Chapter 1

Reference for unit 'uPlotRect'

1.1 Used units

Table 1.1: Used units by unit 'uPlotRect'

Name	Page
Classes	??
dateutils	??
FPimage	??
Graphics	??
GraphType	??
IntfGraphics	??
LCLType	??
math	??
matrix	??
System	??
sysutils	??
Types	??
uPlotAxis	??
uPlotClass	??
uPlotOverrides	??
uPlotSeries	??
uPlotStyles	??
uPlotUtils	??

1.2 Constants, types and variables

1.2.1 Constants

`cMAXLEGENDCHARS = 18`

maximum chars for series description in a legend

`cMAXRECTSIZEPERCENT = 33`

maximum extent of a legend or colorscale

1.2.2 Types

```
TBorder = TRect
```

```
TPointArray = Array of TPoint
```

```
TRectPlacement = (plRight,plBottom,plCanvas)
```

Table 1.2: Enumeration values for type TRectPlacement

Value	Explanation
plBottom	at the bottom of the plotrect
plCanvas	not implemented
plRight	at the right side of the plotrect

1.3 TColorScaleRect

1.3.1 Description

A Plotrect can show a colorscale next to it. This is the class handling the colorscale.

1.3.2 Method overview

Page	Property	Description
3	Create	
2	GetClientRect	
3	Redraw	

1.3.3 Property overview

Page	Property	Access	Description
3	ColorScaleOrientation	rw	
3	ColorScaleWidth	rw	
3	ScaleAxisIndex	rw	

1.3.4 TColorScaleRect.GetClientRect

Synopsis:

Declaration: `function GetClientRect : TRect;  Override`

Visibility: protected

Description:

1.3.5 TColorScaleRect.Create

Synopsis:

Declaration:
```
constructor Create(AOwnerPlotRect: TPlotRect);  Override
```

Visibility: public

Description:

1.3.6 TColorScaleRect.Redraw

Synopsis:

Declaration:
```
function Redraw(AVisible: Boolean;ATransparent: Boolean) : TRect
                       ;  Override
```

Visibility: public

Description:

1.3.7 TColorScaleRect.ScaleAxisIndex

Synopsis:

Declaration:
```
Property ScaleAxisIndex : Integer
```

Visibility: public

Access: Read,Write

Description:

1.3.8 TColorScaleRect.ColorScaleWidth

Synopsis:

Declaration:
```
Property ColorScaleWidth : Integer
```

Visibility: public

Access: Read,Write

Description:

1.3.9 TColorScaleRect.ColorScaleOrientation

Synopsis:

Declaration:
```
Property ColorScaleOrientation : TAxisOrientation
```

Visibility: public

Access: Read,Write

Description:

1.4 TLegendRect

1.4.1 Description

A Plotrect can show a legend next to it. This is the class handling the legend.

1.4.2 Method overview

Page	Property	Description
4	Create	
4	Destroy	
4	GetClientRect	
5	Redraw	

1.4.3 Property overview

Page	Property	Access	Description
6	AutoShrink	rw	
5	ClientRect	r	
6	FillBackground	rw	
6	OwnerPlotRect	rw	
5	RectSize	rw	
5	ShowFrame	rw	
5	Style	rw	

1.4.4 TLegendRect.GetClientRect

Synopsis:

Declaration: `function GetClientRect : TRect;  Virtual`

Visibility: protected

Description:

1.4.5 TLegendRect.Create

Synopsis:

Declaration: `constructor Create(AOwnerPlotRect: TPlotRect);  Virtual`

Visibility: public

Description:

1.4.6 TLegendRect.Destroy

Synopsis:

Declaration: `destructor Destroy;  Override`

Visibility: public

Description:

1.4.7 TLegendRect.Redraw

Synopsis:

Declaration:
```
function Redraw(AVisible: Boolean;ATransparent: Boolean) : TRect
                        ;  Virtual
```

Visibility: public

Description:

1.4.8 TLegendRect.ShowFrame

Synopsis:

Declaration:
```
Property ShowFrame : Boolean
```

Visibility: public

Access: Read,Write

Description:

1.4.9 TLegendRect.RectSize

Synopsis:

Declaration:
```
Property RectSize : TSize
```

Visibility: public

Access: Read,Write

Description:

1.4.10 TLegendRect.Style

Synopsis:

Declaration:
```
Property Style : TPlotStyle
```

Visibility: public

Access: Read,Write

Description:

1.4.11 TLegendRect.ClientRect

Synopsis:

Declaration:
```
Property ClientRect : TRect
```

Visibility: public

Access: Read

Description:

1.4.12 TLegendRect.OwnerPlotRect

Synopsis:

Declaration: `Property OwnerPlotRect : TPlotRect`

Visibility: public

Access: Read,Write

Description:

1.4.13 TLegendRect.FillBackground

Synopsis:

Declaration: `Property FillBackground : Boolean`

Visibility: public

Access: Read,Write

Description:

1.4.14 TLegendRect.AutoShrink

Synopsis:

Declaration: `Property AutoShrink : Boolean`

Visibility: public

Access: Read,Write

Description:

1.5 TPlotRect

1.5.1 Description

The Plotrect is the main element containing exactly one dataplot. It determines the remaining size for axes after drawing a legend and a colorscale.
The Plotrect contains also a TLazIntfImage (DataImage) where the fast series plot onto and overlays the dataimage onto the screen during redraw.

1.5.2 Method overview

Page	Property	Description
8	Create	
8	Destroy	
7	GetClientRect	
8	GetDataRect	
7	GetFrameRect	
9	Pan	pan the plotrect
8	Redraw	
8	StoreBackGround	stores the backround before redraw
9	UpdateMarkers	currently unused
9	UpdateSeriesData	updates the drawing of a series
9	UpdateZoomRect	draw a rectangle
9	Zoom	zoom the plotrect

1.5.3 Property overview

Page	Property	Access	Description
12	AxisAutoPlaceFill	rw	plotrect does axis placement
13	AxisAutoPlaceFillConstraints	rw	parameters for automatic placement
10	BorderAbs	rw	border within the containing TPLot
10	BorderRel	rw	border within the containing TPLot
12	ColorScalePlacement	rw	Placement of the colorscale
11	ColorScaleRect	rw	The colorscale
10	DataImage	r	Memory image for fast plotting
12	LegendPlacement	rw	Placement of the legend
11	LegendRect	rw	The legend
12	ShowColorScale	rw	Show the colorscale
10	ShowFrame	rw	show a frame
12	ShowLegend	rw	Show the legend
10	ShowTitle	rw	show a title
11	Style	rw	drawing style
11	Title	rw	title
11	TitleTag	rw	additional text for title

1.5.4 TPlotRect.GetClientRect

Synopsis:

Declaration: `function GetClientRect : TRect;  Override`

Visibility: protected

Description:

1.5.5 TPlotRect.GetFrameRect

Synopsis:

Declaration: `function GetFrameRect : TRect;  Override`

Visibility: protected

Description:

1.5.6 TPlotRect.GetDataRect

Synopsis:

Declaration: `function GetDataRect : TRect`

Visibility: protected

Description:

1.5.7 TPlotRect.Redraw

Synopsis:

Declaration: `procedure Redraw;  Override`

Visibility: protected

Description:

1.5.8 TPlotRect.Create

Synopsis:

Declaration: `constructor Create(APlot: TPlot);  Override`

Visibility: public

Description:

1.5.9 TPlotRect.Destroy

Synopsis:

Declaration: `destructor Destroy;  Override`

Visibility: public

Description:

1.5.10 TPlotRect.StoreBackGround

Synopsis: stores the backround before redraw

Declaration: `procedure StoreBackGround`

Visibility: public

Description: called by TPlot.Repaint The Background is stored including axes, captions etc. The data is plotted on top of the background. TODO: currently stores the whole PlotImage background. Only the area covered by FrameRect would be sufficient (but must be handeled by TPlot then).

1.5.11 TPlotRect.UpdateSeriesData

Synopsis: updates the drawing of a series

Declaration:
```
procedure UpdateSeriesData(ASeries: TPlotSeries;
                           AMarkerUpdateOnly: Boolean;
                           AForceRefresh: Boolean)
```

Visibility: public

Description: Called during ReDraw. All Series plot their data to the DataImage which is later overlayed onto the PlotImage.
AMarkerUpdateOnly is used when the series data has not changed but the marker properties changed.

1.5.12 TPlotRect.UpdateMarkers

Synopsis: currently unused

Declaration:
```
procedure UpdateMarkers
```

Visibility: public

Description: currently unused

1.5.13 TPlotRect.UpdateZoomRect

Synopsis: draw a rectangle

Declaration:
```
procedure UpdateZoomRect
```

Visibility: public

Description: used in zoom mode with left mouse

1.5.14 TPlotRect.Pan

Synopsis: pan the plotrect

Declaration:
```
procedure Pan(dX: Integer;dY: Integer)
```

Visibility: public

Description: pan the plotrect

1.5.15 TPlotRect.Zoom

Synopsis: zoom the plotrect

Declaration:
```
procedure Zoom(X: Integer;Y: Integer;AFactorX: Extended;
               AFactorY: Extended)
procedure Zoom(ARect: TRect)
```

Visibility: public

Description: Zoom(ARect), based on a rectangle. Only zooms in as the rectangle is always smaller or equal than the data area.
Zoom(X, Y: Integer; AFactorX: Extended; AFactorY: Extended); Zooms in or out, based on the center coordinates and a factor in X and Y direction

1.5.16 TPlotRect.DataImage

Synopsis: Memory image for fast plotting

Declaration: `Property DataImage : TLazIntfImage_debug`

Visibility: public

Access: Read

Description: Used by the fast series to do the actual datapoint plotting. The DataImage is later overlayed onto the PlotIMage during ReDraw. When more than one series is contained in the plotrect, all series plot to this image before it is presented on the screen.

1.5.17 TPlotRect.BorderAbs

Synopsis: border within the containing TPLot

Declaration: `Property BorderAbs : TBorder`

Visibility: public

Access: Read,Write

Description: Absolute in screen pixels

1.5.18 TPlotRect.BorderRel

Synopsis: border within the containing TPLot

Declaration: `Property BorderRel : TBorder`

Visibility: public

Access: Read,Write

Description: Relative in percent of the size of the containing plot

1.5.19 TPlotRect.ShowFrame

Synopsis: show a frame

Declaration: `Property ShowFrame : Boolean`

Visibility: public

Access: Read,Write

Description: Frame around the DataImage. Not useful for 3D plots.

1.5.20 TPlotRect.ShowTitle

Synopsis: show a title

Declaration: `Property ShowTitle : Boolean`

Visibility: public

Access: Read,Write

Description: when true, show the title of the plotrect

1.5.21 TPlotRect.Title

Synopsis: title

Declaration: `Property Title : string`

Visibility: public

Access: Read,Write

Description: The actual title for the plotrect

1.5.22 TPlotRect.TitleTag

Synopsis: additional text for title

Declaration: `Property TitleTag : string`

Visibility: public

Access: Read,Write

Description: can be used by the host application to add some changing information before update

1.5.23 TPlotRect.Style

Synopsis: drawing style

Declaration: `Property Style : TPlotStyle`

Visibility: public

Access: Read,Write

Description: drawing style

1.5.24 TPlotRect.LegendRect

Synopsis: The legend

Declaration: `Property LegendRect : TLegendRect`

Visibility: public

Access: Read,Write

Description: TLegendRect is the legend

1.5.25 TPlotRect.ColorScaleRect

Synopsis: The colorscale

Declaration: `Property ColorScaleRect : TColorScaleRect`

Visibility: public

Access: Read,Write

Description: The colorscale

1.5.26 TPlotRect.ShowLegend

Synopsis: Show the legend

Declaration: `Property ShowLegend : Boolean`

Visibility: public

Access: Read,Write

Description: Show the legend

1.5.27 TPlotRect.ShowColorScale

Synopsis: Show the colorscale

Declaration: `Property ShowColorScale : Boolean`

Visibility: public

Access: Read,Write

Description: Show the colorscale

1.5.28 TPlotRect.LegendPlacement

Synopsis: Placement of the legend

Declaration: `Property LegendPlacement : TRectPlacement`

Visibility: public

Access: Read,Write

Description: (plRight, plBottom, plCanvas); plCanvas is not implemented

1.5.29 TPlotRect.ColorScalePlacement

Synopsis: Placement of the colorscale

Declaration: `Property ColorScalePlacement : TRectPlacement`

Visibility: public

Access: Read,Write

Description: (plRight, plBottom, plCanvas); plCanvas is not implemented

1.5.30 TPlotRect.AxisAutoPlaceFill

Synopsis: plotrect does axis placement

Declaration: `Property AxisAutoPlaceFill : Boolean`

Visibility: public

Access: Read,Write

Description: If set, the plotrect tries to find a best fit of the axes (i.e. 3 axes for 3D) in the plot area. Axis settings for length and origin are overridden then. If <2 or >3 axes, the placement defaults to the axis settings. If all 3 axes cannot be fitted correctly, the placement defaults to placing 2 axes (misleading display might result). If the remaining 2 axes still cannot be fitted, placement defaults to the axis settings. Note: This function was implemented to best fit 3 axes into one plotrect. It respects the dimensions of a cuboid spanned by the three axes given whereas the default axis placement only respects the extent of the three axes.

1.5.31 TPlotRect.AxisAutoPlaceFillConstraints

Synopsis: parameters for automatic placement

Declaration: `Property AxisAutoPlaceFillConstraints[AIndex: Integer]: Double`

Visibility: public

Access: Read,Write

Description: If AxisAutoPlaceFill is set, this controls the relative length. AIndex is 0..2 (not the axis index in the plot). One number out of three must be zero. This axis will be fitted according to the others. For example [1,0,2] will reault in the Z axis having twice the length of the X axis. The Y axis in this example will be fitted to the maximum remaining length.