

# DRC Accelium FFT Accelerator

## Key Features

- IEEE single-precision floating point
- 6.8 GFlops floating point performance
- Radix-4 architecture supports FFT lengths of 4, 16, 64, 256 and 1024
- Software API enables full control of all features

## Overview

The Fast Fourier Transform (FFT) is a mathematical method widely used in signal processing in sonic, spectral and imaging analysis applications. It is applied in a wide variety of applications including biomedical engineering, mechanical analysis, analysis of stock market data, geophysical analysis, and conventional radar communications field. An FFT is an optimized version of a DFT (discrete Fourier Transform) used to transform data from the time-domain to the frequency-domain.

This FFT Accelerator runs on DRC's Accelium Coprocessor and is made available to software applications through a standard API call mechanism. The current version 1D FFT can perform FFTs of lengths: 4, 16, 64, 256 and 1024. Future versions are planned that will extend the length and support to 2D implementations.

The DRC FFT Accelerator enables immediate use of the pre-coded and proven implementation versus taking 6 months to develop the routine. The cost savings and time to market advantages to your organization can be substantial.

## Architecture

The FFT is defined by the formula:

$$X_k = \sum_{n=0}^{N-1} x_n e^{-\frac{2\pi i}{N} nk} \quad \text{where } k \text{ is an integer ranging from } 0 \text{ to } N - 1$$

The 1K 1D FFT Accelerator is based on a Radix-4, Decimation-In-Time algorithm. It consists of six major components:

- In Buffer
- Omega Table
- Radix-4 Dragonfly
- Partial Results Buffer
- Out Buffer

## Compatibility

The FFT Accelerator runs on Accelium Coprocessor models AC2020 and AC2030.

## Ordering Information

Product ID: AS-FFT-001D

**Availability:** Immediate

