MPLAB® ICD 4 In-Circuit Debugger

QUICK START GUIDE

GETTING STARTED

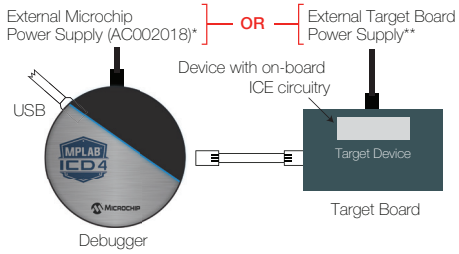
1 Install the Latest Software

Download the MPLAB X IDE software from www.microchip.com/mplabx and install onto your computer. The installer automatically loads the USB drivers. Launch MPLAB X IDE.

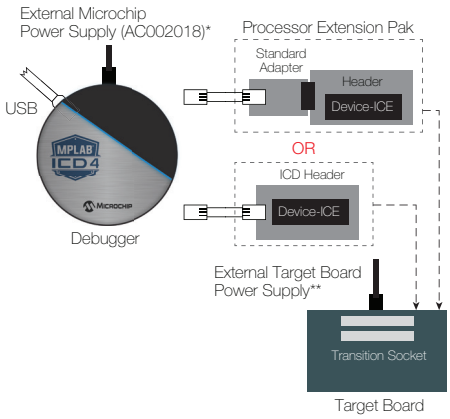
2 Connect to Target Device

1. Connect the MPLAB ICD 4 to the computer using the USB cable.
2. Connect external power either to the target board or debugger.

Typical Configuration (With On-Board Debug Circuitry)



Alternative Configuration (Without Loss of Pins)



**Microchip Power Supply (AC002014) not included. Available at www.microchipDIRECT.com.*
***External target board power supply provided by user.*

3 Create, Build and Run Project

1. Refer to the MPLAB X IDE User's Guide or online help for instructions to install language tools, create or open a project, and configure project properties.
2. Check that the configuration bits in your code match the Recommended Settings below.
3. To execute your code in Debug mode, perform a debug run (*Debug>Debug Project*). To execute your code in Non-Debug (release) mode, perform a run (*Run>Run Project*). To hold a device in Reset after programming, use the Hold in Reset icon in the toolbar.

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	V_{DD} > BOD V_{DD} min.
JTAG	Disabled
AV_{DD} and AV_{SS}	Must be connected
PGCx/PGDx	Proper channel selected, if applicable
Programming	V_{DD} voltage levels meet programming spec

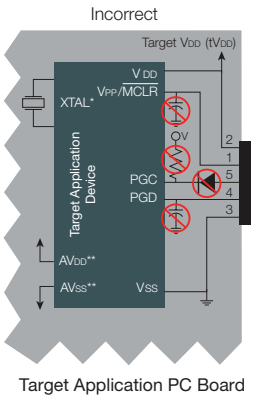
Note: *See MPLAB ICD 4 In-Circuit Debugger online help for more information.*

Reserved Resources

For information on reserved resources used by the debugger, see the MPLAB ICD 4 In-Circuit Debugger online help.

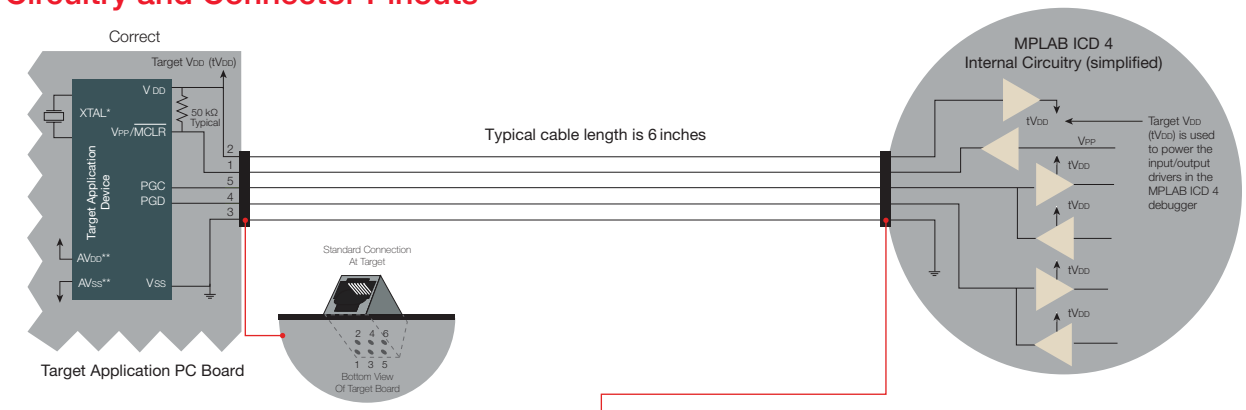
ADDITIONAL INFORMATION

Target Circuit Design Precautions

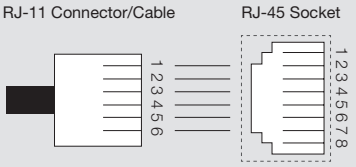


- **Do not use greater than 100 µF capacitance on VDD**: Depending on the overall load, it will prevent the target from powering quickly when MPLAB ICD 4 is the source of power.
- **Do not use capacitors on $\overline{\text{MCLR}}$:** They will prevent fast transitions of VPP.
- **Do not use multiplexing on PGC/PGD:** They are dedicated for communications to MPLAB ICD 4.
- **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 diodes on PGC/PGD:** They will prevent bidirectional communication between MPLAB ICD 4 and the target PIC® MCU.
- **Do not exceed recommended cable lengths:** Refer to the Hardware Specification of the MPLAB ICD 4 online help or user's guide for cable lengths.

Circuitry and Connector Pinouts



The modular cable with the RJ-11 connector attaches to the RJ-45 socket on the MPLAB ICD 4.

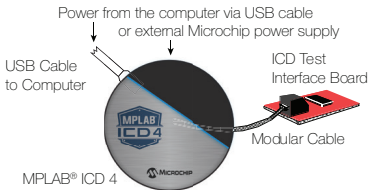


Pin	RJ-11	Function	Pin	RJ-45
		Reserved	1	
1		Reserved	2	
2	PGC (ICSPCLK)	Standard Com Clock	3	PGC (ICSPCLK)
3	PGD (ICSPDAT)	Standard Com Data	4	PGD (ICSPDAT)
4	GND	Ground	5	GND
5	VDD_TGT	Power On Target	6	VDD_TGT
6	VPP	Power	7	VPP
		Reserved	8	

** MPLAB ICD 4 is controlled by a 32-bit MCU with an ARM® Cortex®-M7 core.*
*** 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.*

Verify the Debugger is Functioning Properly

Refer to instructions in the MPLAB ICD 4 documentation for using the ICD Test Interface Board to verify the unit is operating properly.



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