**Specification**

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Component: IEcoMathFFT1

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| --- | --- |
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Content

[**1.** **Overview** 3](#_Toc179655917)

[**1.1.** **Introduction** 3](#_Toc179655918)

[**1.2.** **Note** 3](#_Toc179655919)

[**1.3.** **Links** 3](#_Toc179655920)

[**2.** **Eco.MathFFT1 Component** 4](#_Toc179655921)

[**2.1.** **IEcoMathFFT1 IDL** 5](#_Toc179655922)

[**2.1.1.** **fft function** 6](#_Toc179655923)

[**2.1.2.** **ifft function** 6](#_Toc179655924)

[**2.1.3.** **fft2 function** 6](#_Toc179655925)

[**2.1.4.** **ifft2 function** 6](#_Toc179655926)

[**2.2.** **Error codes** 7](#_Toc179655927)

[**Appendix A: Training programs** 8](#_Toc179655928)

1. **Overview**

This document describes the requirements for the implementation of the EcoMathFFT1 component.

* 1. **Introduction**

Description.

* 1. **Note**
* Keywords
  1. **Links**

This paragraph contains links to information to help you understand this document:

[] – name of the link

Available by: http://address

1. **Eco.MathFFT1 Component**

The Eco.MathFFT1 component

The component has the following description:

* 1. **IEcoMathFFT1 IDL**

|  |
| --- |
| **ECO IDL** |
| import "IEcoBase1.h" | | | |
| [  object,  uguid(A84A0702-41C8-4D68-AAEC-1575FBAFDE9E),  ] | | | |
| interface IEcoMathFFT1 : IEcoUnknown { | | | |
|  | | | |
| int16\_t | | ***fft*** | ([in] ECO\_DOUBLE\_COMPLEX\_T \*X,  [in] int16\_t N,  [out] ECO\_DOUBLE\_COMPLEX\_T \*\*Y); |
|  | | |  |
| int16\_t | | ***ifft*** | ([in] ECO\_DOUBLE\_COMPLEX\_T \*X,  [in] int16\_t N, |
|  | | | [out] ECO\_DOUBLE\_COMPLEX\_T \*\*Y); |
|  | | |  |
| int16\_t | | ***fft2*** | ([in] ECO\_DOUBLE\_COMPLEX\_T \*X, |
|  | | | [in] int16\_t M,  [in] int16\_t N,  [out] ECO\_DOUBLE\_COMPLEX\_T \*\*Y); |
|  | | |  |
| int16\_t | | ***ifft2*** | ([in] ECO\_DOUBLE\_COMPLEX\_T \*X, |
|  | | | [in] int16\_t M,  [in] int16\_t N,  [out] ECO\_DOUBLE\_COMPLEX\_T \*\*Y); |
| } | |  |  |

* + 1. **fft function**

The function returns the Fourier transform along the dimension \*\*Y.

* + 1. **ifft function**

The function returns the inverse Fourier transform along the dimension \*\*Y.

* + 1. **fft2 function**

The function truncates \*X or pads \*X with trailing zeros to form an M-by-N matrix before computing the transform.

* + 1. **ifft2 function**

The function

* 1. **Error codes**

The following table contains the error codes.

|  |  |  |
| --- | --- | --- |
| **Error code** | **Value** | **Description** |
| ERR\_ECO\_SUCCESES | 0x0000 | Operation successful. |
| ERR\_ECO\_UNEXPECTED | 0xFFFF | Unexpected condition. |
| ERR\_ECO\_POINTER | 0xFFEE | NULL was passed incorrectly for a pointer value. |
| ERR\_ECO\_NOINTERFACE | 0xFFED | No such interface supported. |
| ERR\_ECO\_COMPONENT\_NOTFOUND | 0xFFE9 | The component was not found. |
|  |  |  |
|  |  |  |

# **Appendix A: Training programs**