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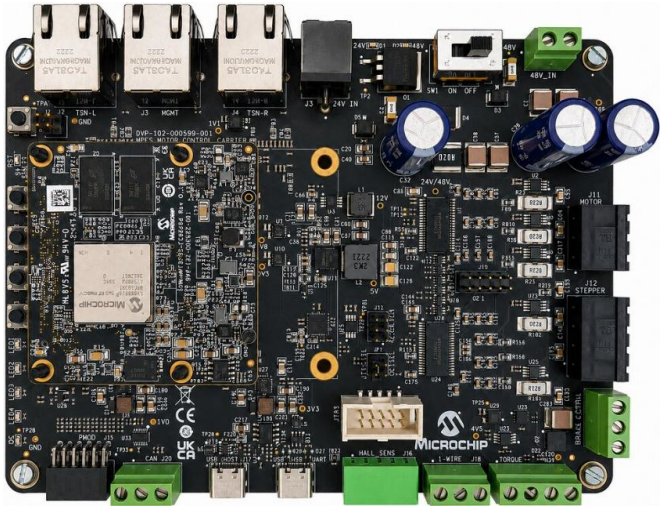
Development Kit Supports Sensor And Sensorless FOC For BLDC Motors

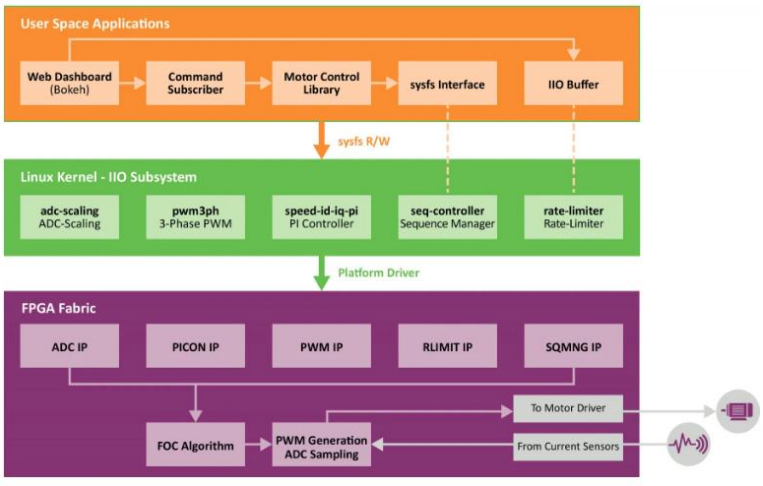
Microchip's PolarFire SoC Motor Control Kit is a complete development platform for evaluating and developing high-performance motor-control applications using the MPFS095T PolarFire SoC FPGA. It supports sensor and sensorless field-oriented control (FOC) for BLDC motors, combining deterministic FPGA-based motor control with a Linux-capable RISC-V processor subsystem (see the figure).

The platform includes motor-control IP, real-time current and voltage sensing, configurable control loops, motor and sensor interfaces, TSN-ready GbE, a browser-based monitoring and control GUI, as well as supporting software, BSPs and reference designs. The architecture can scale to control up to 40 motors from a single device, making it particularly suited to synchronized multi-axis systems, industrial drives and servo systems, factory automation, robotic joints and actuators, autonomous/mobile robots and aerospace motion-control systems.

For more information, see the PolarFire SoC Motor Control Kit page.



(a)



(b)

Figure. The PolarFire SoC FPGA Motor Control Kit enables sensor and sensorless FOC for BLDC motors using deterministic FPGA-based control. The solution includes motor-control IP, current sensing, configurable control loops, a web-based GUI, Linux software stack, and reference designs to accelerate evaluation and development. Everything needed to get started—including programming files, application notes, BSPs, drivers, GUI, and motor-control IP—is provided out of the box. The development board (a) and block diagram (b) are shown here.

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