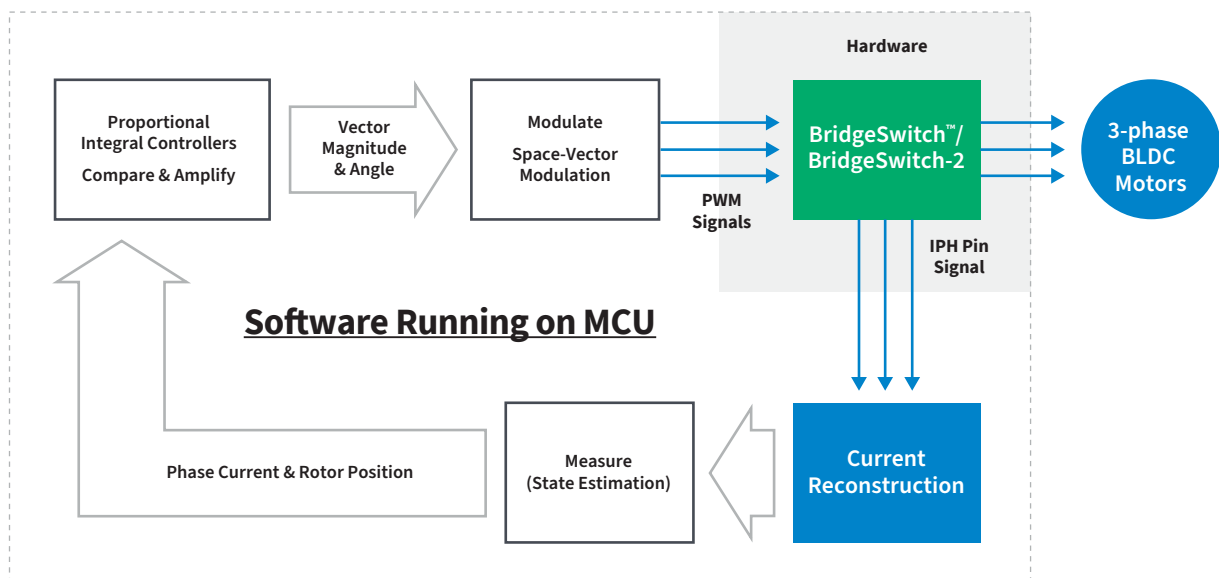# MotorXpert™ Suite

- Modular software for motor tuning, quick start and performance optimization
- Supports three-phase and single-phase BLDC motor designs
- Runs on entry-level Arm Cortex-M0 and equivalent Arm Cortex microcontrollers
  - Can be ported to any other popular motor control MCU
- Highly configurable, even at run-time
- Reduces development time
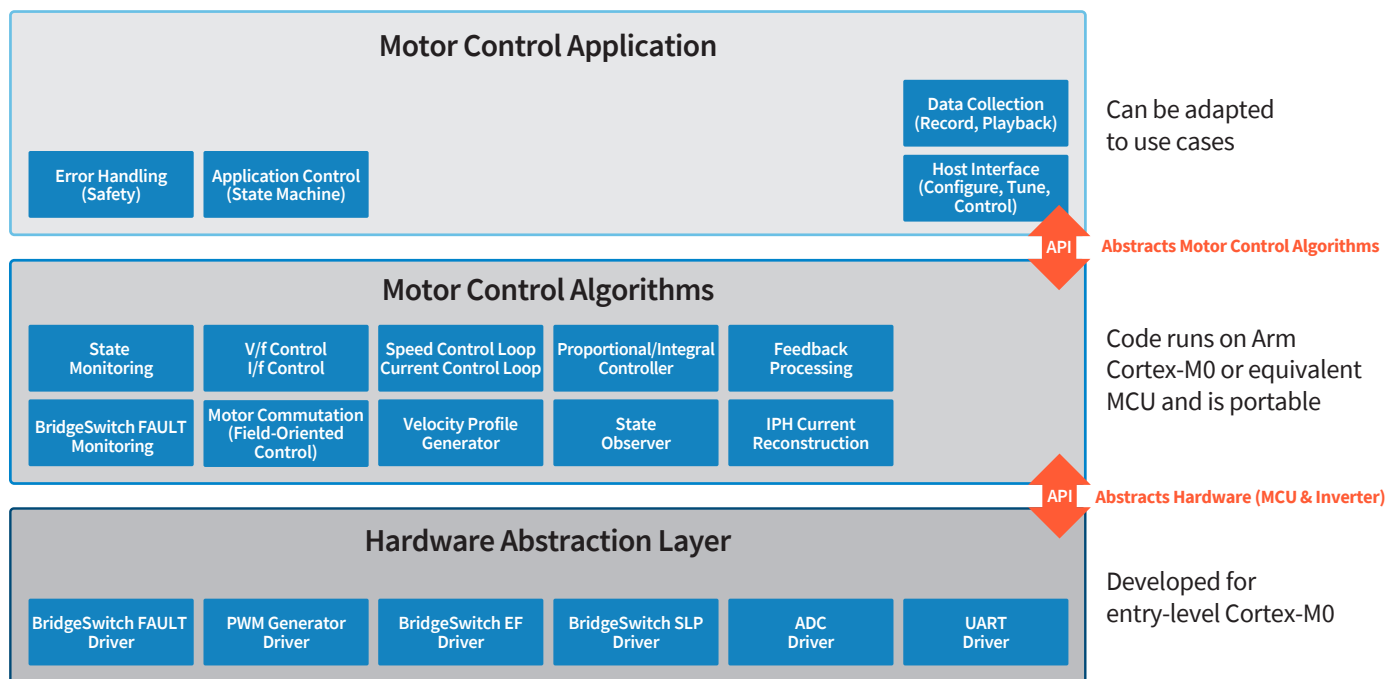- Fully compatible with BridgeSwitch™ and BridgeSwitch-2 product families

Three-Phase Sensorless Field-Oriented Control Software Architecture

Applications

- Single- or multi-phase high-voltage PM and BLDC motor drives in:
  - HVAC fans
  - Refrigerators compressor
  - Fluid pumps
  - Gas boiler combustion fans
  - Washing machine drums
  - Ceiling fans
  - Industrial pumps and motors

Modular Software with Examples to Match Use Cases

Motor Control Application

Error Handling (Safety)	Application Control (State Machine)

Data Collection (Record, Playback)

Host Interface (Configure, Tune, Control)

Can be adapted to use cases

API — Abstracts Motor Control Algorithms

Motor Control Algorithms

State Monitoring	V/f Control I/f Control	Speed Control Loop Current Control Loop	Proportional/Integral Controller	Feedback Processing
BridgeSwitch FAULT Monitoring	Motor Commutation (Field-Oriented Control)	Velocity Profile Generator	State Observer	IPH Current Reconstruction

Code runs on Arm Cortex-M0 or equivalent MCU and is portable

API — Abstracts Hardware (MCU & Inverter)

Hardware Abstraction Layer

BridgeSwitch FAULT Driver	PWM Generator Driver	BridgeSwitch EF Driver	BridgeSwitch SLP Driver	ADC Driver	UART Driver

Developed for entry-level Cortex-M0

Design Support

Design Tool	MotorXpert Suite software (www.power.com/motorxpert-suite)
Design Example	750 W Three-Phase Brushless DC Motor Driver without Heatsink (www.power.com/rdk-975)
Design Example	250 W, three-phase, shuntless FOC design (RDR-964) (www.power.com/rdr-964)
Design Example	150 W three-phase, shuntless FOC design with Integrated Phase Current (IPH) (RDR-974) (www.power.com/rdr-974)
Design Example	30 W single-phase inverter design (RDR-873) (www.power.com/rdr-873)
Design Example	70 W Single-Phase Inverter Using BridgeSwitch for Fan Application Using BridgeSwitch (www.power.com/rdk-872)
Video	MotorXpert software streamlines motor drive designs (www.power.com/motorxpert-video)

power integrations