

MatrixLib Module Structure

matrixlib

Documentation

README.md

QUICKSTART.md

docs/API\_Documentation.md

docs/Cpp\_Standard\_Optimizations.md

docs/IAR\_Integration.md

docs/Sanitizer\_Safety.md

Testing

tests/google/

test\_vec.cpp  
test\_mat.cpp  
test\_quat.cpp  
test\_constants.cpp  
test\_edge\_cases.cpp

tests/zephyr/

matrixlib.hpp

**Main Header**  
Convenience include  
for all components

Build System

CMakeLists.txt

cmake/matrixlib-config.cmake.in

Zephyr RTOS

zephyr/module.yml

zephyr/Kconfig

zephyr/CMakeLists.txt

Type Aliases

matrix2D.hpp

matrix3D.hpp

Mat3<T>, Mat4<T>  
3D transformations  
4x4 homogeneous  
transform\_vector()

vec2D.hpp

Vec2<T>, Vec2f/d/i/u  
POD verification

vec3D.hpp

Core Components

version.hpp

matrix.hpp

quaternion.hpp

vector.hpp

constants.hpp

**Standalone**  
No dependencies  
  
Mathematical constants:  
- pi, e, sqrt2, etc.  
- deg\_to\_rad, rad\_to\_deg  
- Physical constants

SIMD Backends

CONFIG\_MATRIXLIB\_CMSIS  
  
Optimizes:  
- All float operations  
- Matrix multiplication  
- Quaternion product

CMSIS-DSP  
(Cortex-M)

«optional»

CONFIG\_MATRIXLIB\_NEON  
  
Optimizes:  
- Vec<float, 2/3/4>  
- Quaternion<float>

NEON  
Cortex-A/ARM64

optional

optional

optional

optional

optional