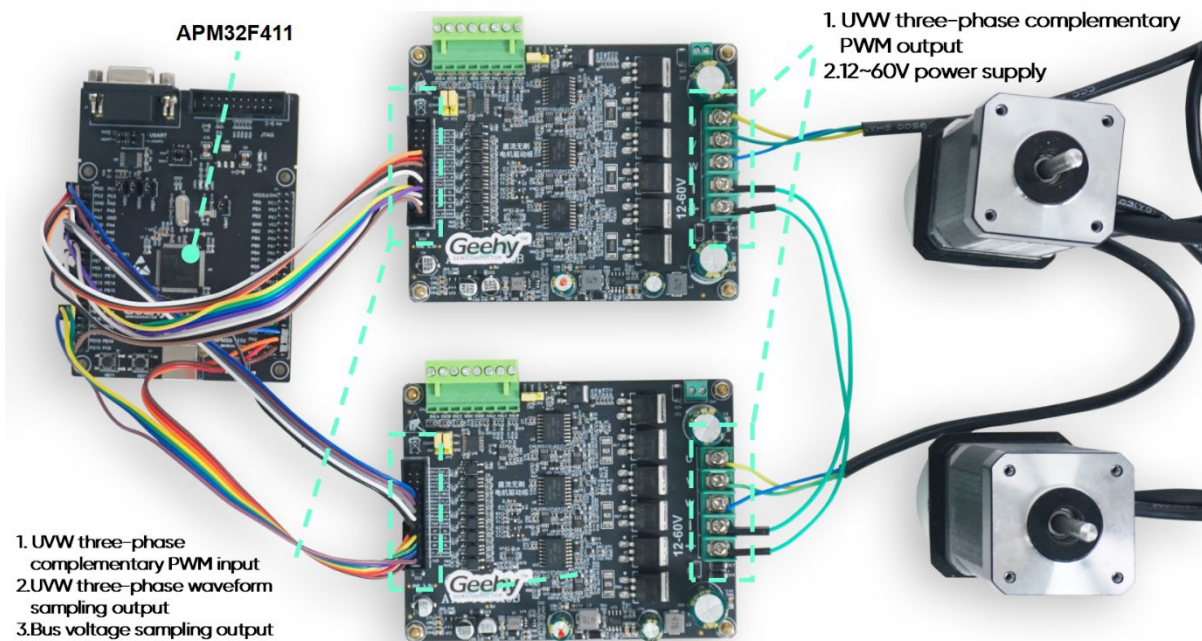


Unified Control in One Chip: Geehy APM32F411 Non-Coaxial Dual Motor Controller

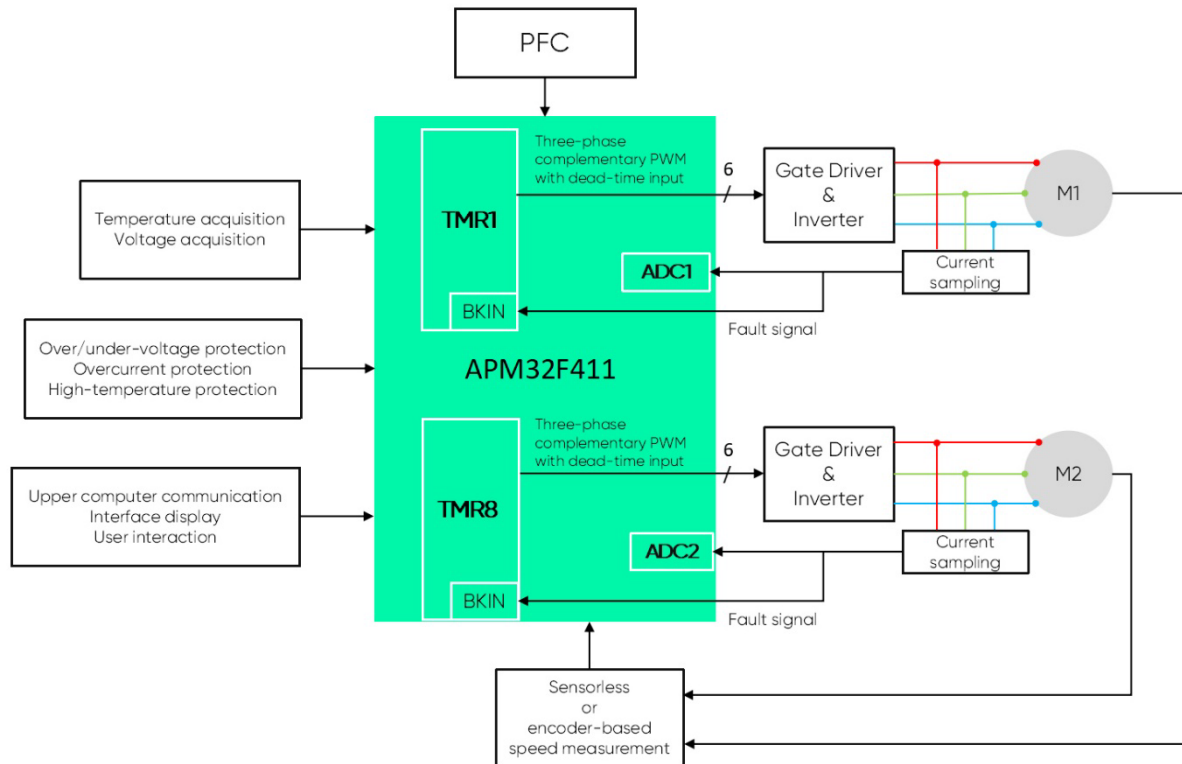
Achieving superior control solutions necessitates exceptional algorithms and, crucially, high-performance main control chips. Geehy's latest offering, the **APM32F411 series MCU**, exemplifies adaptability and performance. **Fabricated using a 55nm process technology and featuring an FPU**, this MCU delivers high-speed computing, versatile operating modes, and an array of precise peripherals and communication interfaces. These qualities empower the cost-effective implementation of robust performance, effortlessly enabling sensorless FOC for dual motors.



Powerful Main Control for Optimal Performance

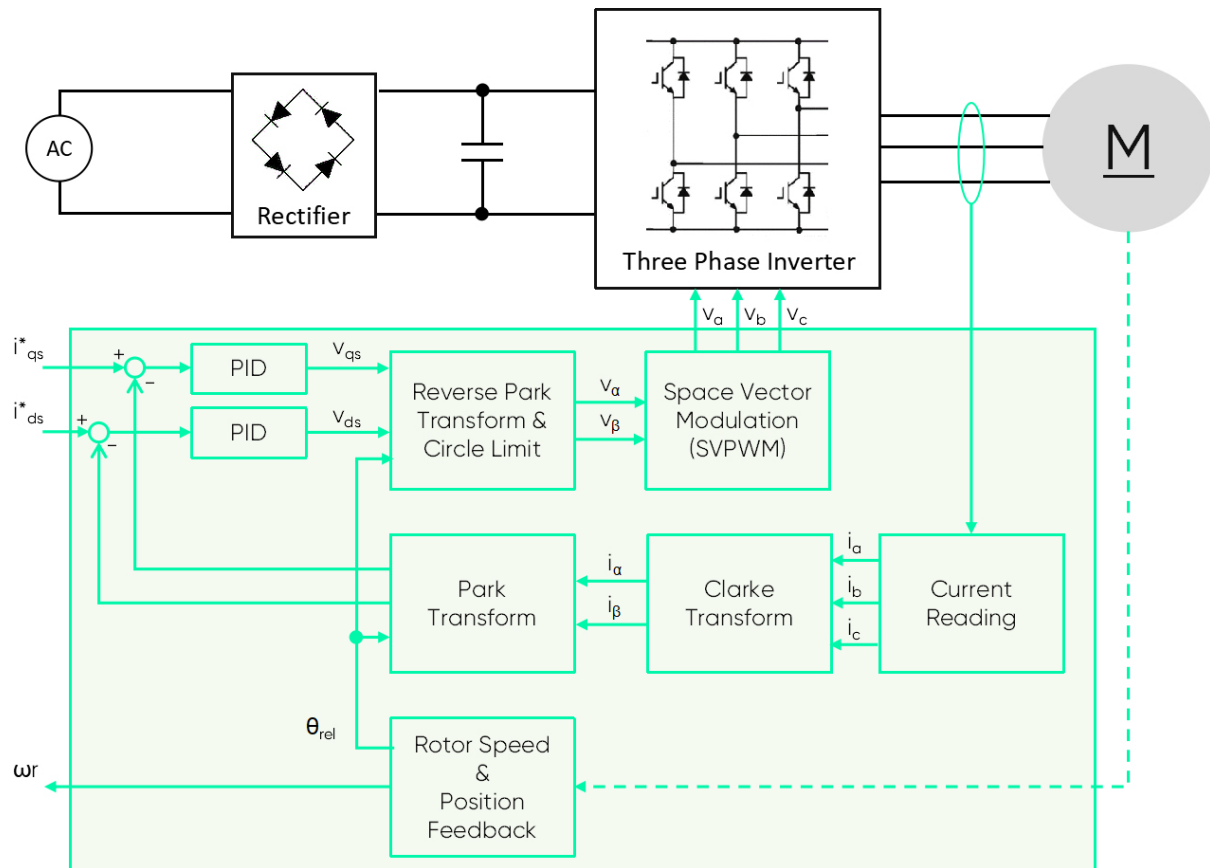
Geehy's APM32F411 motor control solution achieves sensorless FOC for PMSM dual motors. Supporting both three-resistor and single-resistor current sampling schemes, the MCU boasts a **32-bit Arm® Cortex®-M4F core with FPU, operating at up to 120MHz**. This robust performance effortlessly tackles intricate motor control tasks. At a 120MHz core frequency, the MCU dedicates 50% of its execution cycle to a 32KHz current loop with an execution time of 16μs, leaving ample time for speed loops, PFC, communication, display,

and more. With **up to 128KB of SRAM and 512KB of Flash**, it accommodates complex algorithms and solution designs.



Achieving Precision Control for Dual Motors

The MCU integrates **two advanced timers**, capable of generating three-phase complementary PWM signals with dead time. This enables driving two BLDC or PMSM motors with a single chip. It also **features eight 16-bit and two 32-bit general-purpose timers** for functions like input capture and PWM output. Moreover, the general-purpose timers have encoder interfaces for reading incremental (quadrature) encoders and Hall encoders. **Two 12-bit ADCs with sixteen channels** ensure accurate readings with a minimum single conversion time of 0.5 μ s.



Rich Interfaces for Comprehensive Design

The APM32F411 integrates six serial ports (four USARTs and two UARTs), supporting the LIN protocol, five SPI channels, and three I2C channels. It also includes two CAN interfaces and USB_OTG support. **Enhanced connectivity extends to external memory interfaces** such as CF cards, PSRAM, NORFlash, and NANDFlash. This comprehensive connectivity caters to complex communication needs and diverse application designs.

Geehy's APM32F411 dual motor control system caters to high-end consumer electronics and industrial control needs. As motor applications evolve with IoT advancements, Geehy continues to innovate, creating a high-quality application ecosystem for users.