# dsPICDEM MCLV-2 Development Board (Low Voltage)

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Part Number: DM330021-2

Documentation & Software

The dsPICDEMTM MCLV-2 Development Board provides a cost-effective method of evaluating and developing sensored or sensorless Brushless DC (BLDC) and permanent magnet synchronous motor control applications. The board supports Microchip's 28-pin SOIC and 100-pin Plug-In-Modules with dsPIC33E or dsPIC33F Digital Signal Controllers. The board supports the use of the internal, on chip OpAmps found on certain dsPIC devices or the external OpAmps found on the MCLV-2 board. A dsPIC33EP256MC506 Internal OpAmp PIM (MA330031) is included. The board is capable of controlling motors rated up to 48V and 15 Amps, with multiple communication channels such as USB, CAN, LIN and RS-232.

The dsPICDEMTM MCLV-2 Development Board is targeted to control a Brushless DC (BLDC) motor or Permanent Magnet Synchronous Motor (PMSM) in sensor or sensorless operation. This flexible and cost-effective board can be configured in different ways for use with Microchip's specialized motor control digital signal controllers. The dsPICDEMTM MCLV-2 Development Board supports the dsPIC33E or dsPIC33F motor control device family. It offers a mounting option to connect either a 28-pin SOIC device or a generic 100-pin Plug-In Module (PIM).

***The MCLV-2(DM330021-2) replaces the previous MCLV (DM330021) and is fully backwards compatible with the previous MCLV(DM330021) and all motor control PIMs***

Features | Package Contents | Related Tools

**Motor Control Interfaces:**

- Three-phase inverter bridge with a power rating of 48V/15A
- Ability to use internal OpAmps found on certain dsPIC33E devices or external OpAmps on the MCLV-2 board for current sensing
- Hall sensors/quadrature encoder interface for sensored motor control
- Phase voltage feedback for sensorless BLDC operation
- DC bus current sense resistor for single shunt vector control
- Phase current sense resistor for dual shunt vector control
- Overcurrent protection
- Input/output control switches
- Potentiometer
- LED indicator for PWM outputs

**Power Supply Connectors:**

- Auxiliary power tab "fast-on" connectors for the controller and power stage
- 24V power input connector for the controller
- Dedicated power input connector for the power stage

**Communication Interfaces:**

- CAN interface port
- LIN interface port
- UART communication via USB
- UART communication via RS-232

**Programming Interfaces**:

- ICSP™ connector for programming a dsPIC DSC device
- RJ11 connector for programming a dsPIC DSC device
- ICSP connector for programming the PIC18LF2450 USB to UART bridge

**Full Backwards Compatibility with MCLV**

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| AppNotes | Last Updated | Size |
|---|---|---|
| AN1160 - Sensorless BLDC Control with Back-EMF Filtering Using a Majority Function | 10/25/2012 7:20:24 AM | 693KB |
| AN1292 - Sensorless Field Oriented Control (FOC) for a Permanent Magnet Synchronous Motor (PMSM)Using a PLL Estimator and Field Weakening (FW) | 6/30/2011 3:16:54 PM | 440KB |
| AN1017 - Sinusoidal Control of PMSM Motors with dsPIC30F / dsPIC33F/ dsPIC33E DSC | 6/27/2011 8:26:35 PM | 313KB |
| AN1078 - Sensorless Field Oriented Control of a PMSM | 4/4/2010 10:35:41 PM | 474KB |
| AN957 - Sensored BLDC Motor Control Using dsPIC30F2010 | 6/23/2005 9:31:19 AM | 869KB |
| **Documents** | **Last Updated** | **Size** |
| Real-Time Data Monitor User's Guide | 3/23/2014 11:36:42 PM | 1MB |
| Motor Control and Drive Brochure | 10/1/2013 3:36:39 PM | 5MB |
| dsPICDEM MCLV-2 (DM330021-2) Development Board User's Guide | 10/4/2012 10:48:39 AM | 751KB |
| Real Time Data Monitor User's Guide | 8/16/2011 2:48:09 PM | 1MB |
| Technical Notice ETN 33 | 6/30/2011 5:37:13 PM | 270KB |
| Hurst DMB0224C10002 BLDC Motor DataSheet | 5/5/2011 1:38:51 PM | 463KB |
| Part Number: AC300022 - 24V 3-Phase Brushless DC Motor with Encoder DataSheet | 4/1/2011 2:36:14 PM | 423KB |
| AC300020 - 24V 3-Phase Brushless DC Motor | 4/1/2011 2:34:32 PM | 463KB |
| dsPIC33FJ256MC710 100-pin to 100-pin TQFP Plug-In Module (PIM) Information Sheet | 12/3/2008 3:07:00 PM | 672KB |
| dsPICDEM MCLV Development Board User's Guide | 8/22/2008 2:02:35 PM | 2MB |
| Updated USB Driver for win2k, xp, vista | 12/11/2007 2:49:03 PM | 1KB |