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**NOTE:** The POSIX library and documentation are in the FreeRTOS Labs. The libraries in the **FreeRTOS Labs download directory** are fully functional, but undergoing optimizations or refactoring to improve memory usage, modularity, documentation, demo usability, or test coverage. They are available as the [FreeRTOS-Labs download](#).

FreeRTOS+POSIX

Portable Operating System Interface (POSIX threading wrapper) for FreeRTOS

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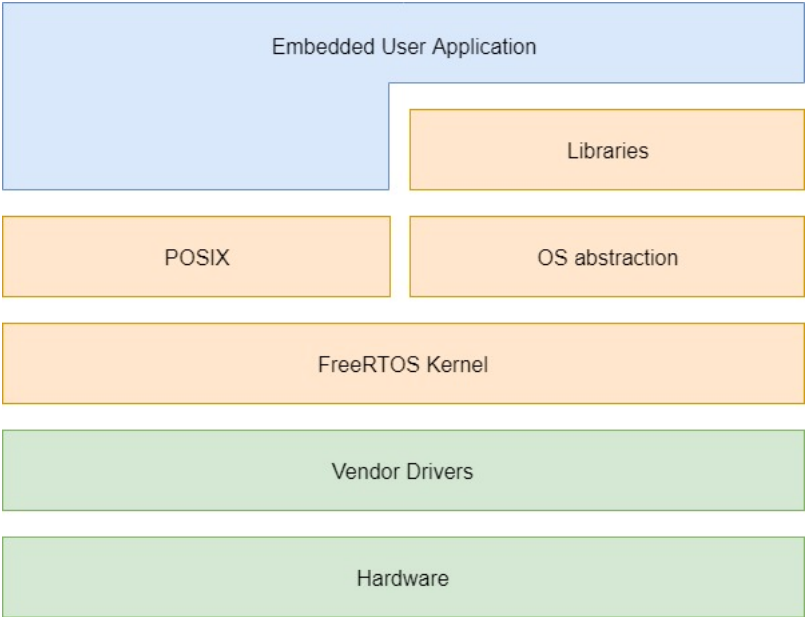
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Introduction

The Portable Operating System Interface (POSIX) is a family of standards specified by the IEEE Computer Society for maintaining compatibility between operating systems. FreeRTOS+POSIX implements a subset of the [POSIX](#) standards.

With FreeRTOS+POSIX, an existing POSIX threading compliant application can be ported to run on the FreeRTOS kernel and therefor leverage all the [FreeRTOS](#) functionality. Additionally, a library designed for use with POSIX threading compliant operating systems can be ported to FreeRTOS kernel based applications.



Location of FreeRTOS+POSIX when used with [FreeRTOS](#) libraries

Example Pre-configure Project



## Currently Supported Features

FreeRTOS+POSIX partially implements [IEEE Std 1003.1-2017 Edition The Open Group Technical Standard Specifications, Issue 7](#). FreeRTOS+POSIX includes implementations for the following POSIX threading headers; please refer to the [FreeRTOS+POSIX API documentation](#) for specifics on the features supported within each.

- `errno.h`
- `fcntl.h`
- `mqueue.h`
- `pthread.h`
- `sched.h`
- `semaphore.h`
- `signal.h`
- `sys/types.h`
- `time.h`
- `unistd.h`
- `utils.h`

## FreeRTOS+POSIX Source Code Organisation

Porting related headers and implementation source code

```
/lib/FreeRTOS-Plus-POSIX
|-- include
|   |-- FreeRTOS_POSIX.h
|   |-- FreeRTOS_POSIX_internal.h
|   |-- FreeRTOS_POSIX_types.h
|   |-- portable
|       |-- [target]
|           |-- [development board]
|               |-- FreeRTOS_POSIX_portable.h
|       |-- FreeRTOS_POSIX_portable_default.h
|-- source
    |-- FreeRTOS_POSIX_clock.c
    |-- FreeRTOS_POSIX_mqueue.c
    |-- FreeRTOS_POSIX_pthread_barrier.c
    |-- FreeRTOS_POSIX_pthread.c
    |-- FreeRTOS_POSIX_pthread_cond.c
    |-- FreeRTOS_POSIX_pthread_mutex.c
    |-- FreeRTOS_POSIX_sched.c
    |-- FreeRTOS_POSIX_semaphore.c
    |-- FreeRTOS_POSIX_timer.c
    |-- FreeRTOS_POSIX_unistd.c
    |-- FreeRTOS_POSIX_utils.c
```

FreeRTOS+POSIX headers

```
/lib/include/FreeRTOS_POSIX
|-- errno.h
|-- fcntl.h
|-- mqueue.h
|-- pthread.h
|-- sched.h
|-- semaphore.h
|-- signal.h
|-- sys
|   |-- types.h
|-- time.h
|-- unistd.h
|-- utils.h
```

## Dependencies



## Developer References and API Documents

Please refer to the [reference material](#) (links to Doxygen output).

### Porting

#### Porting Related Header Files

FreeRTOS platform specific POSIX configuration	High Level Description
/lib/FreeRTOS-Plus- POSIX/include/FreeRTOS_POSIX.h	This header file brings in dependencies required by FreeRTOS+POSIX. This file must be included befo FreeRTOS+POSIX includes.
/lib/FreeRTOS-Plus- POSIX/include/FreeRTOS_POSIX_internal.h	FreeRTOS+POSIX internal structs and initializers. suggested to touch this file.
/lib/FreeRTOS-Plus- POSIX/include/FreeRTOS_POSIX_portable_default.h	Defaults for FreeRTOS+POSIX port-specific config
/lib/FreeRTOS-Plus- POSIX/include/portable/[vendor- directory]/FreeRTOS_POSIX_portable.h	Port-specific configuration overwrite of FreeRTOS+ example, /lib/FreeRTOS-Plus- POSIX/include/portable/pc/windows/FreeRTOS_PC Windows simulator uses the defaults, thus does no overwrite anything.

#### FreeRTOS+POSIX Include Paths

/lib/FreeRTOS-Plus-POSIX/include
/lib/FreeRTOS-Plus-POSIX/source
/lib/include/FreeRTOS_POSIX/

Note that a project only needs platform specific header from this path /lib/FreeRTOS-Plus-POSIX/include/

### Code Size

Code Size (Compiled with ARM Code Generation Tools (CGT), --silicon_version 7M4)		
File	Optimisation off, in Byte	Optimisation on, in E (--opt_level 0 --opt_fr
FreeRTOS_POSIX_clock.c	412	296
FreeRTOS_POSIX_mqueue.c	2016	1612
FreeRTOS_POSIX_pthread_barrier.c	294	200
FreeRTOS_POSIX_pthread.c	980	660
FreeRTOS_POSIX_pthread_cond.c	696	496
FreeRTOS_POSIX_pthread_mutex.c	848	608
FreeRTOS_POSIX_sched.c	48	32
FreeRTOS_POSIX_semaphore.c	540	380
FreeRTOS_POSIX_timer.c	972	788
FreeRTOS_POSIX_unistd.c	92	68
FreeRTOS_POSIX_utils.c	1152	768



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