

TABLE 1: CABLE SETTINGS BASED ON APPLICATION NOTE

MCLV	R1	R2	R3	R4	R5	R6	R11	R12	R13	R14	R15
Dual Shunt	ON	ON	x	ON	ON	OFF	OFF	OFF	x	OFF	OFF
AN1299	ON	ON	ON	x	x	OFF	OFF	OFF	OFF	x	x

MCHV	R1	R2	R3	R4	R5	R6	R11	R12	R13	R14	R15
Dual Shunt	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON
AN1299	ON	ON	x	x	x	OFF	OFF	OFF	x	x	x

MCLV & MCHV	R1	R2	R3	R4	R5	R6	R11	R12	R13	R14	R15
AN1160	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
AN1017	ON	ON	x	x	x	OFF	OFF	OFF	x	x	x

MCSM	R1	R2	R3	R4	R5	R6	R11	R12	R13	R14	R15
AN1307	OFF	OFF	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF

**Legend:** Dual Shunt = AN1078, AN1162, AN1292, and AN1206; x = don't care

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## Dual Motor Control Plug-In Module (PIM) Information Sheet

The Dual Motor Control Plug-In Module (PIM) is designed to facilitate the development of Motor Control applications using two motors and one Digital Signal Controller (DSC) or Microcontroller (MCU). Two Microchip dsPICDEM™ motor control development boards can be used with this PIM to control 3-phase or stepper motors. A flexible cable connects the two boards together and routes all signals to the appropriate pins on the DSC or MCU. The configuration of the cable and signal was carefully chosen to support a wide range of dual motor configuration application notes written for the dsPICDEM MCLV, MCHV, and MCSM Development Boards.

### Installing MPLAB® IDE and C Compilers

The MPLAB Integrated Development Environment (IDE) should be installed prior to running the Dual Motor Control demonstration. While MPLAB provides the assembler tools for development, most of the code examples are written in C language and require a C compiler to be installed. Microchip's MPLAB C compiler seamlessly integrates into MPLAB IDE. Both the MPLAB IDE and MPLAB C compiler are free (see the note below) and are available for download at [www.microchip.com/MPLAB](http://www.microchip.com/MPLAB) and [www.microchip.com/compilers](http://www.microchip.com/compilers), respectively.

**Note:** Standard Evaluation (Free) – All optimization levels are enabled for 60 days, but then revert to optimization level 1 only.

### Code Examples and More Information

For code examples and more information, please visit the Dual Motor Control page at <http://www.microchip.com/motor>. From the Development Tools menu, click Development and Evaluation Boards and from the list select dsPICDEM Dual Motor Control PIM MA330027. Then, from the Downloads section, select the code for the desired Application Note and Development Board. Refer to Table 1 for the hardware settings required for each Development Board.

### Running and Debugging Applications (MCLV) Development Board

After downloading the code example and installing the development tools, please use the following procedure to build and run your software:

1. Connect one motor to each MCLV board as described in the "dsPICDEM™ MCLV Development Board User's Guide" (DS70331).
2. Place the two MCLV boards side by side, on a sturdy platform.
3. Carefully insert the Dual Motor Control PIM into U9 on each MCLV board. The board on which the PIM labeled as Master is plugged into is referred to as the Master board. The other MCLV board is referred to as the Slave board.
4. Connect a 24V power supply to J2 on both the Master and Slave boards.
5. Connect a programmer/debugger (i.e., MPLAB ICD 3 or REAL ICE™) using the J11 connector on the Master board.
6. Extract the Dual Motor Control software previously downloaded and load the project file.
7. In MPLAB 8.XX IDE:
  - Select *Programmer > Tool* and then choose the appropriate tool.
  - Build the project by selecting *Project > Build All*.
  - Download your code to the DSC or MCU by selecting *Programmer > Program*.
8. In MPLAB X IDE:
  - Select *Run > Set Project Configuration > Customize*.
  - Select required tool under Hardware Tools. Click *Apply > Ok* to confirm the selection.
  - Select *Run > Run Project*. This will download the code to the target chip and release reset.
9. To start a motor, press the S2 button on the corresponding board. Press the S2 button again to stop the motor.
10. Use the potentiometers on each board to change the speed of a motor.
11. For an enhanced demonstration, the application requires the Real-Time Data Monitor (RTDM). Connect the development computer to J8 on the Master board with a mini-USB cable and follow the instructions provided on the Dual Motor Control web page for additional instructions on this demonstration.

**Note:** When using the Dual Motor Control PIM with the dsPICDEM MCHV Development Board, connecting the GND test point to an oscilloscope must be done only through a High-Voltage Differential Probe.

# Dual Motor Control Plug-In Module (PIM) Information Sheet

## Schematics

