
uos activpal Documentation

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Contents

1	uos_activpal	1
1.1	uos_activpal.io	1
1.2	uos_activpal.gui	4
2	Indices and tables	15

CHAPTER 1

uos_activpal

1.1 uos_activpal.io

1.1.1 uos_activpal.io.raw module

<code>uos_activpal.io.raw.</code>	An object to wrap activPAL data.
<code>ActivpalData(file_path)</code>	
<code>uos_activpal.io.raw.Meta</code>	A namedtuple with fields for the activPAL raw data's metadata.
<code>uos_activpal.io.raw.</code>	Modify the file code in the header of an activPAL raw
<code>change_file_code(...)</code>	data file.
<code>uos_activpal.io.raw.</code>	Return a Meta object with the metadata from the given
<code>extract_metadata_from_file(...)</code>	activPAL data file.
<code>uos_activpal.io.raw.</code>	Return the data from an activPAL data file as (metadata,
<code>load_activpal_data(file_path)</code>	signals).

uos_activpal.io.raw.ActivpalData

`class uos_activpal.io.raw.ActivpalData(file_path)`

An object to wrap activPAL data.

`TODO()`

See also:

`load_activpal_data` Returns the data from an activPAL data file as a tuple (metadata, signals).

`__init__(file_path)`

Create an instance of an activpal_data object.

Parameters `file_path(str)` – The path to an activPAL raw data file.

Methods

<code>__init__(file_path)</code>	Create an instance of an activpal_data object.
----------------------------------	--

Attributes

<code>data</code>	<i>pandas.DataFrame</i> – Deprecated - use signals.
<code>metadata</code>	<i>namedtuple</i> – The information extracted from the files header.
<code>rss</code>	<i>pandas.Series</i> – The Root Sum of Squares of the x, y, z axes.
<code>signals</code>	<i>pandas.DataFrame</i> – The sensor signals.
<code>timestamps</code>	<i>pandas.DatetimeIndex</i> – The timestamps of the signals.
<code>x</code>	<i>pandas.Series</i> – The signal from the x axis.
<code>y</code>	<i>pandas.Series</i> – The signal from the y axis.
<code>z</code>	<i>pandas.Series</i> – The signal from the z axis.

uos_activpal.io.raw.Meta

`class uos_activpal.io.raw.Meta`

A namedtuple with fields for the activPAL raw data's metadata.

Parameters

- `firmware (int)` –
- `bitdepth (int)` –
- `resolution (int)` –
- `hz (int)` –
- `axes (int)` –
- `start_datetime (datetime.datetime)` –
- `stop_datetime (datetime.datetime)` –
- `duration (datetime.timedelta)` –
- `start_condition (str)` –
- `stop_condition (str)` –
- `file_code (str)` –
- `device_id (int)` –

`__init__()`

Initialize self. See help(type(self)) for accurate signature.

Methods

<code>count(value)</code>	
---------------------------	--

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Table 4 – continued from previous page

<code>index(value, [start, [stop]])</code>	Raises ValueError if the value is not present.
--	--

Attributes

<code>axes</code>	Alias for field number 4
<code>bitdepth</code>	Alias for field number 1
<code>device_id</code>	Alias for field number 11
<code>duration</code>	Alias for field number 7
<code>file_code</code>	Alias for field number 10
<code>firmware</code>	Alias for field number 0
<code>hz</code>	Alias for field number 3
<code>resolution</code>	Alias for field number 2
<code>start_condition</code>	Alias for field number 8
<code>start_datetime</code>	Alias for field number 5
<code>stop_condition</code>	Alias for field number 9
<code>stop_datetime</code>	Alias for field number 6

uos_activpal.io.raw.change_file_code

`uos_activpal.io.raw.change_file_code(file_path, new_code)`

Modify the file code in the header of an activPAL raw data file.

Parameters

- `file_path (str)` – The path to an activPAL raw data file.
- `new_code (str)` – The upto 8 char string which the file code should be changed to.

uos_activpal.io.raw.extract_metadata_from_file

`uos_activpal.io.raw.extract_metadata_from_file(file_path)`

Return a Meta object with the metadata from the given activPAL data file.

Parameters `file_path (str)` – The path to an activPAL raw data file.

Returns `meta` – The information extracted from the files header.

Return type `uos_activpal.io.raw.Meta`

See also:

[`ActivpalData\(\)`](#) An object to wrap activPAL data.

[`load_activpal_data\(\)`](#) Returns the data from an activPAL data file.

[`change_file_code\(\)`](#) Modifies the file code of an activPAL raw data file.

[`extract_accelerometer_data\(\)`](#) Extracts the signals from an activPAL raw data file body.

uos_activpal.io.raw.load_activpal_data

`uos_activpal.io.raw.load_activpal_data(file_path)`

Return the data from an activPAL data file as (metadata, signals).

Parameters `file_path (str)` – The path to an activPAL raw data file.

Returns

- **metadata** (*uos_activpal.io.raw.Meta*) – A namedtuple containing information extracted from the files header.
- **signals** (*numpy.ndarray*) – An array with a column for each axis of the device.

See also:

[ActivpalData\(\)](#) An object to wrap activPAL data.

1.2 uos_activpal.gui

1.2.1 uos_activpal.gui.base module

<i>uos_activpal.gui.base.</i>	
<i>BaseMainWindow([parent])</i>	A QMainWindow subclass which includes additional setup, mainly styling.
<i>uos_activpal.gui.base.</i>	
<i>BaseSubWindow([parent])</i>	A BaseMainWindow subclass designed for creating additional windows.
<i>uos_activpal.gui.base.</i>	
<i>BaseDialog([parent])</i>	A QDialog subclass which includes additional setup, mainly styling.
<i>uos_activpal.gui.base.</i>	
<i>BaseMessageDialog([...])</i>	A BaseDialog subclass designed for displaying messages.
<i>uos_activpal.gui.base.</i>	
<i>BaseQuestionDialog([...])</i>	A BaseDialog subclass designed for asking binary (yes no) questions.
<i>uos_activpal.gui.base.</i>	
<i>SpacerWidget([parent])</i>	A QWidget which fills horizontal and vertical space.
<i>uos_activpal.gui.base.</i>	
<i>QuestionResponse([parent])</i>	A combo widget designed to put a question and textbox on one line.
<i>uos_activpal.gui.base.</i>	
<i>VQuestionResponse([parent])</i>	A combo widget designed to stack a question on top of a textbox.

uos_activpal.gui.base.BaseMainWindow

class *uos_activpal.gui.base.BaseMainWindow* (*parent=None*)

A QMainWindow subclass which includes additional setup, mainly styling.

__init__ (*parent=None*)

Create an instance of a BaseMainWindow.

Parameters *parent* (*object*) – The parent object.

Methods

__init__ ([parent])	Create an instance of a BaseMainWindow.
<i>centerOnScreen()</i>	Centers the window on the screen.

Attributes

base_geometry	<i>(left, top, width, height)</i> – The default window geometry.
---------------	--

uos_activpal.gui.base.BaseSubWindow

class uos_activpal.gui.base.**BaseSubWindow** (*parent=None*)
A BaseMainWindow subclass designed for creating additional windows.

See also:

BaseDialog A QDialog subclass which includes additional setup, mainly styling.

__init__ (*parent=None*)

Create an instance of a BaseSubWindow.

Parameters **parent** (*object*) – The parent object.

Methods

__init__ ([parent])	Create an instance of a BaseSubWindow.
centerOnScreen()	Centers the window on the screen.
closeEvent(*args, **kwargs)	Close the window.
left_button_action()	Define the left button action.
right_button_action()	Define the right button action.

Attributes

base_geometry	<i>(left, top, width, height)</i> – The default window geometry.
---------------	--

uos_activpal.gui.base.BaseDialog

class uos_activpal.gui.base.**BaseDialog** (*parent=None*)
A QDialog subclass which includes additional setup, mainly styling.

See also:

BaseMessageDialog A BaseDialog subclass designed for displaying messages.

BaseQuestionDialog A BaseDialog subclass designed for asking binary (yes | no) questions.

__init__ (*parent=None*)

Create an instance of a BaseDialog.

Parameters **parent** (*object*) – The parent object.

Methods

__init__ ([parent])	Create an instance of a BaseDialog.
	Continued on next page

Table 11 – continued from previous page

centerOnScreen()	Centers the window on the screen.
controlbar_addWidget(widget)	Add a widget to the controlbar.
left_button_action()	Define the left button action.
main_space_addWidget(widget)	Add a widget to the main space.
right_button_action()	Define the right button action.

Attributes

base_geometry	<i>(left, top, width, height)</i> – The default window geometry.
---------------	--

uos_activpal.gui.base.BaseMessageDialog

class uos_activpal.gui.base.**BaseMessageDialog** (*parent=None, msg=None*)

A BaseDialog subclass designed for displaying messages.

See also:

[BaseDialog](#) A QDialog subclass which includes additional setup, mainly styling.

[BaseQuestionDialog](#) A BaseDialog subclass designed for asking binary (yes | no) questions.

__init__ (*parent=None, msg=None*)

Create an instance of a BaseMessageDialog.

Parameters

- **parent** (*object*) – The parent object.
- **msg** (*str*) – The message to display.

Methods

__init__ ([<i>parent, msg</i>])	Create an instance of a BaseMessageDialog.
centerOnScreen()	Centers the window on the screen.
controlbar_addWidget(widget)	Add a widget to the controlbar.
left_button_action()	Define the left button action.
main_space_addWidget(widget)	Add a widget to the main space.
right_button_action()	Define the right button action.
set_message(<i>msg</i>)	Set the message displayed by the dialog.

Attributes

base_geometry	<i>(left, top, width, height)</i> – The default window geometry.
---------------	--

uos_activpal.gui.base.BaseQuestionDialog

class uos_activpal.gui.base.**BaseQuestionDialog** (*parent=None, question=None*)

A BaseDialog subclass designed for asking binary (yes | no) questions.

See also:

[BaseDialog](#) A QDialog subclass which includes additional setup, mainly styling.

[BaseMessageDialog](#) A BaseDialog subclass designed for displaying messages.

`__init__(parent=None, question=None)`

Create an instance of a BaseQuestionDialog.

Parameters

- **parent** (*object*) – The parent object.
- **question** (*str*) – The question to display.

Methods

<code>__init__([parent, question])</code>	Create an instance of a BaseQuestionDialog.
<code>centerOnScreen()</code>	Centers the window on the screen.
<code>controlbar_addWidget(widget)</code>	Add a widget to the controlbar.
<code>left_button_action()</code>	Define the left button action.
<code>main_space_addWidget(widget)</code>	Add a widget to the main space.
<code>right_button_action()</code>	Define the right button action.
<code>set_question(question)</code>	Set the question displayed by the dialog.

Attributes

<code>base_geometry</code>	<i>(left, top, width, height)</i> – The default window geometry.
----------------------------	--

uos_activpal.gui.base.SpacerWidget

class uos_activpal.gui.base.SpacerWidget (parent=None)

A QWidget which fills horizontal and vertical space.

Most useful for aligning other widgets, a spacer either side will center, a spacer on the left will align right, a spacer on the right will align left.

`__init__(parent=None)`

Create a SpacerWidget.

Methods

<code>__init__([parent])</code>	Create a SpacerWidget.
---------------------------------	------------------------

uos_activpal.gui.base.QuestionResponse

class uos_activpal.gui.base.QuestionResponse (parent=None)

A combo widget designed to put a question and textbox on one line.

`__init__(parent=None)`

Create a QuestionResponse widget.

Methods

<code>__init__([parent])</code>	Create a QuestionResponse widget.
---------------------------------	-----------------------------------

Attributes

<code>layout</code>	<i>QLayout</i> – The QLayout used to organise the question and response.
---------------------	--

uos_activpal.gui.base.VQuestionResponse

class `uos_activpal.gui.base.VQuestionResponse (parent=None)`

A combo widget designed to stack a question on top of a textbox.

`__init__ (parent=None)`

Create a VQuestionResponse widget.

Methods

<code>__init__ ([parent])</code>	Create a VQuestionResponse widget.
----------------------------------	------------------------------------

Attributes

<code>layout</code>	<i>QLayout</i> – The QLayout used to organise the question and response.
---------------------	--

1.2.2 uos_activpal.gui.raw_viewer module

`uos_activpal.gui.raw_viewer.`
MainWindow([parent])

A BaseMainWindow subclass which displays a plot of raw activPAL data.

`uos_activpal.gui.raw_viewer.`
UIFilePlot([...])

A QWidget which displays activPAL raw data (x, y, z and rss).

uos_activpal.gui.raw_viewer.MainWindow

class `uos_activpal.gui.raw_viewer.MainWindow (parent=None)`

A BaseMainWindow subclass which displays a plot of raw activPAL data.

`__init__ (parent=None)`

Create an instance of a MainWindow.

Parameters `parent (object)` – The parent object.

Methods

<code>__init__([parent])</code>	Create an instance of a MainWindow.
<code>centerOnScreen()</code>	Centers the window on the screen.
<code>run_main()</code>	Fetch a data file and plot it.
<code>select_file()</code>	Bring up a file dialog to pick a file.

Attributes

<code>base_geometry</code>	<i>(left, top, width, height)</i> – The default window geometry.
----------------------------	--

uos_activpal.gui.raw_viewer.UIFilePlot

class `uos_activpal.gui.raw_viewer.UIFilePlot(parent=None, file_path=None, center=None, width=None)`
A QWidget which displays activPAL raw data (x, y, z and rss).
`__init__(parent=None, file_path=None, center=None, width=None)`
Create a UIFilePlot widget.

Methods

<code>__init__([parent, file_path, center, width])</code>	Create a UIFilePlot widget.
<code>basic_pan([move_factor])</code>	Pan the plot (horizontally).
<code>basic_zoom([scale_factor, xhold])</code>	Zoom in on the plot (horizontally).
<code>clear_plot()</code>	Clear lines from the plot.
<code>load_data([file_path])</code>	Load the given data file.
<code>new_plot([center, width])</code>	Create a fresh plot from the loaded file.

1.2.3 uos_activpal.gui.raw_marker module

<code>uos_activpal.gui.raw_marker.MainWindow(...)</code>	A raw_viewer.MainWindow subclass which adds the ability to mark points.
<code>uos_activpal.gui.raw_marker.UIFileMarkingPlot(...)</code>	A QWidget which displays, and allow marking of, activPAL raw data.
<code>uos_activpal.gui.raw_marker.ConfidenceDialog(...)</code>	A BaseQuestionDialog to request a confidence rating from the user.
<code>uos_activpal.gui.raw_marker.AnotherPointDialog(...)</code>	A BaseQuestionDialog to ask if the user wants to mark another point in this file.
<code>uos_activpal.gui.raw_marker.AnotherFileDialog(...)</code>	A BaseQuestionDialog to ask if the user wants to mark another point in another file.
<code>uos_activpal.gui.raw_marker.ConfidenceSlider(...)</code>	A Qwidget which contains a 1 to 10 slider and the label ‘Confidence:’.

uos_activpal.gui.raw_marker.MainWindow

class `uos_activpal.gui.raw_marker.MainWindow(parent=None, request_confidence=True)`
A raw_viewer.MainWindow subclass which adds the ability to mark points.

`__init__(parent=None, request_confidence=True)`

Create an instance of a MainWindow.

Parameters

- **parent** (*object*) – The parent object.
- **request_confidence** (*bool*) –

Sets whether a dialog will appear, when the save button is pressed, which requests the confidence the correct point has been marked.

Methods

<code>__init__([parent, request_confidence])</code>	Create an instance of a MainWindow.
<code>centerOnScreen()</code>	Centers the window on the screen.
<code>clear_markers()</code>	Clear all placed markers.
<code>load_new()</code>	Fetch new file, load the data and plot.
<code>run_main()</code>	Fetch a data file and plot it.
<code>save()</code>	Save marked points sample number, datetime, (and confidence) to csv file.
<code>save_button_action()</code>	Run pre-save actions then save.
<code>select_file()</code>	Bring up a file dialog to pick a file.
<code>toggle_plot_marking()</code>	Activate / Deactivate the plot marking feature.

Attributes

<code>base_geometry</code>	(<i>left, top, width, height</i>) – The default window geometry.
----------------------------	--

uos_activpal.gui.raw_marker.UIFileMarkingPlot

class `uos_activpal.gui.raw_marker.UIFileMarkingPlot` (*parent=None, file_path=None, center=None, width=None*)

A QWidget which displays, and allow marking of, activPAL raw data.

Displays x, y, z and rss.

`__init__ (parent=None, file_path=None, center=None, width=None)`
Create a UIFileMarkingPlot widget.

Parameters

- **parent** (*object*) – The parent object.
- **file_path** (*str*) – The path of the file to plot.
- **center** (*float*) – The point the plot should be horizontally centered around.
- **width** (*float / int*) – The width of the plot (range of the x axis) in days.

Methods

<code>__init__([parent, file_path, center, width])</code>	Create a UIFileMarkingPlot widget.
	Continued on next page

Table 29 – continued from previous page

<code>basic_pan([move_factor])</code>	Pan the plot (horizontally).
<code>basic_zoom([scale_factor, xhold])</code>	Zoom in on the plot (horizontally).
<code>clear_markers()</code>	Clear all stored markers.
<code>clear_plot()</code>	Clear lines from the plot.
<code>create_marker(xdata[, linecolor])</code>	Create a marker line on the plot.
<code>get_nearest_peak(input_array, sample_number)</code>	Find the peak in the given array nearest the given sample number.
<code>load_data([file_path])</code>	Load the given data file.
<code>new_plot([center, width])</code>	Create a fresh plot from the loaded file.
<code>update_marker(marker, xdata)</code>	Update the location of the given marker.

uos_activpal.gui.raw_marker.ConfidenceDialog

class `uos_activpal.gui.raw_marker.ConfidenceDialog(parent=None)`

A BaseQuestionDialog to request a confidence rating from the user.

See also:

`uos_activpal.gui.base.BaseDialog` A QDialog subclass which includes additional setup, mainly styling.

`uos_activpal.gui.base.BaseMessageDialog` A BaseDialog subclass designed for displaying messages.

`uos_activpal.gui.base.BaseQuestionDialog` A BaseDialog subclass designed for asking binary (yes | no) questions.

`__init__(parent=None)`

Create an instance of a ConfidenceDialog.

Parameters `parent (object)` – The parent object.

Methods

<code>__init__([parent])</code>	Create an instance of a ConfidenceDialog.
<code>centerOnScreen()</code>	Centers the window on the screen.
<code>controlbar_addWidget(widget)</code>	Add a widget to the controlbar.
<code>get_confidence()</code>	Get the current confidence rating.
<code>left_button_action()</code>	Define the left button action.
<code>main_space_addWidget(widget)</code>	Add a widget to the main space.
<code>right_button_action()</code>	Define the right button action.
<code>set_question(question)</code>	Set the question displayed by the dialog.

Attributes

<code>base_geometry</code>	<i>(left, top, width, height)</i> – The default window geometry.
----------------------------	--

uos_activpal.gui.raw_marker.AnotherPointDialog

class uos_activpal.gui.raw_marker.AnotherPointDialog (*parent=None*)
A BaseQuestionDialog to ask if the user wants to mark another point in this file.

See also:

[uos_activpal.gui.base.BaseDialog](#) A QDialog subclass which includes additional setup, mainly styling.

[uos_activpal.gui.base.BaseMessageDialog](#) A BaseDialog subclass designed for displaying messages.

[uos_activpal.gui.base.BaseQuestionDialog](#) A BaseDialog subclass designed for asking binary (yes | no) questions.

__init__ (*parent=None*)

Create an instance of a AnotherPointDialog.

Parameters **parent** (*object*) – The parent object.

Methods

__init__ ([<i>parent</i>])	Create an instance of a AnotherPointDialog.
centerOnScreen ()	Centers the window on the screen.
controlbar_addWidget (<i>widget</i>)	Add a widget to the controlbar.
left_button_action ()	Define the left button action.
main_space_addWidget (<i>widget</i>)	Add a widget to the main space.
right_button_action ()	Define the right button action.
set_question (<i>question</i>)	Set the question displayed by the dialog.

Attributes

base_geometry	(<i>left, top, width, height</i>) – The default window geometry.
-------------------------------	--

uos_activpal.gui.raw_marker.AnotherFileDialog

class uos_activpal.gui.raw_marker.AnotherFileDialog (*parent=None*)
A BaseQuestionDialog to ask if the user wants to mark another point in another file.

See also:

[uos_activpal.gui.base.BaseDialog](#) A QDialog subclass which includes additional setup, mainly styling.

[uos_activpal.gui.base.BaseMessageDialog](#) A BaseDialog subclass designed for displaying messages.

[uos_activpal.gui.base.BaseQuestionDialog](#) A BaseDialog subclass designed for asking binary (yes | no) questions.

__init__ (*parent=None*)

Create an instance of a AnotherPointDialog.

Parameters `parent` (*object*) – The parent object.

Methods

<code>__init__([parent])</code>	Create an instance of a AnotherPointDialog.
<code>centerOnScreen()</code>	Centers the window on the screen.
<code>controlbar_addWidget(widget)</code>	Add a widget to the controlbar.
<code>left_button_action()</code>	Define the left button action.
<code>main_space_addWidget(widget)</code>	Add a widget to the main space.
<code>right_button_action()</code>	Define the right button action.
<code>set_question(question)</code>	Set the question displayed by the dialog.

Attributes

<code>base_geometry</code>	<i>(left, top, width, height)</i> – The default window geometry.
----------------------------	--

uos_activpal.gui.raw_marker.ConfidenceSlider

class `uos_activpal.gui.raw_marker.ConfidenceSlider(parent=None)`
A QWidget which contains a 1 to 10 slider and the label ‘Confidence’.

`__init__(parent=None)`
Create a ConfidenceSlider widget.

Methods

<code>__init__([parent])</code>	Create a ConfidenceSlider widget.
<code>get_slider_value()</code>	Return the current value of the slider.

CHAPTER 2

Indices and tables

- genindex

Index

Symbols

`__init__()` (uos_activpal.gui.base.BaseDialog method), 5
`__init__()` (uos_activpal.gui.base.BaseMainWindow method), 4
`__init__()` (uos_activpal.gui.base.BaseMessageDialog method), 6
`__init__()` (uos_activpal.gui.base.BaseQuestionDialog method), 7
`__init__()` (uos_activpal.gui.base.BaseSubWindow method), 5
`__init__()` (uos_activpal.gui.base.QuestionResponse method), 7
`__init__()` (uos_activpal.gui.base.SpacerWidget method), 7
`__init__()` (uos_activpal.gui.base.VQuestionResponse method), 8
`__init__()` (uos_activpal.gui.raw_marker.AnotherFileDialog method), 12
`__init__()` (uos_activpal.gui.raw_marker.AnotherPointDialog method), 12
`__init__()` (uos_activpal.gui.raw_marker.ConfidenceDialog method), 11
`__init__()` (uos_activpal.gui.raw_marker.ConfidenceSlider method), 13
`__init__()` (uos_activpal.gui.raw_marker.MainWindow method), 9
`__init__()` (uos_activpal.gui.raw_marker.UIFileMarkingPlot method), 10
`__init__()` (uos_activpal.gui.raw_viewer.MainWindow method), 8
`__init__()` (uos_activpal.gui.raw_viewer.UIFilePlot method), 9
`__init__()` (uos_activpal.io.raw.ActivpalData method), 1
`__init__()` (uos_activpal.io.raw.Meta method), 2

A

ActivpalData (class in uos_activpal.io.raw), 1
AnotherFileDialog (class in uos_activpal.gui.raw_marker), 12

AnotherPointDialog (class in uos_activpal.gui.raw_marker), 12

B

BaseDialog (class in uos_activpal.gui.base), 5
BaseMainWindow (class in uos_activpal.gui.base), 4
BaseMessageDialog (class in uos_activpal.gui.base), 6
BaseQuestionDialog (class in uos_activpal.gui.base), 6
BaseSubWindow (class in uos_activpal.gui.base), 5

C

change_file_code() (in module uos_activpal.io.raw), 3
ConfidenceDialog (class in uos_activpal.gui.raw_marker), 11
ConfidenceSlider (class in uos_activpal.gui.raw_marker), 13

E

extract_metadata_from_file() (in module uos_activpal.io.raw), 3

L

load_activpal_data() (in module uos_activpal.io.raw), 3

M

MainWindow (class in uos_activpal.gui.raw_marker), 9
MainWindow (class in uos_activpal.gui.raw_viewer), 8
Meta (class in uos_activpal.io.raw), 2

Q

QuestionResponse (class in uos_activpal.gui.base), 7

S

SpacerWidget (class in uos_activpal.gui.base), 7

T

in TODO() (uos_activpal.io.raw.ActivpalData method), 1

U

UIFileMarkingPlot (class in
uos_activpal.gui.raw_marker), [10](#)
UIFilePlot (class in uos_activpal.gui.raw_viewer), [9](#)

V

VQuestionResponse (class in uos_activpal.gui.base), [8](#)