

## NXP Mini ARM7/LFPAK motion-control development kit

# Quick, cost-effective development of brushed/brushless DC motor controllers

Use this plug-and-play kit to develop high-performance motor controllers for brushed or brushless DC motors. The modular design supports power boards with various power ratings.

### Key features

- ▶ ARM7-based microcontroller with 8-/10-bit A/D converter and onboard PWM
- ▶ Pre-programmed for brushed or brushless motor control
- ▶ Adjustable PWM output frequency
- ▶ Input: 12 to 24 V<sub>DC</sub>
- ▶ Output with brushed motor: 10 A at 12 V
- ▶ Output with brushless motor: 15 A at 12 V
- ▶ Separate power boards available for higher-power applications
- ▶ RS-232, JTAG, and USB ports
- ▶ Modular design

The NXP Mini ARM7/LFPAK motion control development kit is a cost-effective tool for quickly designing high-performance motor controllers for brushed and brushless DC motors.

The kit is based on a modular concept that lets the designer use a single control board with a selection of NXP power boards to achieve various output powers.

As shipped, the kit uses a 10-A, 12-V power board with LFPAK. A range of other boards, with different power ratings, are also available on request.

The Mini ARM7 microcontroller is a high-performance solution that has four timers generating up to 12 PWM signals. The onboard A/D converters can also be used to interpret feedback from the motor, which in turn can be used to accurately control motor speed.

A full bridge of PH20100S MOSFETs controls motor speed and direction. Each MOSFET has a 100-V rating, suitable for motors up to at least 24 V DC. MOSFETs in LFPAK enable a superior thermal design in an SO8 footprint, thus reducing the size of the PCB. The MOSFETs are suitable up to 10 A at 12 V for brushed motor designs and up to 15 A at 12 V for brushless designs. Integrated discrete MOSFET drivers deliver significant cost and performance benefits.

The kit includes software that enables plug-and-play operation. As a result, the board can sense the type of power board being used and prevents damage from attempting to use incompatible boards.

A series of LEDs and LED tables indicate circuit functionality.

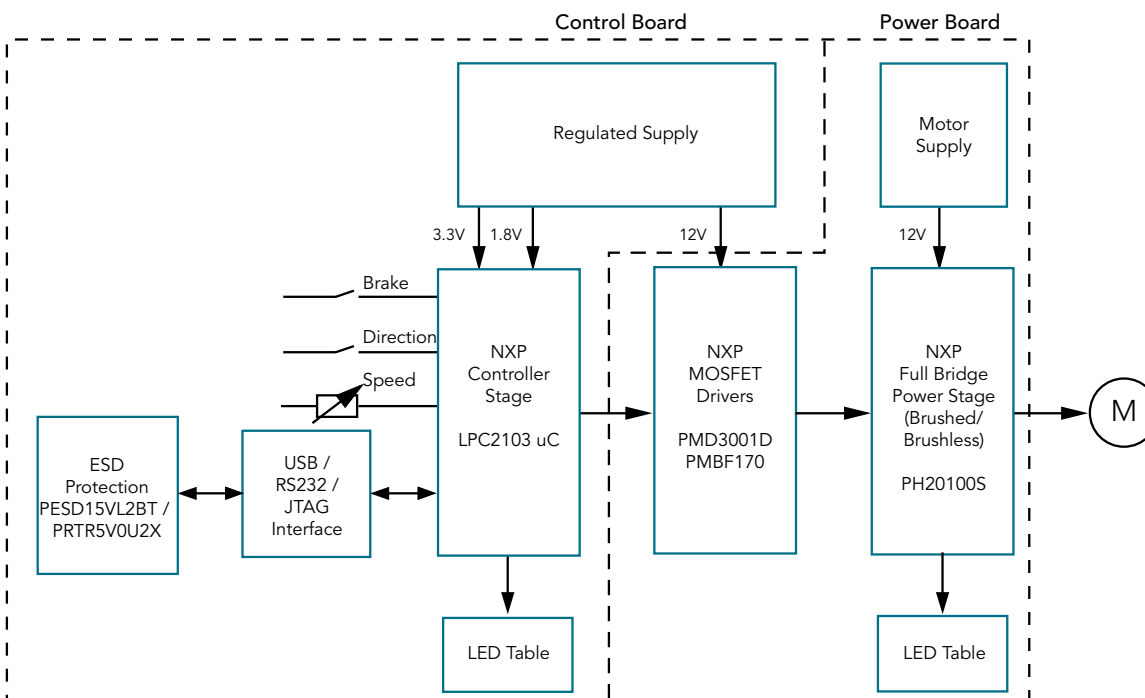
The user manual provides step-by-step instructions for operation and includes detailed instructions for implementing software changes such as PWM frequency or the control of dead time.

Development support is provided on a case-by-case basis.

**Standard kit contents (other options available on request)**

Type number	Function	Package
LPC2103	32-bit microcontroller with 12 timer-generated PWM signals	LQFP48
PH20100S	100-V, 23-mΩ, N-channel MOSFET	LFPK
PMBF170	5.3-Ω, 60-V MOSFET	SOT23
PMD3001D	Push-pull transistor pair	TSOP6
PESD15VL2BT	ESD protection for RS-232 port	SOT23
PRTR5V0U2X	ESD protection for USB port	SOT143B
74LVC125AD	3.3-V buffer/line driver	SO14
BAS16	General-purpose diode	SOT23
SAS21	General-purpose diode	SOT23
BZX84C-3V6	3.6-V, 250-mA Zener diode	SOT23

### Mini ARM7 development kit



Block diagram of the development kit

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