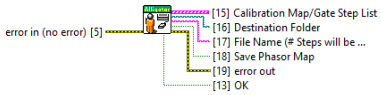
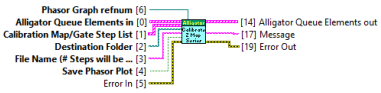
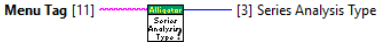
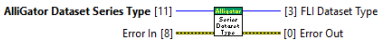
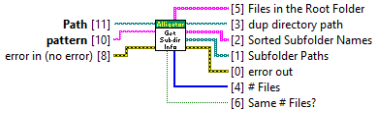
2.22. AlliGator Scripts.lvlib

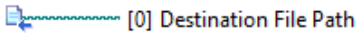
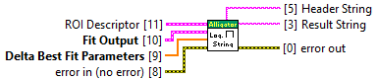
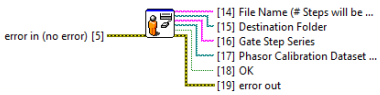
Responsibility: AlliGator actions performing a series of sequential tasks.

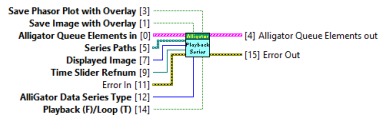
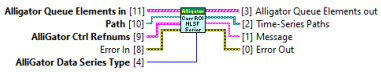
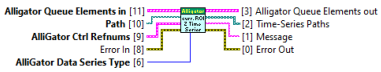
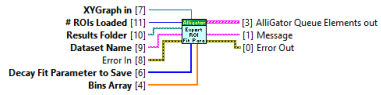
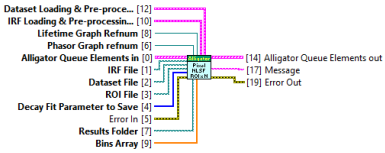
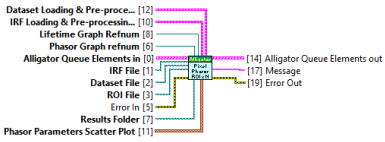
Version: 1.0.0.0

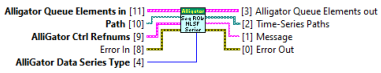
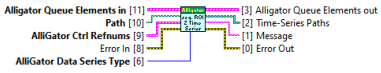
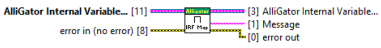
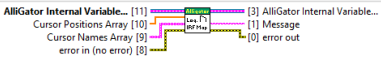
2.22.1. Functions

Table 20. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Calibrated Phasor Map Series Dialog		Dialog window to enter the information eeded to run the Calibrated Phasor Map Series script.			
AlliGator Calibrated Phasor Maps Series Script		Loops through a series of FLI Dataset files, loads them with the specified gate step, and performs an All ROIs Phasor Analysis, using the resulting phasor plot as Phasor Calibration Map. This map is then save and optionally, the phasor plot as well.			
AlliGator Clear Internal Variables before Script		Clears internal data structure before a script.			
AlliGator Get Series Analysis Type		Decodes menu tag to determine whether an action is limited to the **Current ROI** or **All ROIs**.			
AlliGator Get Series Dataset Type		Converts Dataset Series type to FLI Dataset type enum.			
AlliGator Get Series Subfolders Information		Returns a breadown of the folder's content for subsequent script actions.			
AlliGator Get-Set Data Information		Gets/Sets Dataset Information stored in the Settings Storage.vi			
AlliGator Get-Set Loading & Pre-Processing Options	[AlliGator Scripts.lvlib:AlliGator Get-Set Loading & Pre-Processing Options.vi]	Gets/Sets **Data Information**, **Source Image Settings** and **Decay Preprocessing** from/in the Settings Storage.vi.			
AlliGator Get-Set Source Image Settings		Gets/Sets **Source Image** options.			

Name	Connector pane	Description	S.	R.	I.
AlliGator IV Script Destination File Path		Gets the **Script Destination File Path** internal variable.			
AlliGator Load ROIs, Select one ROI (& Convert to Pixel ROIs) Script	[AlliGator Scripts.lvlib:AlliGator Load ROIs]	Script loading the selected ROI from a multi-ROIs file, This requires a number of subsequent steps that are queued by this script.			
AlliGator Load, Merge & to Pixel ROIs Script	[AlliGator Scripts.lvlib:AlliGator Load]	Loads a (multi-) ROI(s) file and merges all the ROIs (including the existing ones), before converting it to a list of single-pixel ROIs.			
AlliGator Logistic Square Gated IRF Characteristics Map		Computes the decays of all ROIs and fits them with a logistic square gate model. Saves the results in an ASCII file.			
AlliGator Logistic Square Gated IRF Fit Result File String		Builds string containing the output of a logistic square gate fit.			
AlliGator NLSF & Phasor Multi-ROI Analysis Dialog	[AlliGator Scripts.lvlib:AlliGator NLSF & Phasor Multi-ROI Analysis Dialog.vi]	Dialog window to set up a multi-ROIs single-pixel NLSF analysis of a FLI dataset.			
AlliGator Phasor Calibration Map Series Dialog		Dialog to enter the parameters necessary for the calculation of a Series of Phasor Calibration Maps differing by the gate step used when loading the FLI dataset.			
AlliGator Phasor Calibration Maps (# Gates Series) Script	[AlliGator Scripts.lvlib:AlliGator Phasor Calibration Maps (</mark> Gates Series) Script.vi]	Series of Phasor Calibration Map differing by the gate step used when loading the FLI dataset script.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Playback Time-Gated Data Series v2		Launches the playback of a FLI dataset series.			
AlliGator Save Single Phasor Plot Script		Script used to save the last Phasor Plot in the Phasor Graph with the specified name and folder.			
AlliGator Script Current ROI Time-Gated Data Series NLSF Analysis v1		Script performing NLSF analysis of the current ROI for the series of FLI dataset in the provided folder.			
AlliGator Script Current ROI Time-Gated Data Series Phasor Analysis v2		Script computing a phasor plot consisting of the current ROI's phasor in the FLI dataset series.			
AlliGator Script Export ROI Fit Parameters as ASCII		Script saving the Decay Fit Parameter Map parameters selected by the user to individual ASCII files (one file per parameter per ROI). This script works for a single ROI or all ROIs.			
AlliGator Script Multi-ROI Single-Pixel NLSF Analysis		Scripts performing NLSF analysis of all pixels in all ROIs, using individual IRFs if provided.			
AlliGator Script Multi-ROI Single-Pixel Phasor Analysis		Scripts performing phasor analysis of all pixels in all ROIs, using individual IRFs if provided.			
AlliGator Script Open Mask Image		Script used to open a **Mask Image** and identify the corresponding ROIs.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Script Open White Light Image		Script used to open a **White Light Image**.			
AlliGator Script Sequential ROIs Time-Gated Data Series NLSF Analysis		Script performing NLSF analysis of a different ROI for each dataset in a series. This is used for instance if the ROI list is representing the successive locations of an object being tracked across the dataset series.			
AlliGator Script Sequential ROIs Time-Gated Data Series Phasor Analysis		Script performing phasor analysis of a different ROI for each dataset in a series. This is used for instance if the ROI list is representing the successive locations of an object being tracked across the dataset series.			
AlliGator Square Gated IRF Characteristics Map		Performs a crude square gate analysis of all ROI decays and saves the gate parameters in an ASCII file.			
AlliGator Tilted Square Gated IRF Characteristics Map		Performs a tilted logistic square gate NLSF analysis of all ROI decays and saves the gate parameters in an ASCII file.			
AlliGator Toggle (Loop) Playback		Toggles from normal playback (stops at the end of the series) to looped playback or vice versa.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.22.2. Library Constant VIs

NOTE	No Constant VIs Found

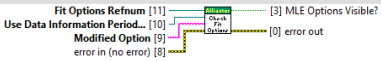
2.23. AlliGator Settings.lvlib

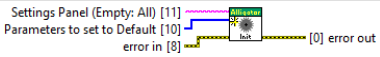
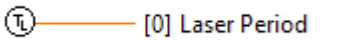
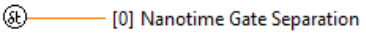
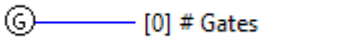
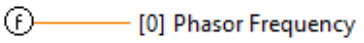
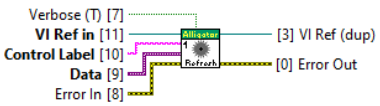
Responsibility: VIs handling user-defined parameters.

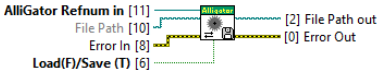
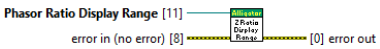
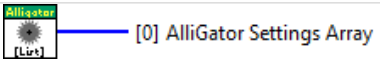
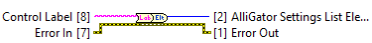
Version: 1.0.0.0

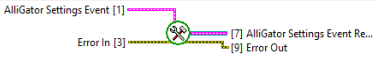
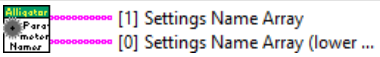
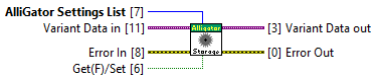
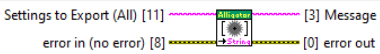
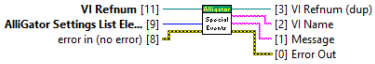
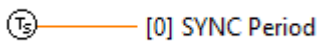
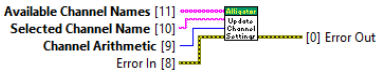
2.23.1. Functions

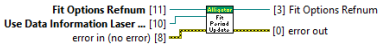
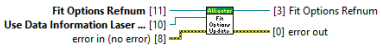
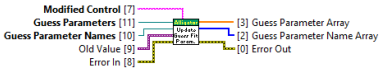
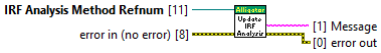
Table 21. Functions (non private scope only)

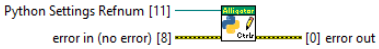
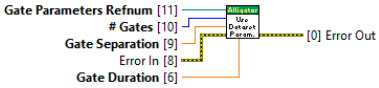
Name	Connector pane	Description	S.	R.	I.
AlliGator Check Fit Options		Handles user-initiated parameter changes in the **Fit Options** panel.			
AlliGator Compute Natural Frequency		Computes the "natural" phasor frequency as a functions of various settings parameters.			
AlliGator Export Settings Parameter JSON String to Clipboard		Reads the control's value and creates a JSON string describing it and copies it into th clipboard.			
AlliGator Gate Separation (ns)		Returns the **Gate Separation** settings parameter.			
AlliGator Get Available Fitting Parameters		Returns list of parameters not in the **Parameter Names** list.			
AlliGator Get Control Label & Settings Element	[AlliGator Settings.lvlib:AlliGator Get Control Label & Settings Element.vi]	Returns the label string of the Settings control whose **CtlRef** refnum is provided, as well as the corresponding **AlliGator Settings List** enumerated value.			
AlliGator Get Control Notebook String		Formats the input **Value** of the control whose **Control Label** is provided into a string. A special case is needed when units are involved, otherwise the default case should be able to handle all other cases.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Get Phasor Ratio Interpolated Color Scale		Builds a **Interpolated Color Scale Definition** based on the colors associated with both references.			
AlliGator Hot Pixel Removal Options String		Builds a string defining the hot pixel removal options.			
AlliGator Init Settings v2		Resets selected Settings parameters to their default values.			
AlliGator Laser Period		Settings Data Information:Laser Period value.			
AlliGator Nanotime Gate Separation		Settings Data Information:Nanotime Gate Separation value.			
AlliGator Number of Gates		Settings Data Information:# Gates value.			
AlliGator Phasor Frequency		Settings Data Information:Phasor Frequency value.			
AlliGator Refresh All Settings		Reads all Settings values and refresh the corresponding controls and indicators with those values.			
AlliGator Refresh Single Setting		Refresh the control with **Control Label** with the provided **Data**. Optionally sends this label and value to the Notebook.			
AlliGator Remove Duplicated Fit Parameter Constraints		Removes any potential duplicate entries in the array of fit parameter constraints.			
AlliGator Reorder Decay Pre-processing Operations		Dialog window allowing the user to reorder decay pre-processing steps.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Save-Load Parameter Map Color Palette List		Loads/Save the list of palettes used for the **Decay Fit Parameter Map** in the AlliGator Settings ini file.			
AlliGator Save-Load Phasor Plot Color Palette List		Loads/Save the list of palettes used for the **Phasor Plot** in the AlliGator Settings ini file.			
AlliGator Save-Load Settings		Use this file to Save or Load AlliGator's settings to an ini file. If the **File Path** input is left unconnected, the defaut ini file is used (overriding the current ini file). To save settings in a user-specified location, either provide a valid path, or connect a "Not a Path" constant to the input. A File Dialog window will then open to allow the user to choose a path.			
AlliGator Save-Load Source Image Color Palette List		Loads/Save the list of palettes used for the **Source Image** in the AlliGator Settings ini file.			
AlliGator Save-Load Source Image Overlay Color Palette List		Loads/Save the list of palettes used to overlay a phasor-based map on the **Source Image** in the AlliGator Settings ini file.			
AlliGator Set Phasor Ratio Display Range		Constrains the sliders of the Phasor Ratio (or other parameter) Range to the displayed slide's min and max values.			
AlliGator Settings Array		Returns the complete list of settings parameters (values of the enumerated constant).			
AlliGator Settings Control Label to Element		Convert Control label to Settings Parameter List enum.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Settings Element to Control Label		Returns the last string after the rightmost semicolon in the parameter's name., which corresponds to the control's label.			
AlliGator Settings Event Refnum		Sends user event to the Settings window.			
AlliGator Settings Names		Returns the list of settings parameter names stored internally.			
AlliGator Settings Storage		Get/Set Settings parameter values using variant attributes.			
AlliGator Settings to String v2		Returns a string listing all or only the selected settings.			
AlliGator Settings Window		GUI providing access to settings parameters for all aspect of AlliGator's functions.			
AlliGator Special Controls Update		Handles update of some Settings controls & indicators as a result of settings changes.			
AlliGator SYNC Period		Returns the **SYNC Period** stored in Settings.			
AlliGator Update Channel File Settings		Updates the values of the **Channel Name** and **Channel Arithmetic** controls, as well as of the hidden **Available Channel Names** indicator.			
AlliGator Update Settings & Control	[AlliGator Settings.lvlib:AlliGator Update Settings & Control.vi]	Updates the Control whose reference or label is passed. The Settings window is updated as well (or if the Settings Window is the sender, AlliGator is).			
AlliGator Update Settings Available Channel Names		Updates the **Channel Name** control in the Settings window.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Update Settings Dataset Channel		Updates **Source Image** according to the **Selected Channel**.			
AlliGator Update Settings Decay Shift Parameters Visibility		Updates the visibility of controls related to shift pre-processing operations.			
AlliGator Update Settings Fit Options Laser Period		Updates the **Fit Options** cluster's **Laser Period** obtained from the Data Information tab ot the Settings if the **User Data Information Period** option is selected.			
AlliGator Update Settings Fit Options		If the **Laser Period** parameter of the **Fit Options** is modified, and it is different from the value associated with the dataset, toggles the **Use Data Information Laser Period** checkbox off.			
AlliGator Update Settings Guess Parameter Arrays		Handles user modifications of the **Guess Parameter Names** and/or **Guess Parameter Values** in the Settings window. Ensures that both arrays have the same size.			
AlliGator Update Settings IRF Analysis Method Control		Update decay shifting parameters in the Settings window.			
AlliGator Update Settings Python Options & Valid Flag	[AlliGator Settings.lvlib:AlliGator Update Settings Python Options & Valid Flag.vi]	Updates Python Plugins options and Valid Session flag in the Settings window.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Update Settings Python Options		Updates Python Plugins options in the Settings window.			
AlliGator Update Settings SEPL Parameters		Updates SEPL parameters in the Settings window.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.23.2. Library Constant VIs

NOTE	No Constant VIs Found

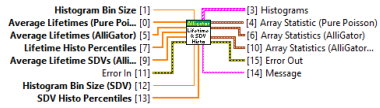
2.24. AlliGator Shot Noise Influence on Average Lifetime.lvlib

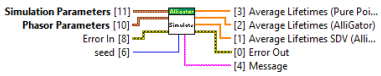
Responsibility: VIs used for the Shot Noise Influence on Average Lifetime Analysis Tool.

Version: 1.0.0.0

2.24.1. Functions

Table 22. Functions (non private scope only)

Name	Connector pane	Description	S.	R.	I.
AlliGator Compute Shot Noise Average Lifetime Simulation Histograms		Computes histograms and summary statistics for the computed lifetimes.			
AlliGator Shot Noise Influence on Average Lifetime		Main window of the Shot Noise Influence on Average Lifetime tool.			

Name	Connector pane	Description	S.	R.	I.
AlliGator Simulate Average Lifetime of Linear Combination		Performs the simulations used in the Shot Noise Influence on Average Lifetime tool.			

Scope: → Protected | → Community

Reentrancy: → Preallocated reentrancy | → Shared reentrancy

Inlining: → Inlined

2.24.2. Library Constant VIs

NOTE	No Constant VIs Found

Chapter 3. Legal Information

3.1. Document creation

This document has been generated using the following tools.

3.1.1. Antidoc

Project website: Antidoc

Maintainer website: Wovalab

3.1.2. Asciidoc for LabVIEW™

Project website: Asciidoc toolkit

Maintainer website: Wovalab

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3.2. Product used in the project

Antidoc hasn’t been able to detect third party products in the project. This is the author’s responsibility to list any of the missing product used.