

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_{DC}
- ▶ 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.

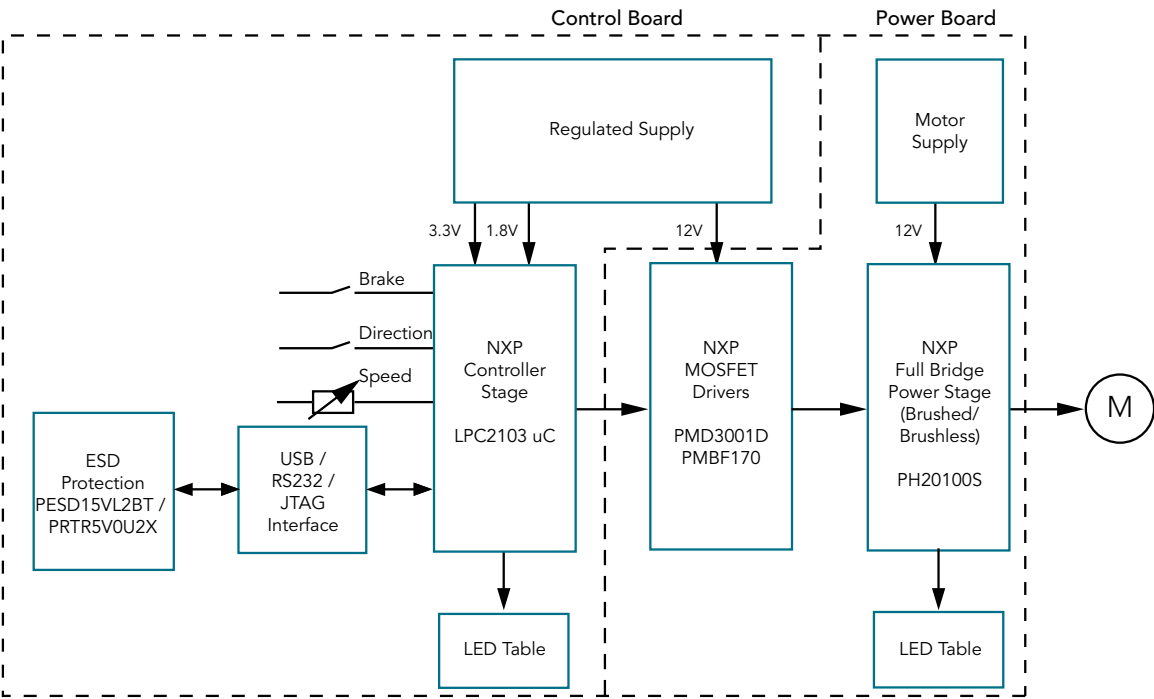
The user manual provides step-by-step instructions for operation and includes detailed instructions for implementing software changes such as PWM frequency or the control of dead time.

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	LFPAK
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

www.nxp.com



© 2007 NXP B.V.
 All rights reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.
 The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use.
 Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Date of release: January 2007
 Document order number: 9397 750 15888
 Printed in the Netherlands