MICROCHIP MPLAB ICE 4 In Circuit Emulator User Guide

MPLAB ICE 4 In Circuit Emulator
User Guide

Contents

Install the Latest Software

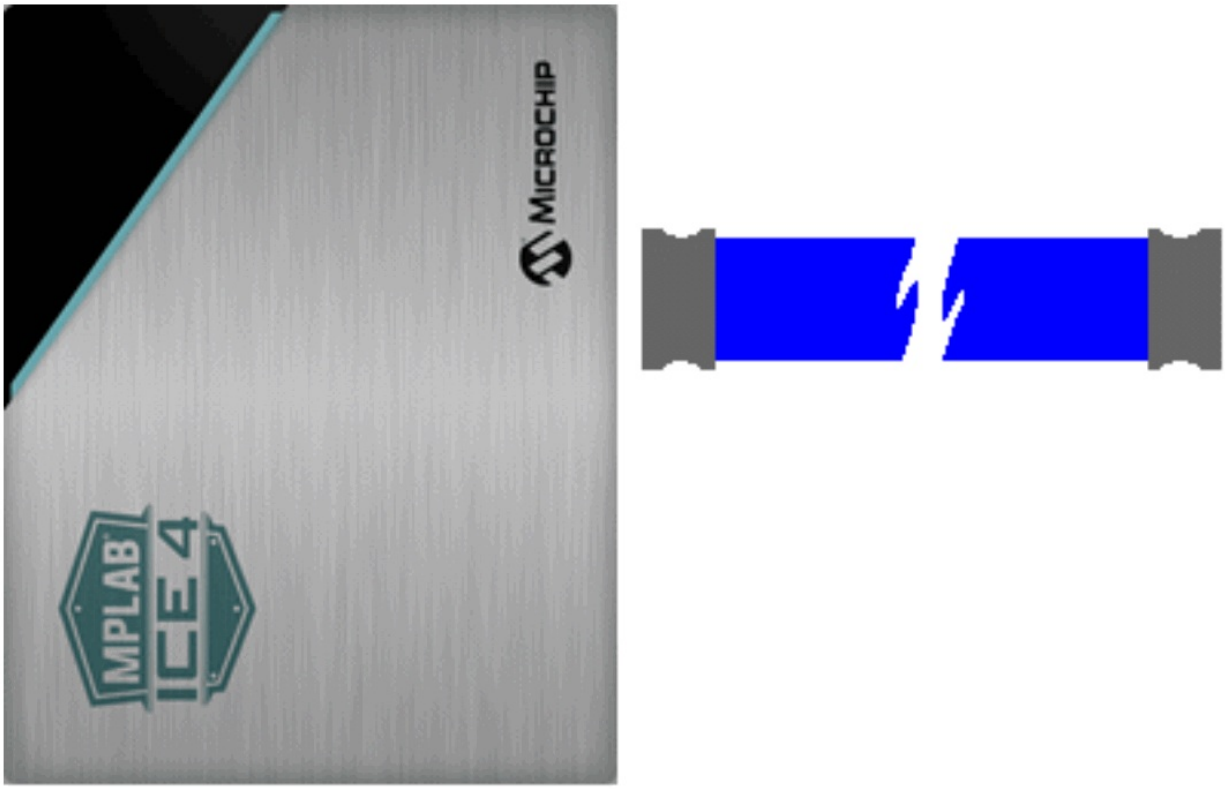
Download the MPLAB X IDE software from www.microchip.com/mplabx and install onto your computer. The installer automatically loads the USB drivers. Launch MPLAB X IDE.

Connect to Target Device

1. Connect the MPLAB ICE 4 to the computer using a USB cable.
2. Connect external power to the emulator. Connect external power* to the target board if not using emulator power.
3. Connect one end of the 40-pin debug cable into the emulator. Connect the other end to your target or optional adapter board.

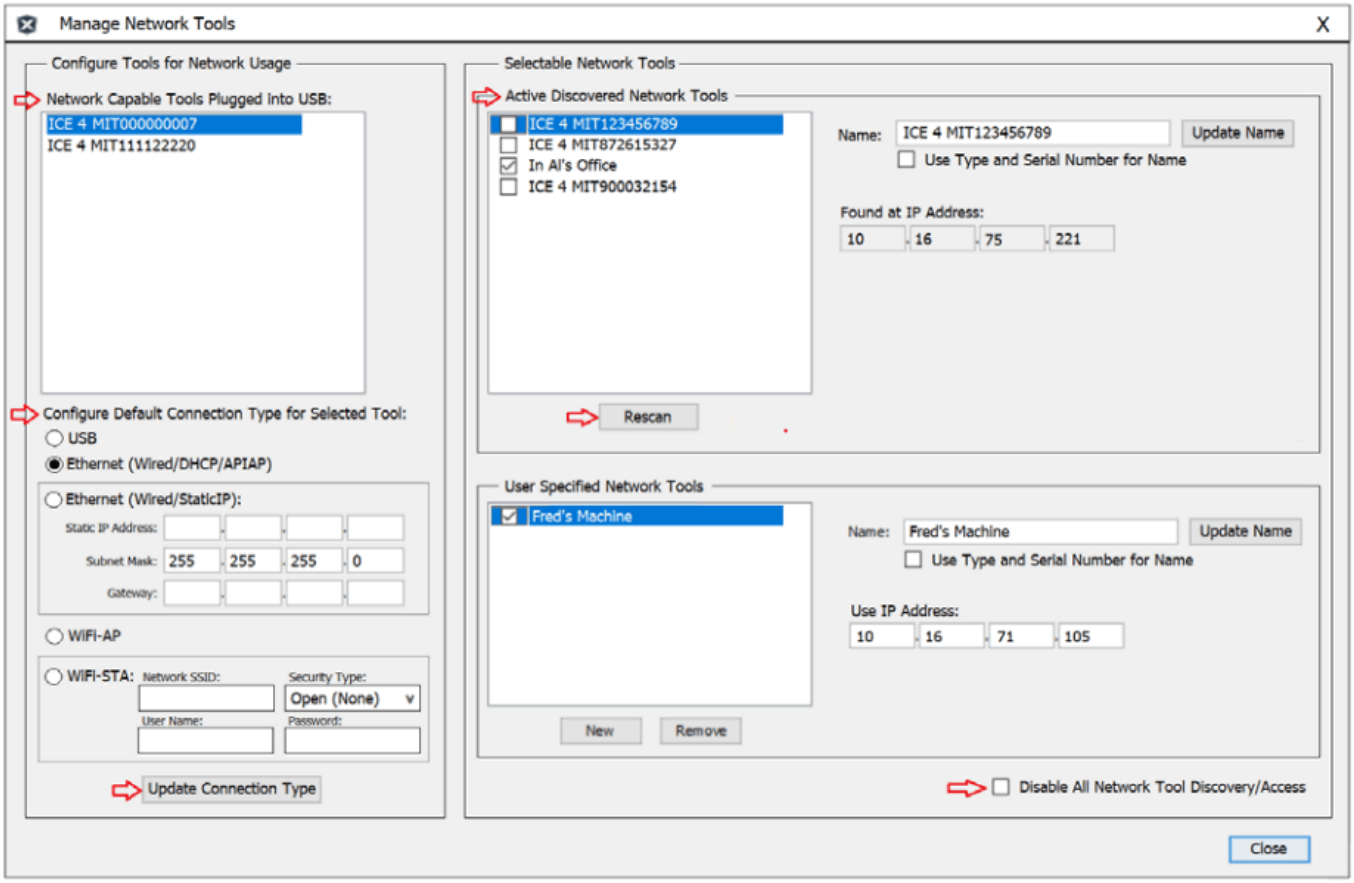
Computer Connections

Target Connections



Setup Wi-Fi or Ethernet

To configure MPLAB ICE 4 for Wi-Fi or Ethernet, go to Project Properties>Manage Network Tools in MPLAB X IDE.



Use the following steps to set up your selected computer connection.

Ethernet or Wi-Fi Setup and Tool Discovery in MPLAB X IDE

1. Connect the emulator to your PC via the USB cable.
2. Go to Tools> Manage Network Tools in MPLAB® X IDE.
3. Under “Network Capable Tools Plugged into USB”, select your emulator.
   Under “Configure Default Connection Type for Selected Tool” select the radio button for the connection you want.
4. Ethernet (Wired/StaticIP): Input Static IP Address, Subnet Mask and Gateway.
   Wi-Fi® STA: Input SSID, Security type and password, depending on the security type of your home/office router.
   Click Update Connection Type.
5. Unplug the USB cable from your emulator unit.
6. The emulator will restart automatically and come up in the connection mode you selected. Then either:
   All Except Wi-Fi AP: The LEDs will display for either a successful network connection or a network connection failure/error.
   Wi-Fi AP: The normal Wi-Fi scanning process of Windows OS / macOS / Linux OS will scan for available Wi-Fi networks on your PC. Find the tool with SSID “ICE4_MTIxxxxxxxxx” (where xxxxxxxxx is your tool unique serial number), and use the password “microchip” to connect to it.
   Now go back to the “Manage Network Tools” dialog and click on the Scan button, which will list your emulator under “Active Discovered Network Tools”. Select the checkbox for your tool and close the dialog.
7. Wi-Fi AP: On Windows 10 computers, you may see the message “No Internet, Secured” and yet the button will say “Disconnect” showing that there is a connection. This message means that the emulator is connected as a

router/AP but not by direct connection (Ethernet.)

8. If your emulator is not found under “Active Discovered Network Tools”, you can manually enter information in the “User Specified Network Tools” section. You must know the IP address of the tool (by the way of network admin or static IP assignment.)

Connect to a Target

See the table below for the pin-out of the 40-pin connector on your target. It is recommended that you connect your target to the MPLAB ICE 4 using the high-speed 40-pin cable for best debug performance. However, you may use one of the legacy adapters provided in the MPLAB ICE 4 kit between the cable and an existing target, but this will likely degrade performance.

Additional Information

40-Pin Connector on Target

Pin	Description	Function(s)
1	CS- A	Power Monitor
2	CS- B	Power Monitor
3	UTIL SDA	Reserved
4	DGI SPI nCS	DGI SPI nCS,PORT6, TRIG6
5	DGI SPI MOSI	DGI SPI MOSI, SPI DATA, PORT5, TRIG5
6	3V3	Reserved
7	DGI GPIO3	DGI GPIO3, PORT3, TRIG3
8	DGI GPIO2	DGI GPIO2, PORT2, TRIG2
9	DGI GPIO1	DGI GPIO1, PORT1, TRIG1
10	DGI GPIO0	DGI GPIO0, PORT0, TRIG0
11	5V0	Reserved
12	DGI VCP RXD	DGI RXD, CICD RXD, VCD RXD
13	DGI VCP TXD	DGI TXD, CICD TXD, VCD TXD
14	DGI I2C SDA	DGI I2C SDA
15	DGI I2C SCL	DGI I2C SCL
16	TVDD PWR	TVDD PWR
17	TDI IO	TDI IO, TDI, MOSI
18	TPGC IO	TPGC IO, TPGC, SWCLK, TCK, SCK
19	TVPP IO	TVPP/MCLR, nMCLR, RST

20	TVDD PWR	TVDD PWR
21	CS+ A	Power Monitor
22	CS+ B	Power Monitor
23	UTIL SCL	Reserved
24	DGI SPI SCK	DGI SPI SCK, SPI SCK, PORT7, TRIG7
25	DGI SPI MISO	DGI SPI MISO, PORT4, TRIG4
26	GND	GND
27	TRCLK	TRCLK, TRACECLK
28	GND	GND
29	TRDAT3	TRDAT3, TRACEDATA(3)
30	GND	GND
31	TRDAT2	TRDAT2, TRACEDATA(2)
32	GND	GND
33	TRDAT1	TRDAT1, TRACEDATA(1)
34	GND	GND
35	TRDAT0	TRDAT0, TRACEDATA(0)
36	GND	GND
37	TMS IO	TMS IO, SWD IO, TMS
38	TAUX IO	TAUX IO, AUX, DW, RESET
39	TPGD IO	TPGD IO, TPGD, SWO,TDO, MISO, DAT
40	TVDD PWR	TVDD PWR

Create, Build and Run Project

1. Refer to the MPLAB X IDE User's Guide or online help for instructions to install compilers, create or open a project, and configure project properties.
2. Consider the recommended settings below for configuration bits.
3. To run the project:

 Execute your code in Debug mode

 Execute your code in Non-Debug (release) mode

 Hold a device in Reset after programming

Recommended Settings

Component	Setting
Oscillator	• OSC bits set properly • Running
Power	External supply connected
WDT	Disabled (device dependent)
Code-Protect	Disabled
Table Read	Protect Disabled
LVP	Disabled
BOD	DVDs > BOD DVDs min.
Add and As	Must be connected, if applicable
Pac/Pad	Proper channel selected, if applicable
Programming	DVDs voltage levels meet programming spec

Note: See MPLAB ICE 4 In-Circuit Emulator online help for more information.

Reserved Resources

For information on reserved resources used by the emulator, see the MPLAB X IDE Help>Release Notes>Reserved Resources

Documents / Resources

	MICROCHIP MPLAB ICE 4 In Circuit Emulator [pdf] User Guide MPLAB ICE 4 In Circuit Emulator, MPLAB, ICE 4 In Circuit Emulator, Circuit Emulator, Emulator

References

- Empowering Innovation | Microchip Technology
- MPLAB® X IDE | Microchip Technology