NXP LPCXpresso Motor Control Kit

Fast time-to-market for motor control

This universal platform, designed for the evaluation, development, and debugging of low-voltage motor-control applications, supports control of BLDC, BLAC, stepper, and dual-brushed DC motors.

Key features

- Flexible microcontroller sockets
  - Socket for LPCXpresso LPC1114, LPC11C24, LPC1343, and LPC1769
  - Socket for LPC1100 Cortex-M0™ in PLCC44 package
  - Expansion connector LPC1800, LPC4000, LPC2900 and other NXP ARM™ microcontrollers
- Motor control
  - 300 W max output to motors
  - 4-phases (based on NXP PMSN2R6-40YS NMOSFET), accessed via screw terminals
  - 100% duty cycle supported
  - Voltage measurement (on three phases and virtual ground)
  - Current measurement (in-phase on three phases and common low-side)
  - Input current measurement including over-current trip
  - Break functionality
  - Hall & QEI sensor inputs connected via screw terminals
  - Temperature sensor
- Communication interfaces
  - USB, Ethernet, and CAN (if supported by MCU)
  - RS422/485 and UART-to-USB
- User interface
  - 5-key joystick switch
  - 96x64 pixel OLED
- Other
  - Reset push-button
  - Onboard 15 W power supply (+11, +5 or +3.3 V)
  - I^2C EEPROM for user data
  - SWD/JTAG debugging connector
- Power supply input
  - 2.1 mm input jack, or via screw terminals
  - 12-30 V, 17 A max
- Board measures 200 x 150 mm

To support fast time-to-market for motor-control applications, NXP offers the low-cost LPCXpresso Motor Control Kit, a universal development platform created in partnership with Embedded Artists. It is an ideal way to prototype a motor-control project or simply explore motor-control functionality. It supports control of brushless DC (BLDC), brushless AC (BLAC), stepper, and dual-brushed DC motors.

The main board has two full H-bridges, so up to four phases can be controlled with up to 100% duty cycle. Phase voltage, as well as in-phase current can be measured on three phases, and virtual ground voltage and common low-side current can be

measured, too. For safety and protection, there is an input over-current trip protection. When the motor is generating power the actively controlled breaking circuitry becomes enabled, and above a certain bus voltage level the circuit breaks automatically. For design flexibility, there are several communications interfaces, including USB, Ethernet, CAN, RS-422/485, and a UART-to-USB bridge. The board also has a small graphic user interface (96x64 pixel OLED) with a joystick, to allow for simple, intuitive human interaction.

The kit is available through NXP's distribution partners.

The LPCXpresso Motor Control Kit

Ordering information

Item no.	Name	Contents
OM13009	LPCXpresso Motor Control Kit	▸ LPCXpresso Motor Control Board ▸ LPCXpresso LPC1114 board with LPC-Link ▸ LPCXpresso Eclipse-based IDE and GNU compiler ▸ BLDC motor with hall sensors ▸ 24 V power supply (60 W)

www.nxp.com

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