

Rayforge Core Library

Documentation v1.0

Overview

Core library package providing essential utilities, rendering extensions, and math helpers for Rayforge Unity assets. This package serves as a shared dependency and should not be modified directly.

Package Type: Shared Dependency Library

Target Audience: Users of Rayforge Unity Assets

Installation: Automatic via dependency resolution

Installation

- Install via Unity Package Manager
 - **Minimum Unity Version:** [Specify Version]
 - This package is automatically installed as a dependency for Rayforge assets
 - No manual setup required
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Main Modules

Editor Utilities

- **VolumeComponents:** Custom volume component helpers
- **Abstractions & Attributes:** Base classes for editor tooling

Runtime

- **Caching:** Performance optimization utilities
- **ManagedResources:** Resource pooling and memory management
- **Maths:** Extended math operations (Spaces, Transforms, noise functions)
- **Rendering:** Shader utilities, collections, filtering, and passes

Shader Extensions

- **ShaderLibrary:** Common shader functions (Blitter, Color, Filter, Lighting, Math)
 - **TemporalReprojection:** TAA and temporal effects support
 - **BlueNoise:** Optimized noise textures and sampling
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Key Features

Modular Architecture: Use only what you need

Performance Focused: Optimized caching and pooling systems

Shader Library: Reusable HLSL functions across projects

Threading Support: Multi-threaded operations via Jobs system

Module Details

Caching System

Provides efficient caching mechanisms for frequently accessed data, reducing memory allocations and improving runtime performance.

Managed Resources

Handles resource pooling, allocation strategies, and memory management to optimize asset usage across your projects.

Math Utilities

Extended mathematical operations including space transformations, noise functions (Blue Noise), and specialized transform helpers.

Rendering Pipeline

Core rendering utilities for shader management, pass organization, filtering operations, and collection handling.

Shader Library

Comprehensive HLSL function library covering:

- Color space conversions and manipulation
 - Lighting calculations
 - Mathematical operations optimized for shaders
 - Blitter utilities for efficient rendering
 - Temporal reprojection for anti-aliasing and effects
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Usage Notes

Important:

- Designed as a dependency package - install once, use across multiple Rayforge assets
 - All namespaces start with `RayforgeUnity.Library.Core`
 - See individual asset documentation for specific integration examples
 - Do not modify package contents directly - changes may be overwritten on updates
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Integration

This library is automatically referenced by Rayforge assets. No manual integration steps are required. Simply install your desired Rayforge asset, and this package will be included as a dependency.

Support & Resources

- **Documentation:** Included with each Rayforge asset
 - **Support:** info@rayforge.eu
 - **Updates:** Automatically managed via Unity Package Manager
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Component Overview

Core Components

Caching & Memory Management

- Concurrent caching systems for thread-safe operations
- Resource pooling and allocation strategies
- Transform and data caching utilities

Mathematics

- Space transformations and coordinate conversions
- Blue Noise generation and sampling
- Optimized math helpers for graphics operations

Rendering Pipeline

- Shader pass management and organization
- Color space utilities and filtering operations
- Blitter system for efficient full-screen effects
- Temporal reprojection for anti-aliasing and motion

Editor Integration

- Custom volume components for URP/HDRP
 - Editor utilities and inspector extensions
 - Debug visualization tools
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