

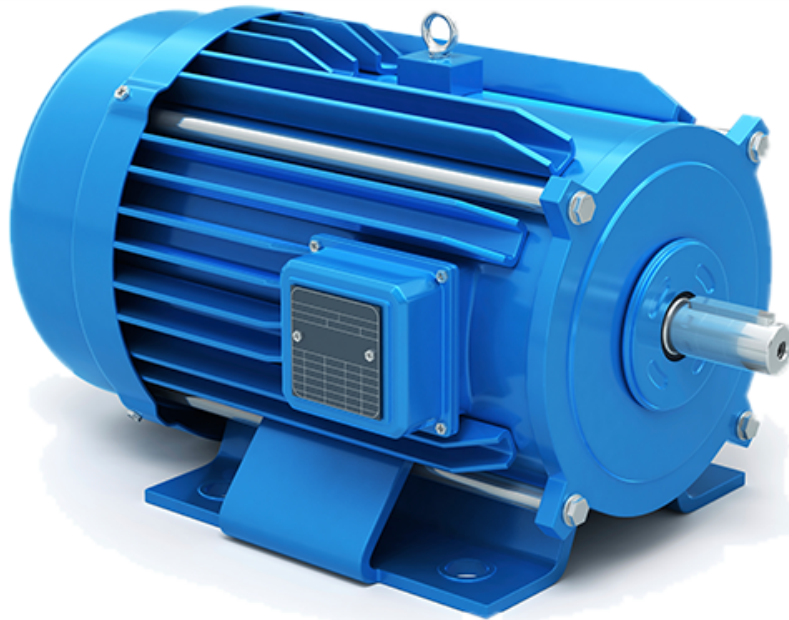
How MSP430FRx MCUs Can Achieve Higher Performance



William Cooper

Not long ago, we released a new TI Design reference design that showcased a solution for [wirelessly monitoring the condition of motors](#) to detect the need for maintenance or replacement. The concept is simple: it monitors vibration and send wireless notifications if the motor vibrations start to exceed normal ranges.

This design leveraged the fast write speeds and high endurance of FRAM – but there is some more complexity involved. To truly optimize the system, a spectral analysis of the vibrational data is run on the MSP430FR5969 MCU to minimize data that must be transmitted wirelessly. By leveraging optimized math libraries, the MSP MCU can efficiently run a 4096-point sample FFT periodically to compare values over time.



Performance

Motor Monitor

Hardware multiplier and free optimized math libraries combine for complex FFT calculations on low-power MCUs

If you are performing complex math computations in your applications, libraries can be used to improve execution speed, accuracy and power consumption in computationally intensive real-time applications. The MSP-IQMATHLIB optimized software library for MSP MCUs can help reduce your time-to-market by providing optimized fixed-point functions that include add, multiply, sine and log. These functions can achieve as much as **100 TIMES MORE** performance compared to using a standard math.h header file. Looking for a floating point math library? MSPMATHLIB is also available and can offer up to **26 TIMES MORE** improved performance!

Get started today with the MSP-IQMATHLIB library and [the MSP430FR6989 MCU LaunchPad](#).

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