

# Package ‘unigd’

March 26, 2024

**Type** Package

**Title** Universal Graphics Device

**Version** 0.1.1

**Description**

A unified R graphics backend. Render R graphics fast and easy to many common file formats.  
Provides a thread safe 'C' interface for asynchronous rendering of R graphics.

**License** GPL (>= 2)

**Depends** R (>= 3.2.0)

**Imports** systemfonts (>= 1.0.0)

**LinkingTo** cpp11 (>= 0.2.4), systemfonts

**Encoding** UTF-8

**SystemRequirements** libpng, cairo, freetype2, fontconfig

**RoxygenNote** 7.3.0

**URL** <https://github.com/nx10/unigd>, <https://nx10.github.io/unigd/>

**BugReports** <https://github.com/nx10/unigd/issues>

**Suggests** testthat (>= 3.0.0), xml2 (>= 1.0.0), fontquiver (>= 0.2.0),  
covr, knitr, rmarkdown

**Config/testthat/edition** 3

**Config/Needs/website** tidyverse/tidytemplate

**VignetteBuilder** knitr

**NeedsCompilation** yes

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## R topics documented:

unigd-package . . . . .	2
ugd . . . . .	4
ugd_clear . . . . .	5
ugd_close . . . . .	6
ugd_id . . . . .	6
ugd_info . . . . .	7
ugd_remove . . . . .	8
ugd_render . . . . .	9
ugd_renderers . . . . .	10
ugd_render_inline . . . . .	10
ugd_save . . . . .	11
ugd_save_inline . . . . .	12
ugd_state . . . . .	13
ugd_test_pattern . . . . .	14
<b>Index</b>	<b>15</b>

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unigd-package

*unigd: Universal graphics device*

---

## Description

Universal graphics device

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**See Also**

Useful links:

- <https://github.com/nx10/unigd>
- <https://nx10.github.io/unigd/>
- Report bugs at <https://github.com/nx10/unigd/issues>

**Description**

This function initializes a unigd graphics device.

**Usage**

```
ugd(  
  width = getOption("unigd.width", 720),  
  height = getOption("unigd.height", 576),  
  bg = getOption("unigd.bg", "white"),  
  pointsize = getOption("unigd.pointsize", 12),  
  system_fonts = getOption("unigd.system_fonts", list()),  
  user_fonts = getOption("unigd.user_fonts", list()),  
  reset_par = getOption("unigd.reset_par", FALSE)  
)
```

**Arguments**

width	Graphics device width (pixels).
height	Graphics device height (pixels).
bg	Background color.
pointsize	Graphics device point size.
system_fonts	Named list of font names to be aliased with fonts installed on your system. If unspecified, the R default families <code>sans</code> , <code>serif</code> , <code>mono</code> and <code>symbol</code> are aliased to the family returned by <code>systemfonts::font_info()</code> .
user_fonts	Named list of fonts to be aliased with font files provided by the user rather than fonts properly installed on the system. The aliases can be fonts from the <code>fontquiver</code> package, strings containing a path to a font file, or a list containing name and file elements with name indicating the font alias in the SVG output and file the path to a font file.
reset_par	If set to <code>TRUE</code> , global graphics parameters will be saved on device start and reset every time <code>ugd_clear()</code> is called (see <code>graphics::par()</code> ).

**Details**

All font settings and descriptions are adopted from the excellent 'svglite' package.

**Value**

No return value, called to initialize graphics device.

**Examples**

```
ugd() # Initialize graphics device

# Plot something
x <- seq(0, 3 * pi, by = 0.1)
plot(x, sin(x), type = "l")

# Render plot as SVG
ugd_render(width = 600, height = 400, as = "svg")

dev.off() # alternatively: ugd_close()
```

---

ugd_clear	<i>Clear all unigd plot pages.</i>
-----------	------------------------------------

---

**Description**

This function will only work after starting a device with `ugd()`.

**Usage**

```
ugd_clear(which = dev.cur())
```

**Arguments**

`which` Which device (ID).

**Value**

Whether there were any pages to remove.

**Examples**

```
ugd()
plot(1, 1)
hist(rnorm(100))
ugd_clear() # Clear all previous plots
hist(rnorm(100))

dev.off()
```

---

ugd_close	<i>Close unigd device.</i>
-----------	----------------------------

---

### Description

This achieves the same effect as `grDevices::dev.off()`, but will only close the device if it has the unigd type.

### Usage

```
ugd_close(which = dev.cur(), all = FALSE)
```

### Arguments

<code>which</code>	Which device (ID).
<code>all</code>	Should all running unigd devices be closed.

### Value

Number and name of the new active device (after the specified device has been shut down).

### Examples

```
ugd()
hist(rnorm(100))
ugd_close() # Equivalent to dev.off()
```

```
ugd()
ugd()
ugd()
ugd_close(all = TRUE)
```

---

ugd_id	<i>Query unigd plot IDs</i>
--------	-----------------------------

---

### Description

Query unigd graphics device static plot IDs. Available plot IDs starting from `index` will be returned. `limit` specifies the number of plots. This function will only work after starting a device with `ugd()`.

### Usage

```
ugd_id(index = 0, limit = 1, which = dev.cur(), state = FALSE)
```

**Arguments**

index	Plot index. If this is set to 0, the last page will be selected.
limit	Limit the number of returned IDs. If this is set to a value > 1 the returned type is a list if IDs. Set to 0 for all.
which	Which device (ID).
state	Include the current device state in the returned result (see also: <a href="#">ugd_state()</a> ).

**Value**

List containing static plot IDs.

**Examples**

```
ugd() # Initialize graphics device

# Page 1
plot.new()
text(.5, .5, "#1")

# Page 2
plot.new()
text(.5, .5, "#2")

# Page 3
plot.new()
text(.5, .5, "#3")

third <- ugd_id() # Get ID of page 3 (last page)
second <- ugd_id(2) # Get ID of page 2
all <- ugd_id(1, limit = Inf) # Get all IDs

ugd_remove(1) # Remove page 1
ugd_render(second) # Render page 2

dev.off() # Close device
```

---

ugd\_info

*unigd device information.*

---

**Description**

Access general information of a unigd graphics device. This function will only work after starting a device with [ugd\(\)](#).

**Usage**

```
ugd_info(which = dev.cur())
```

**Arguments**

which            Which device (ID).

**Value**

List of status variables with the following named items: \$id: Server unique ID, \$version: unigd and library versions.

**Examples**

```
ugd() # Initialize graphics device
ugd_info() # Get device information
dev.off() # Close device
```

---

ugd_remove	<i>Remove a unigd plot page.</i>
------------	----------------------------------

---

**Description**

This function will only work after starting a device with `ugd()`.

**Usage**

```
ugd_remove(page = 0, which = dev.cur())
```

**Arguments**

page            Plot page to remove. If this is set to 0, the last page will be selected. Can be set to a numeric plot index or plot ID (see `ugd_id()`).

which           Which device (ID).

**Value**

Whether the page existed (and thereby was successfully removed).

**Examples**

```
ugd()
plot(1, 1) # page 1
hist(rnorm(100)) # page 2
ugd_remove(page = 1) # remove page 1

dev.off()
```



---

ugd_render	<i>Render unigd plot and return it.</i>
------------	---

---

## Description

See [ugd\\_save\(\)](#) for saving rendered plots as files. This function will only work after starting a device with [ugd\(\)](#).

## Usage

```
ugd_render(  
  page = 0,  
  width = -1,  
  height = -1,  
  zoom = 1,  
  as = "svg",  
  which = dev.cur()  
)
```

## Arguments

page	Plot page to render. If this is set to 0, the last page will be selected. Can be set to a numeric plot index or plot ID (see <a href="#">ugd_id()</a> ).
width	Width of the plot. If this is set to -1, the last width will be selected.
height	Height of the plot. If this is set to -1, the last height will be selected.
zoom	Zoom level. (For example: 2 corresponds to 200%, 0.5 would be 50%.)
as	Renderer.
which	Which device (ID).

## Value

Rendered plot. Text renderers return strings, binary renderers return byte arrays.

## Examples

```
ugd()  
plot(1, 1)  
ugd_render(width = 600, height = 400, as = "svg")  
dev.off()
```

---

ugd_renderers	<i>unigd device renderers.</i>
---------------	--------------------------------

---

### Description

Get a list of available renderers. This function will only work after starting a device with `ugd()`.

### Usage

```
ugd_renderers()
```

### Value

List of renderers with the following named items: `$id`: Renderer ID, `$mime`: File mime type, `$ext`: File extension, `$name`: Human readable name, `$type`: Renderer type (currently either plot or other), `$bin`: Is the file a binary blob or text.

### Examples

```
ugd_renderers()
```

---

ugd_render_inline	<i>Inline plot rendering.</i>
-------------------	-------------------------------

---

### Description

Convenience function for quick inline plot rendering. This is similar to `ugd_render()` but the plotting code is specified inline and an `unigd` graphics device is managed (created and closed) automatically. Starting a device with `ugd()` is therefore not necessary.

### Usage

```
ugd_render_inline(  
  code,  
  page = 0,  
  width = getOption("unigd.width", 720),  
  height = getOption("unigd.height", 576),  
  zoom = 1,  
  as = "svg",  
  ...  
)
```

**Arguments**

code	Plotting code. See examples for more information.
page	Plot page to render. If this is set to 0, the last page will be selected. Can be set to a numeric plot index or plot ID (see <a href="#">ugd_id()</a> ).
width	Width of the plot.
height	Height of the plot.
zoom	Zoom level. (For example: 2 corresponds to 200%, 0.5 would be 50%.)
as	Renderer.
...	Additional parameters passed to <code>ugd(...)</code>

**Value**

Rendered plot. Text renderers return strings, binary renderers return byte arrays.

**Examples**

```
ugd_render_inline({
  hist(rnorm(100))
}, as = "svgz")

s <- ugd_render_inline({
  plot.new()
  lines(c(0.5, 1, 0.5), c(0.5, 1, 1))
})
cat(s)
```

---

ugd_save	<i>Render unigd plot to a file.</i>
----------	-------------------------------------

---

**Description**

See [ugd\\_render\(\)](#) for accessing plot data directly in memory without saving as a file. This function will only work after starting a device with [ugd\(\)](#).

**Usage**

```
ugd_save(
  file,
  page = 0,
  width = -1,
  height = -1,
  zoom = 1,
  as = "auto",
  which = dev.cur()
)
```

**Arguments**

file	Filepath to save plot.
page	Plot page to render. If this is set to 0, the last page will be selected. Can be set to a numeric plot index or plot ID (see <code>ugd_id()</code> ).
width	Width of the plot. If this is set to -1, the last width will be selected.
height	Height of the plot. If this is set to -1, the last height will be selected.
zoom	Zoom level. (For example: 2 corresponds to 200%, 0.5 would be 50%.)
as	Renderer. When set to "auto" renderer is inferred from the file extension.
which	Which device (ID).

**Value**

No return value. Plot will be saved to file.

**Examples**

```
ugd()

plot(1, 1)

tf <- tempfile()
on.exit(unlink(tf))

ugd_save(file = tf, width = 600, height = 400, as = "png")

dev.off()
```

---

ugd\_save\_inline      *Inline plot rendering to a file.*

---

**Description**

Convenience function for quick inline plot rendering. This is similar to `ugd_save()` but the plotting code is specified inline and an unigd graphics device is managed (created and closed) automatically. Starting a device with `ugd()` is therefore not necessary.

**Usage**

```
ugd_save_inline(
  code,
  file,
  page = 0,
  width = getOption("unigd.width", 720),
  height = getOption("unigd.height", 576),
  zoom = 1,
  as = "auto",
  ...
)
```

**Arguments**

code	Plotting code. See examples for more information.
file	Filepath to save plot.
page	Plot page to render. If this is set to 0, the last page will be selected. Can be set to a numeric plot index or plot ID (see <a href="#">ugd_id()</a> ).
width	Width of the plot.
height	Height of the plot.
zoom	Zoom level. (For example: 2 corresponds to 200%, 0.5 would be 50%.)
as	Renderer.
...	Additional parameters passed to <code>ugd(...)</code>

**Value**

No return value. Plot will be saved to file.

**Examples**

```
tf <- tempfile(fileext=".svg")
on.exit(unlink(tf))

ugd_save_inline({
  plot.new()
  lines(c(0.5, 1, 0.5), c(0.5, 1, 1))
}, file = tf)
```

---

ugd_state	<i>unigd device status.</i>
-----------	-----------------------------

---

**Description**

Access status information of a unigd graphics device. This function will only work after starting a device with [ugd\(\)](#).

**Usage**

```
ugd_state(which = dev.cur())
```

**Arguments**

which	Which device (ID).
-------	--------------------

**Value**

List of status variables with the following named items: `$hsize`: Plot history size (how many plots are accessible), `$upid`: Update ID (changes when the device has received new information), `$active`: Is the device the currently activated device.

**Examples**

```
ugd()  
ugd_state()  
plot(1, 1)  
ugd_state()  
  
dev.off()
```

---

ugd_test_pattern	<i>Plot a test pattern that can be used to evaluate and compare graphics devices.</i>
------------------	---

---

**Description**

Plot a test pattern that can be used to evaluate and compare graphics devices.

**Usage**

```
ugd_test_pattern()
```

**Value**

Nothing, but a plot is generated.

**Examples**

```
## Not run:  
  
ugd_test_pattern()  
  
## End(Not run)
```

# Index

graphics::par(), 4  
grDevices::dev.off(), 6

systemfonts::font\_info(), 4

ugd, 4  
ugd(), 5–13  
ugd\_clear, 5  
ugd\_clear(), 4  
ugd\_close, 6  
ugd\_id, 6  
ugd\_id(), 8, 9, 11–13  
ugd\_info, 7  
ugd\_remove, 8  
ugd\_render, 9  
ugd\_render(), 10, 11  
ugd\_render\_inline, 10  
ugd\_renderers, 10  
ugd\_save, 11  
ugd\_save(), 9, 12  
ugd\_save\_inline, 12  
ugd\_state, 13  
ugd\_state(), 7  
ugd\_test\_pattern, 14  
unigd (unigd-package), 2  
unigd-package, 2