

# dsPIC33CK Motor Control Starter Kit (MCSK)

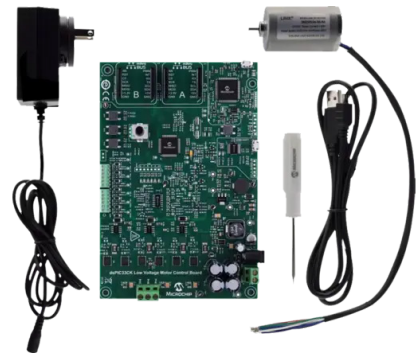
EV12F76A

6/1/2026

For the most up-to-date information, visit [mouser.com](http://mouser.com) or the manufacturer's website.

## DESCRIPTION

Microchip Technology EV12F76A DSPIC33CK Motor Control Starter Kit is designed to drive a low-voltage, three-phase Permanent Magnet Synchronous Motor (PMSM) or BLDC motor using dsPIC33CK256MP508. This kit includes a motor control board, a motor, and a USB cable for PC communication. The EV12F76A kit also comes with a screwdriver for easy motor-to-board connection and a power supply with international plug adaptors, making it an all-in-one solution. This kit includes a 12V gate-drive power supply, a 5V step-down DC/DC converter, and a 3V step-down DC/DC converter. The dsPIC33CK low-voltage motor control board user interface provides three push buttons, along with a potentiometer and multiple LEDs.



## FEATURES

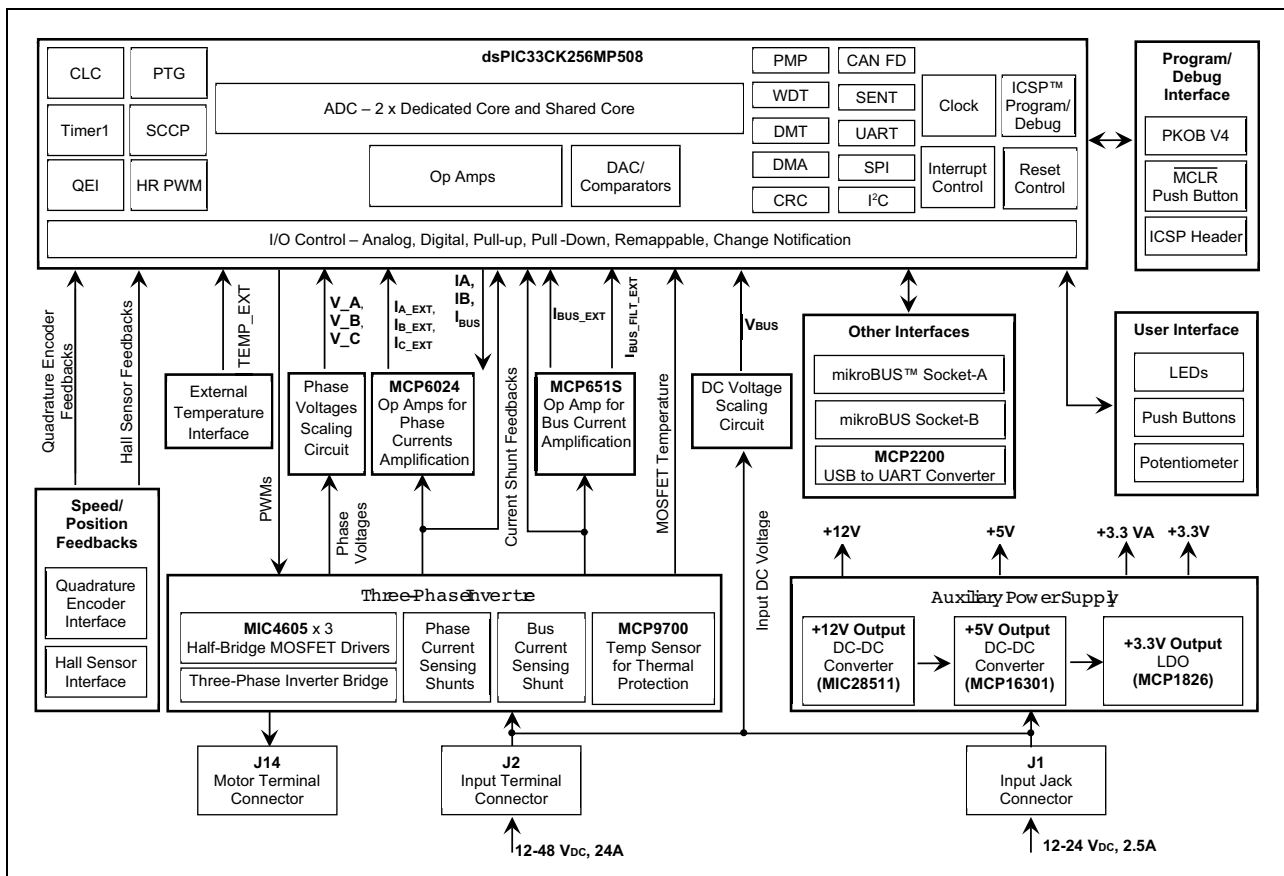
- Low-voltage motor control board (DM330031):
- Three-phase inverter bridge for 12V to 48V motors:
- Three-phase bridge with six NMOS MOSFETs supports 10A of continuous current or 20A with an additional heat sink or fan
- Three MIC4605 Half-Bridge MOSFET Gate Drivers (85V)
- Separate hall sensors and optical/magnetic encoder interfaces for sensed motor control
- Phase voltage feedback for sensorless BEMF BLDC or PMSM operation
- DC bus current sense shunt resistor circuit for single-shunt FOC control or BLDC current control
- Phase current sense shunt resistor in inverter leg for dual or triple-shunt FOC control
- Phase current signal conditioning using the internal op amps located on the dsPIC33CK DSC or using the external op amps located on the LVMC board for current sensing

- DC Bus Voltage feedback for over-voltage protection
- Temperature sensor for monitoring the MOSFET temperature
- Connector to interface external thermocouple (I<sup>2</sup>C) and an external temperature sensor to monitor the motor temperature
  
- User interface:
  - 6 green LEDs for PWM status indication
  - 1 Red LED for power-on status indication
  - 2 Blue LED for debug indication
  - 1 potentiometer and 3 push buttons to implement user inputs like speed reference, start, stop, forward, reverse, etc.
  - Reset switch
  
- Power supply connectors:
  - Screw terminal connector to power from an external DC power supply
  - Barrel connector to power the board from a 24V/2.5A AC/DC power adaptor
  
- On-board power supply:
  - 12V gate drive power supply
  - 5V step-down DC/DC for Hall sensors, an optical encoder, and the mikroBUS™ sockets
  - 3V step-down DC/DC for the dsPIC33CK DSC, serial interfaces, and mikroBUS sockets
  
- Communications interfaces:
  - UART to USB circuit and connector (mini-B) for high-speed communications for debuggers such as X2C Debug
  - Two mikroBUS sockets to expand serial communications functionality using Mikro click boards™
  
- Programming interfaces:
  - On-board PKoBv4 Debug Circuit for code programming and debugging, eliminating the need for an external programmer/debugger
  - Additional ICSP™ connector for programming the dsPIC® DSC device using an external programmer/debugger

## KIT CONTENTS

- dsPIC33CK Low Voltage Motor Control (LVMC) development board (DM330031)
- Linux 3-phase BLDC motor 24V/1.85A/30W with built-in hall sensors
- USB cable for connection from PC to the board
- Screwdriver for motor connector
- 100V<sub>AC</sub> to 240V<sub>AC</sub> 50Hz/60Hz 1.5A input, 24V<sub>DC</sub>/1.5A/36W output with a positive center barrel
- 2.1mm tip universal power adapter

## BLOCK DIAGRAM



MOUSER PART NUMBER

[View Part](#)

To learn more, visit <https://www.mouser.com/new/microchip/microchip-ev12f76a-kit/>