Using MPLAB® ICD 3 In-Circuit Debugger

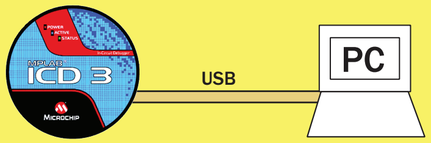
1 Install the Latest Software

Install the MPLAB® IDE software onto your PC using the MPLAB IDE CD-ROM or download the software from the MPLAB IDE page of the Microchip web site (www.microchip.com/MPLAB). Check the latest release notes for additional information.

2 Configure PC USB Communications

Connect the MPLAB ICD 3 in-circuit debugger to a PC USB port via a USB cable. If the drivers do not install automatically, then install the drivers as instructed in: `C:\Program Files\Microchip\MPLAB IDE\ICD 3\Drivers\ddri.htm`.

Note: If a USB hub is used, the hub must be powered with its own power supply.



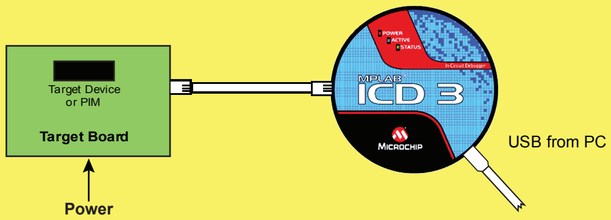
3 Build Your Project

1. Launch MPLAB IDE.
2. Load your project or use the Project Wizard to create a new one.
4. Build your project based on your configurations and options.
5. Select the MPLAB ICD 3 as either a debugger (*Debugger>Select Tool>*ICD 3) or as a programmer (*Programmer>Select Programmer>*ICD 3).

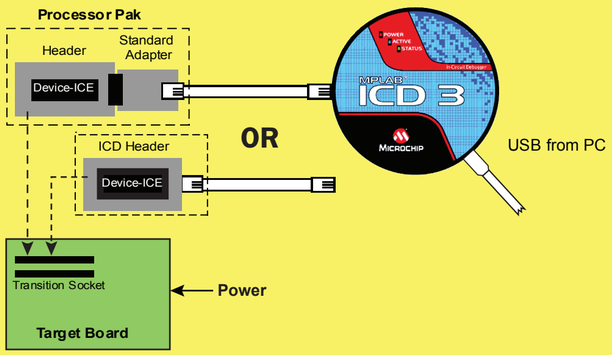
4 Connect to Target Device

1. Attach the MPLAB ICD 3 to the PC using the USB cable, if not already.
2. Attach the communications cable between the debugger and target board.
3. Connect power to the target board.

Typical Debugger System – Device with on-board ICE circuitry



Alternate Debugger System – ICE Device



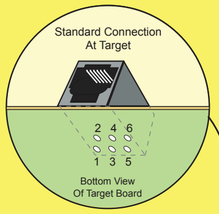
5 Program and Debug

1. Program your device.
2. As a programmer, MPLAB ICD 3 will automatically run your code. As a debugger, you can run, halt, single step and set breakpoints in your code.

ADDITIONAL INFORMATION

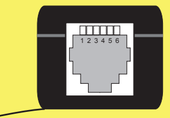
Circuitry and Connector Pinouts

Target Connector Pinout



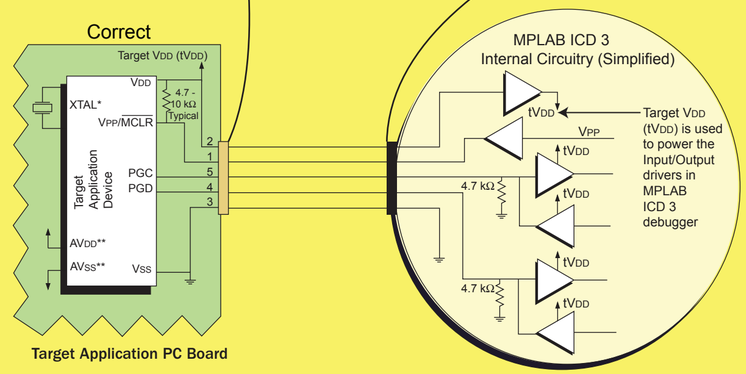
Modular Connector Pin	Microcontroller Pin
1	MCLR/VPP
2	VDD
3	Ground
4	PGD (ICSPDAT)
5	PGC (ICSPCLK)
6	LVP

MPLAB ICD 3 RJ-11 Jack Pinout



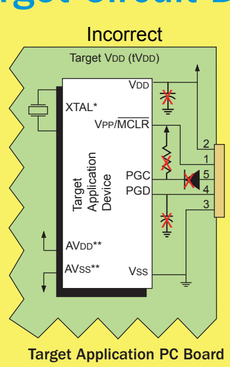
Pin	Signal
LVP	1
PGC	2
PGD	3
Ground	4
VDD	5
MCLR/VPP	6

Correct



Target Application PC Board

Incorrect



Target Application PC Board

*Target device must be running with an oscillator for the debugger to function as a debugger.
**If the device has AVDD and AVSS lines, they must be connected for the debugger to operate.

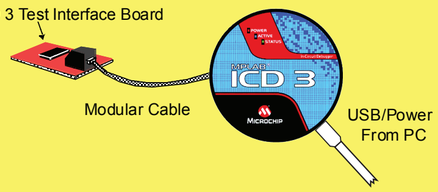
Target Circuit Design Precautions

- **Do not use multiplexing on PGC/PGD** – they are dedicated for communications to MPLAB ICD 3.
- **Do not use pull-ups on PGC/PGD** – they will divide the voltage levels since these lines have 4.7 kΩ pull-down resistors in MPLAB ICD 3.
- **Do not use capacitors on PGC/PGD** – they will prevent fast transitions on data and clock lines during programming and debug communications.
- **Do not use capacitors on MCLR** – they will prevent fast transitions of VPP.
- **Do not use diodes on PGC/PGD** – they will prevent bidirectional communication between MPLAB ICD 3 and the target PIC® MCU.

ICD 3 Test Interface Board

Use the ICD 3 Test Interface Board to verify that the MPLAB ICD 3 is functioning properly:

1. Disconnect the debugger from the target and PC.
2. Connect the ICD 3 Test Interface Board to the debugger using the modular cable.
3. Connect the debugger to the PC.
4. Select "MPLAB ICD 3" on either the Debugger or Programmer menu in MPLAB IDE.
5. From that menu, select "Settings", **Status** tab, then click on **Run ICD 3 Test Interface.** The status (pass/fail) is displayed in the Output window.



Recommended Settings

COMPONENT	SETTING
Oscillator	• OSC bits set properly • Running
Power	Supplied by target
WDT	Disabled (device dependent)
Code-Protect	Disabled
Table Read Protect	Disabled
LVP	Disabled
BOD	VDD > BOD VDD min
JTAG	Disabled
AVDD and AVSS	Must be connected
PGCx/PGDx	Proper channel selected, if applicable
Programming	VDD voltage levels meet programming specs

Note: See the "*MPLAB ICD 3 User's Guide*" (DS51766) for more component and setting information.

Reserved Resources

For information on reserved resources used by the debugger, see the MPLAB ICD 3 on-line help.