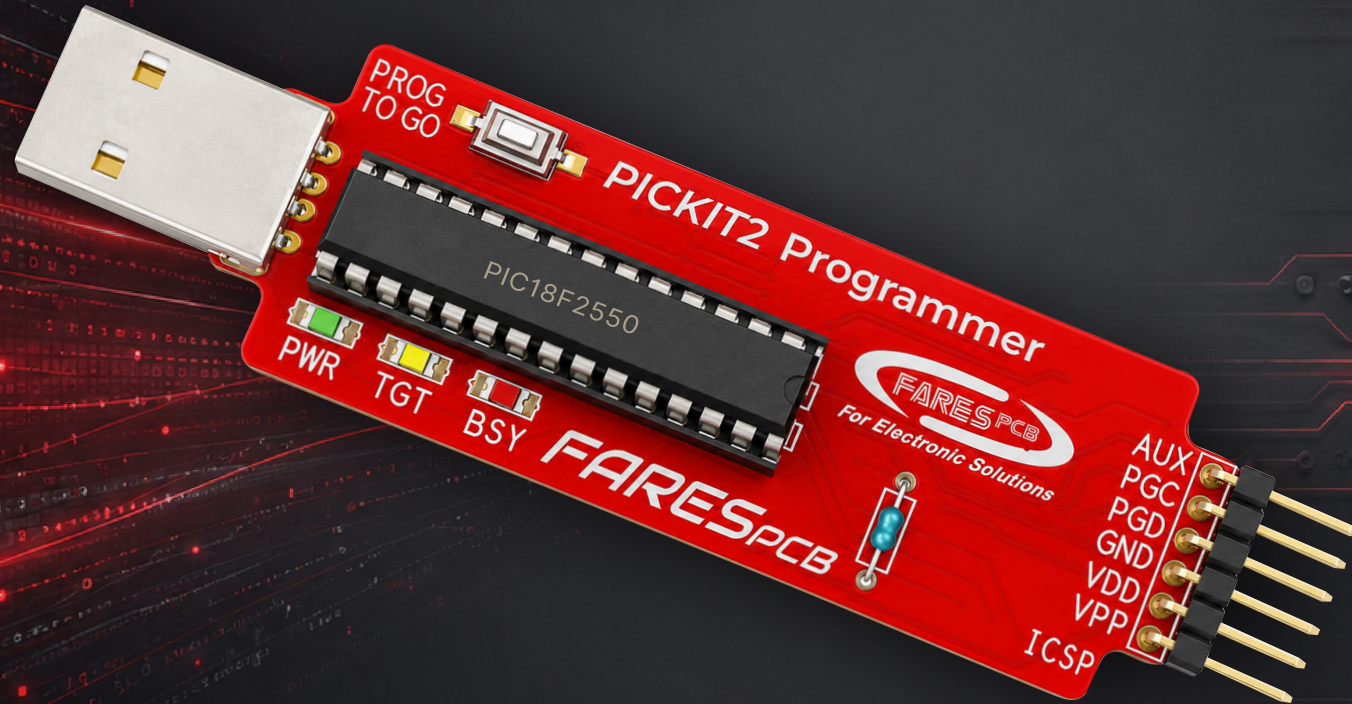




PICKit 2 Programmer/Debugger

PICKit 2 Programmer/Debugger

General Description:

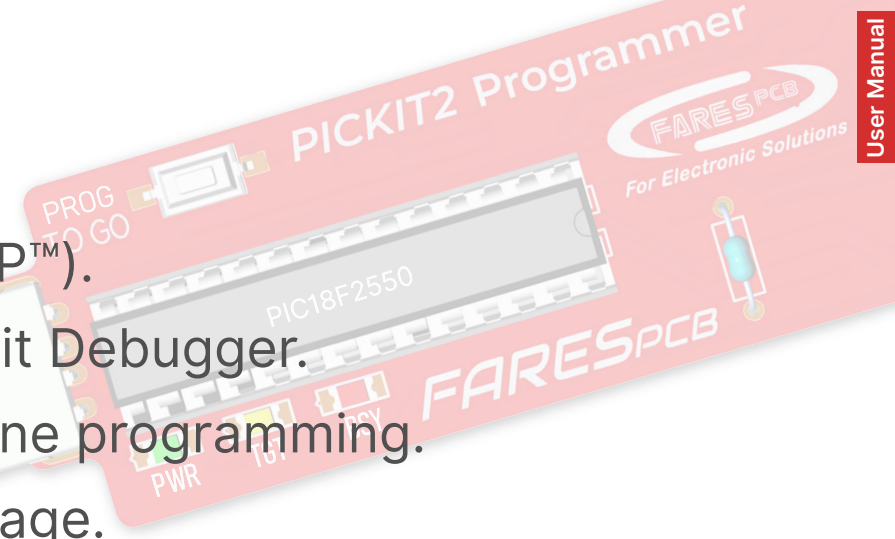
The **PICKit 2** Programmer/Debugger is a compact USB-based development tool designed for programming and debugging Microchip® PIC® microcontrollers using the In-Circuit Serial Programming™ (ICSP™) interface.

Based on the **PIC18F2550** microcontroller, the **PICKit 2** provides a cost-effective solution for firmware development, device programming, and production programming. It supports both traditional PC-controlled programming and standalone operation through the **Programmer-To-Go (PTG)** feature, allowing target devices to be programmed without a computer.

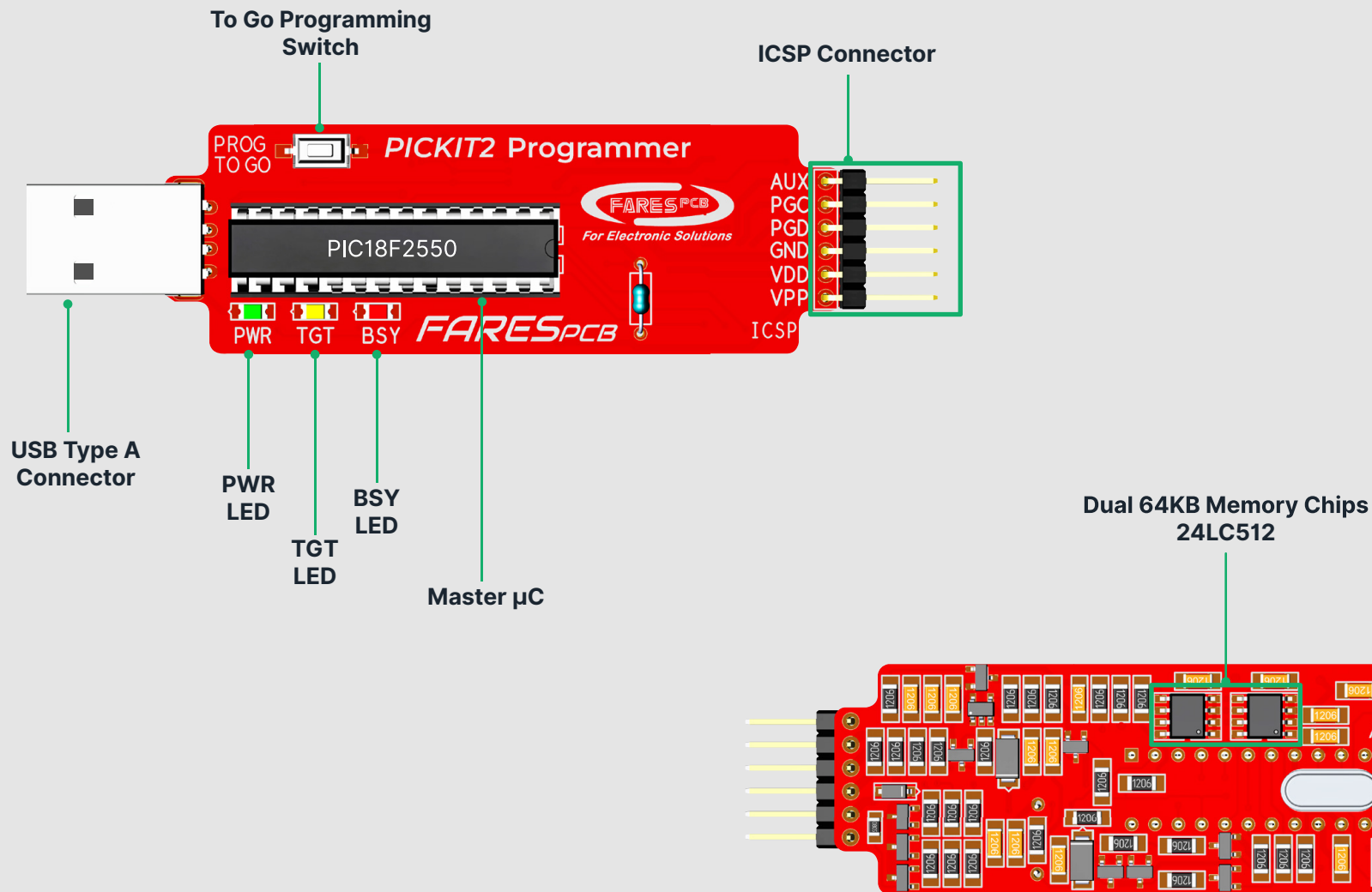
The integrated **USB Type-A** connector plugs directly into a USB port, eliminating the need for a separate USB cable and simplifying installation in development systems, production fixtures, and educational environments.

Features

- Based on **PIC18F2550** USB Microcontroller.
- Supports In-Circuit Serial Programming™ (ICSP™).
- Functions as both a Programmer and In-Circuit Debugger.
- Supports **Programmer-To-Go (PTG)** standalone programming.
- Dual **64KB** memory banks for PTG image storage.
- Direct **USB Type-A** connection (no USB cable required).
- Compatible with standard USB extension cables.
- Target voltage generation for supported devices.
- Compatible with **PICKit 2** Programmer Software.
- Supports MPLAB® IDE debugging functions.
- Compact and portable design.
- **PWR LED** for Programmer power status.
- **TGT LED** for the power status of the target device.
- **BSY LED** for Programming or debugging activity.



PICKit 2 Programmer Overview



Electrical Characteristics

USB Power Input

Parameter	Min	Typ	Max	Unit
USB Supply Voltage	4.5	5.0	5.25	V
Programmer Consumption	30	50	100	mA

Target Power Output

Parameter	Min	Typ	Max	Unit
Target Supply Voltage	2.5	—	5.0	V
Max Target Current	—	—	100	mA

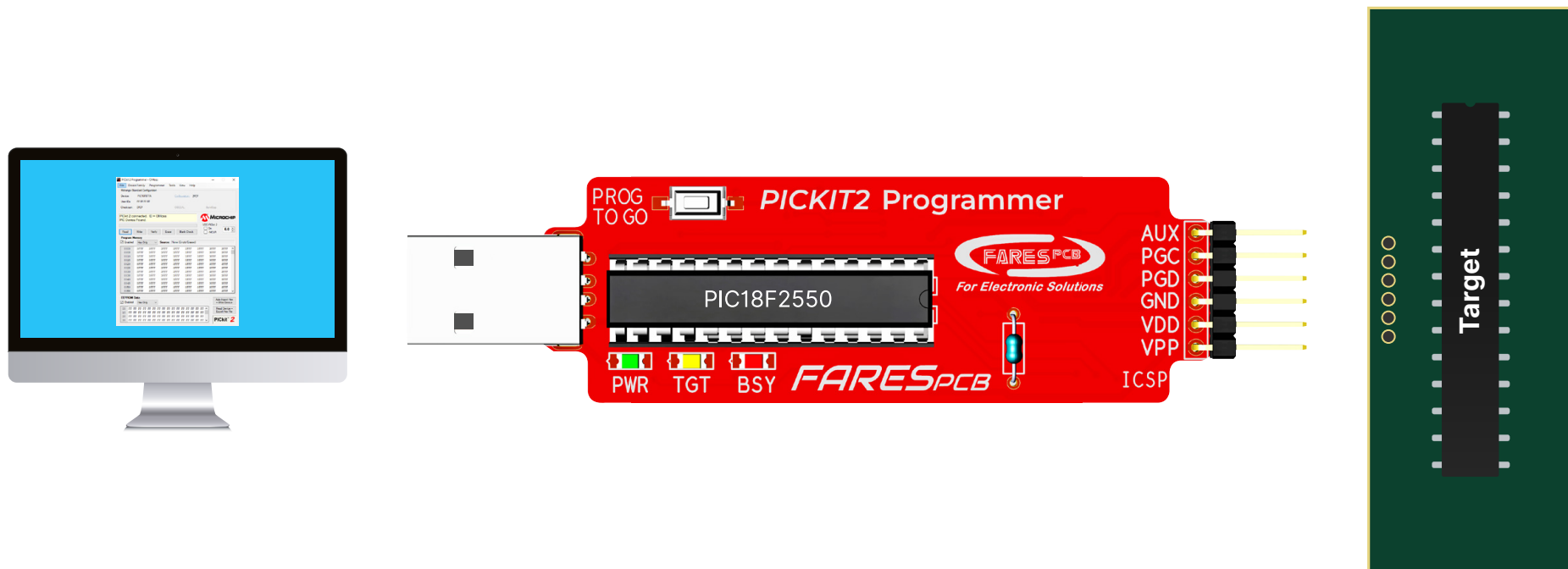


The programmer is intended to power low-power target circuits only. External power is recommended for circuits containing displays, relays, motors, communication modules, or other high-current loads.

Operating Modes

Normal Mode

In Normal Mode, the **PICKit 2** is connected to a host computer and controlled through the **PICKit 2** Programmer Software.



Normal Mode Functions



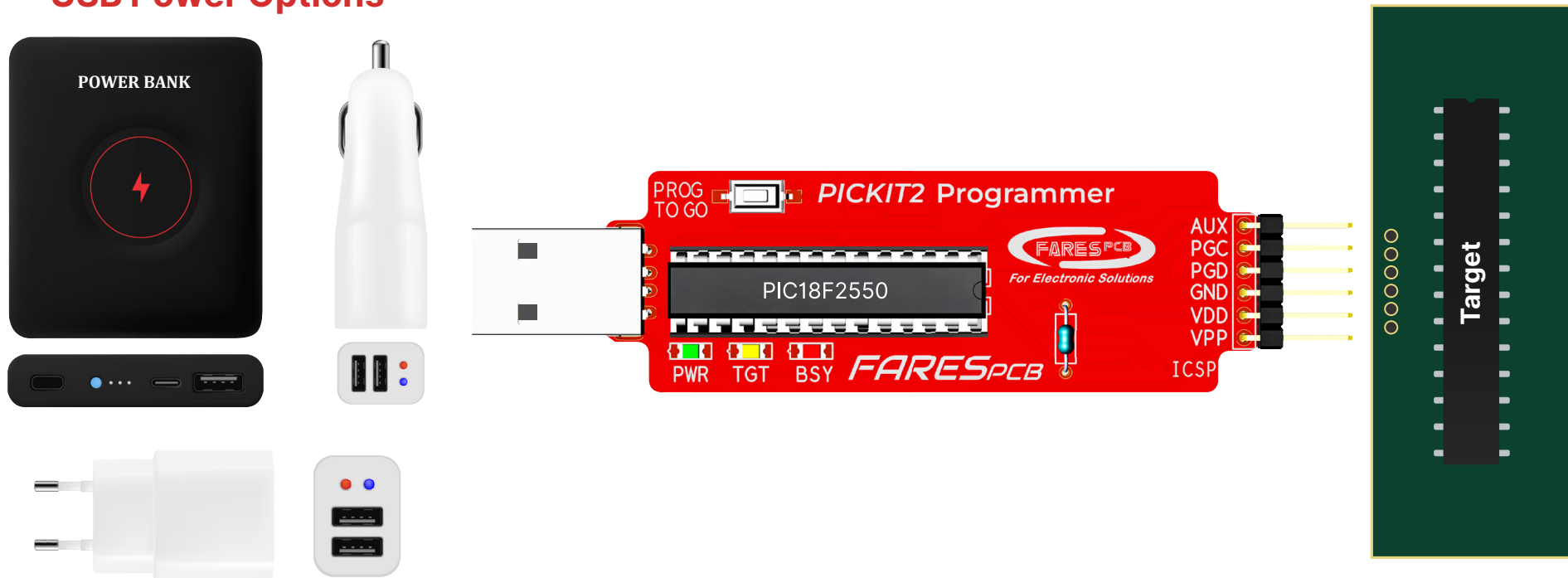
- Configuration Bit Programming.
- In-Circuit Debugging.
- Program Memory.
- Device Detection.
- Verify Memory.
- Read Memory.
- Device Erase.

Programmer-To-Go (PTG) Mode

Programmer-To-Go allows firmware images to be stored within the programmer's internal memory.

Once configured, the **PICKit 2** can program target devices without a computer. Only a USB power source is required.

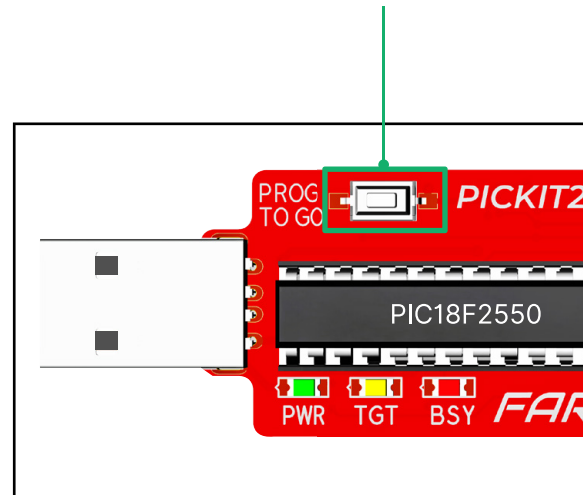
USB Power Options



(PTG) Mode Functions:

- Standalone Programming.
- Production Programming.
- Portable Operation.
- Field Updates.

Programming is initiated by pressing the onboard **PROG** pushbutton.



ICSP Connection

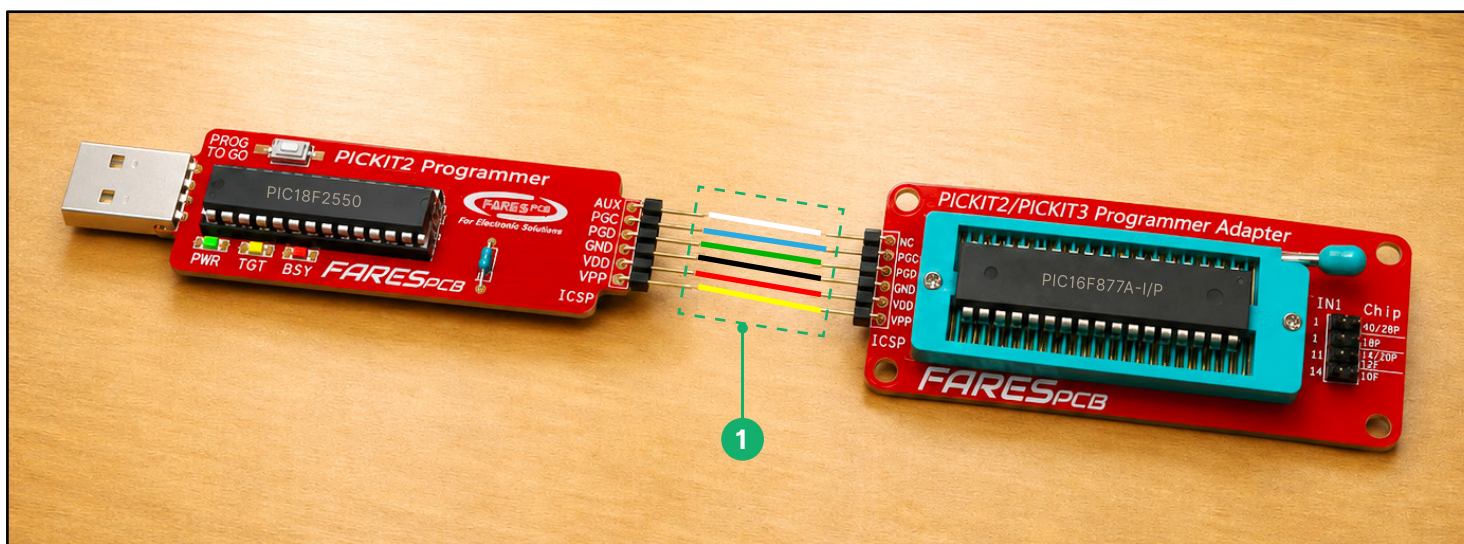
Connect the programmer to the target microcontroller using the standard ICSP interface.

Pin	Description
AUX	Auxiliary connection (Optional)
PGC	Programming clock
PGD	Programming data
GND	Ground reference (0V)
VDD	Target Power (+V)
VPP	Programming voltage/Reset

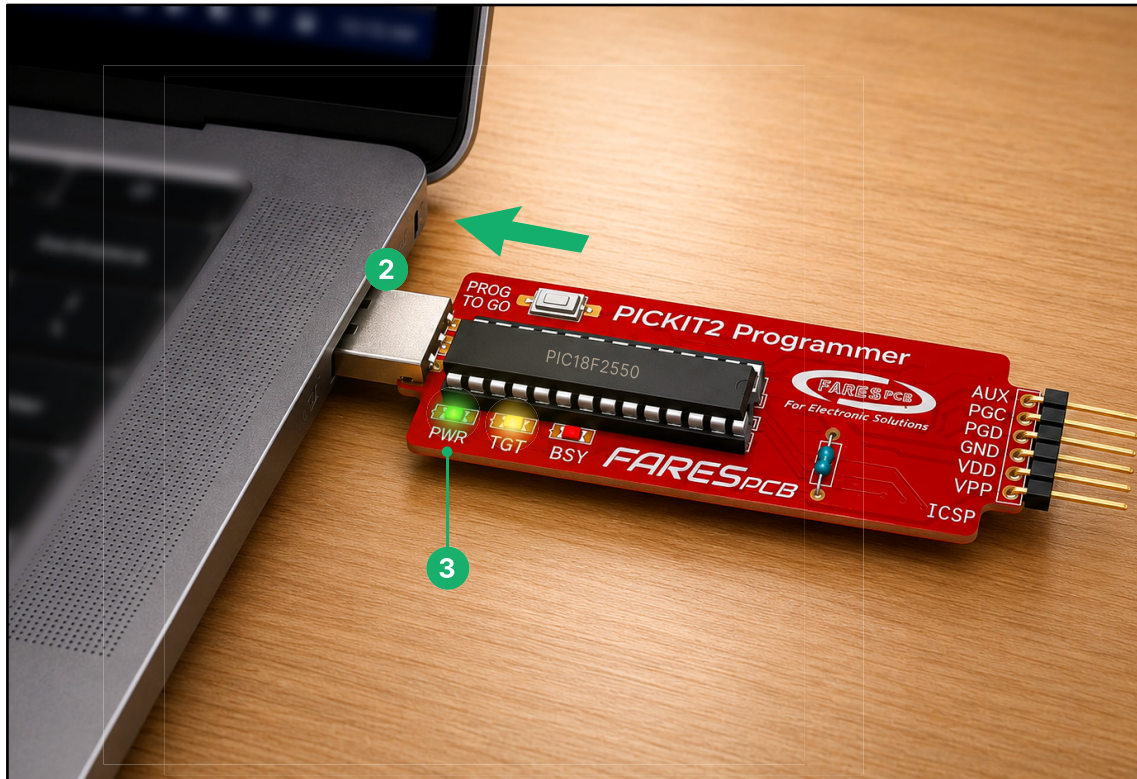
Getting Started

Hardware Setup

1- Connect the **PICKit 2** Programmer to the target microcontroller through the ICSP connector.



2- Plug the **PICKit 2** directly into a USB port.



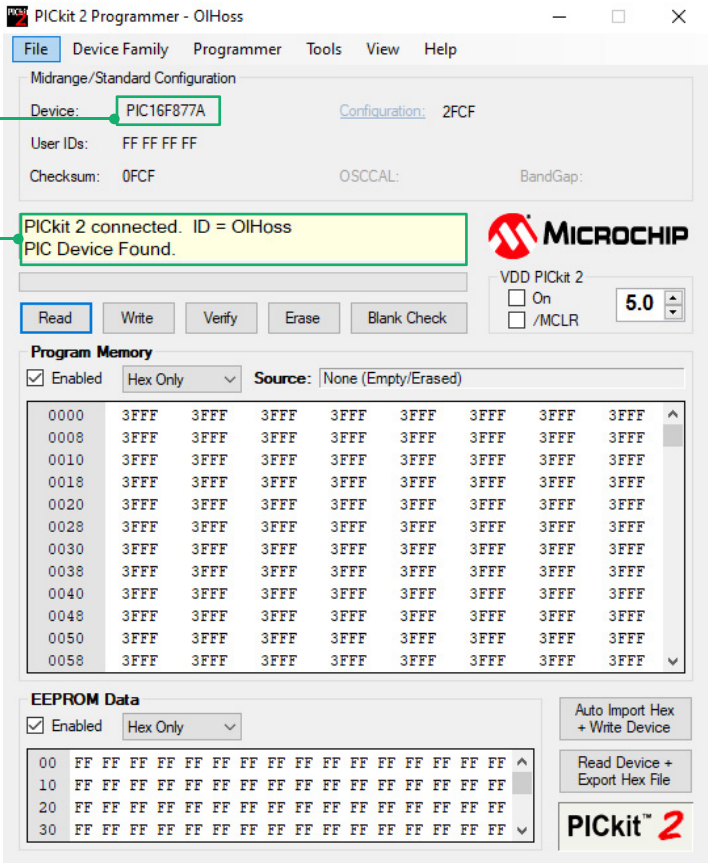
3- Verify that the **PWR LED** is illuminated.

Software Operation – Normal Mode

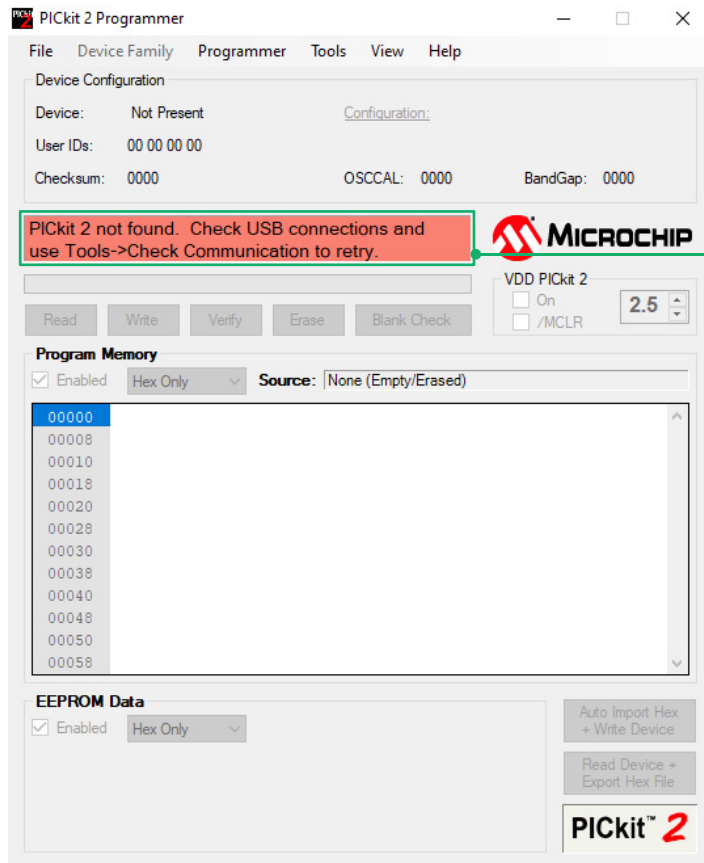
- 1- Install and launch the **PICKit 2** programmer software.
- 2- Verify that the programmer is detected.

Target Device Name

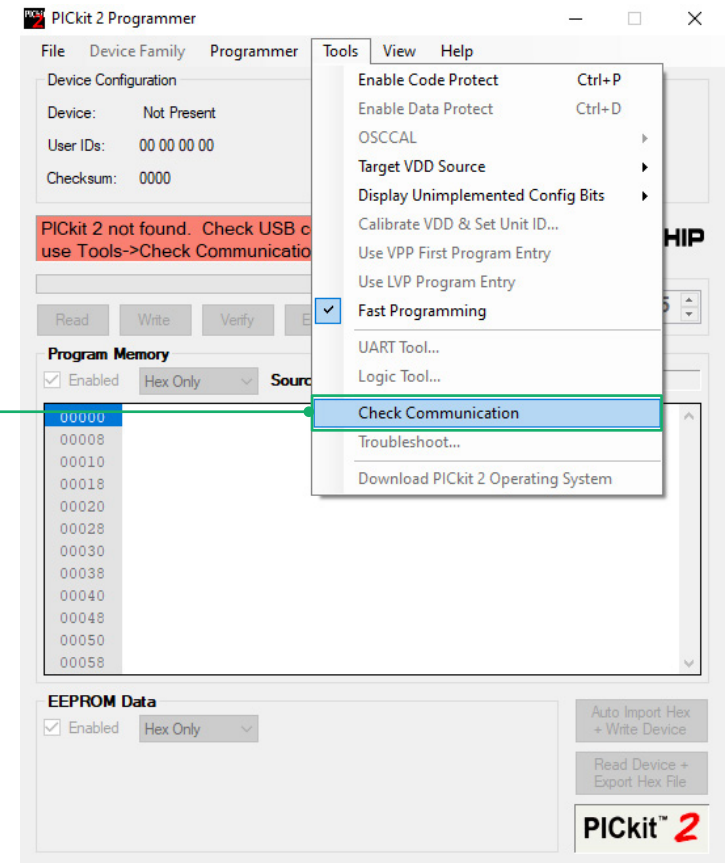
2



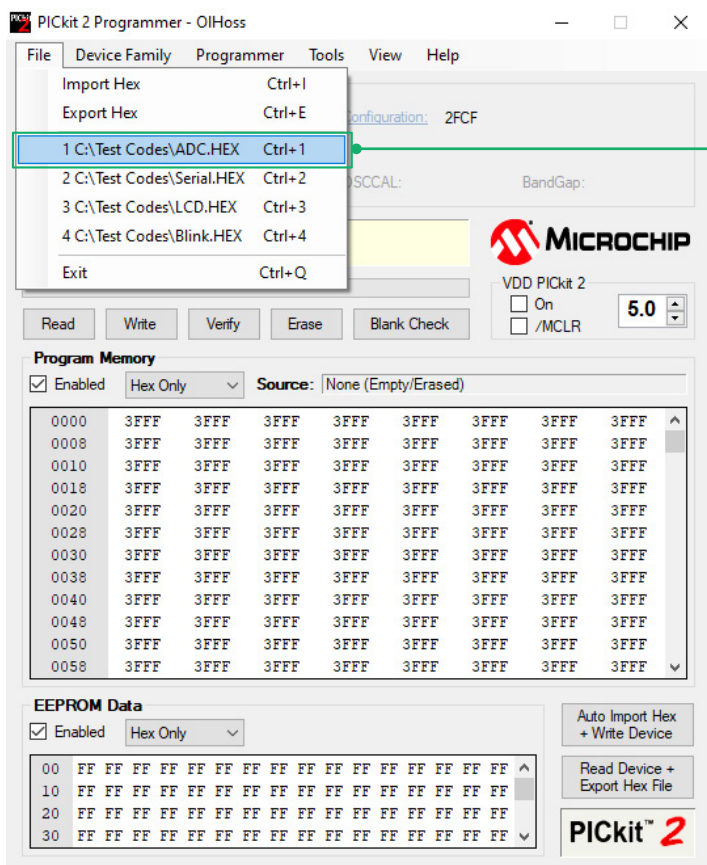
3- If the connection fails, verify all wiring and select **Tools** → **Check Communication**



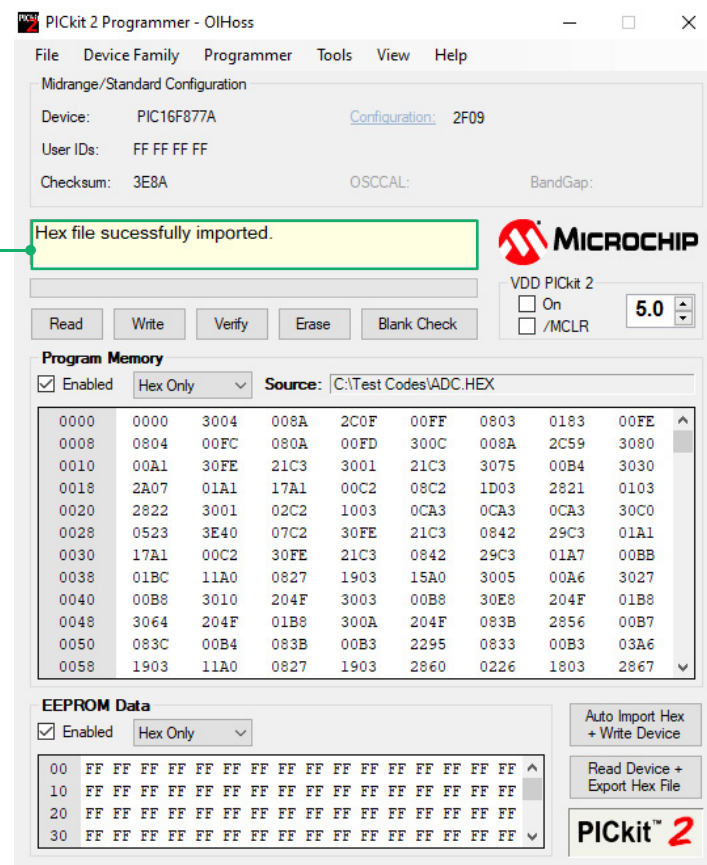
3



4- To load a firmware file: File → Import HEX

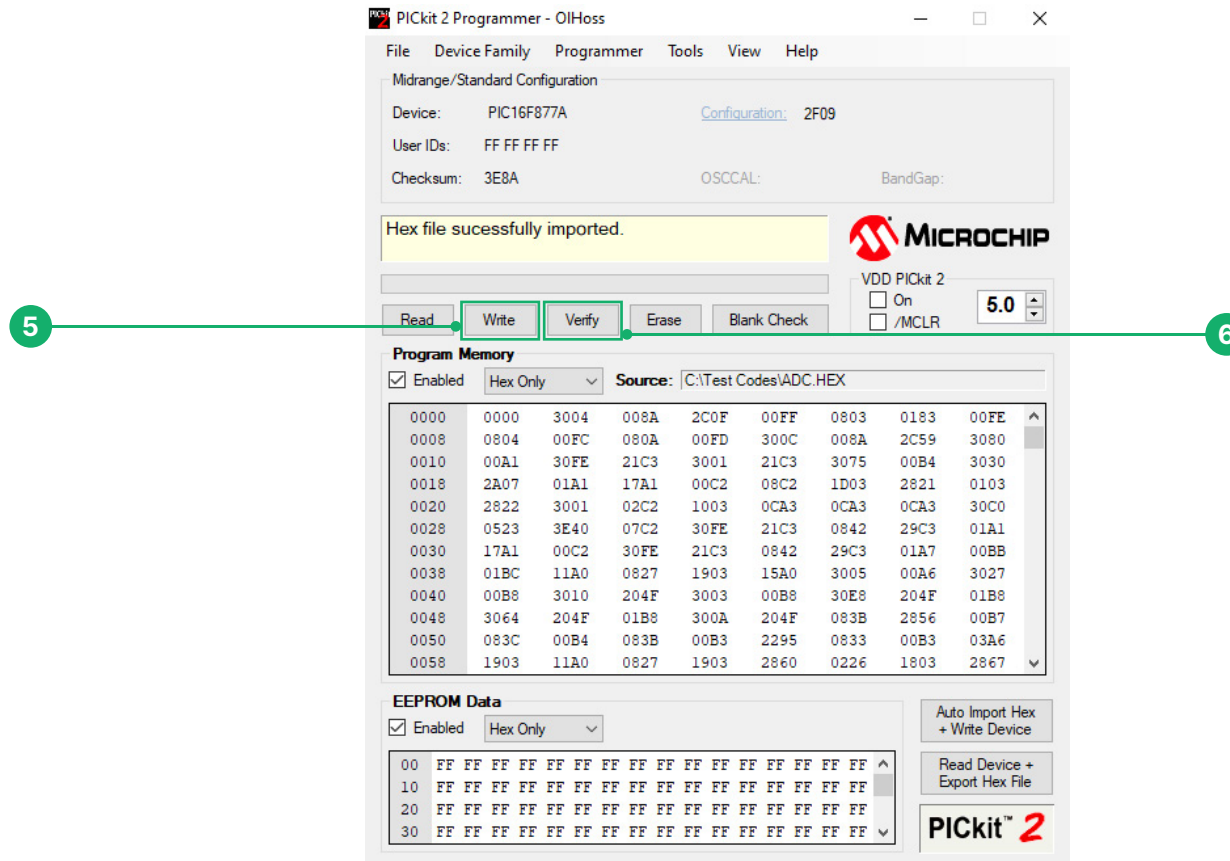


4



5- Click **Write** to program the target device.

6- Click **Verify** to compare device memory with the loaded HEX file.



Note: During programming operations, both **TGT** and **BSY** LEDs should illuminate.

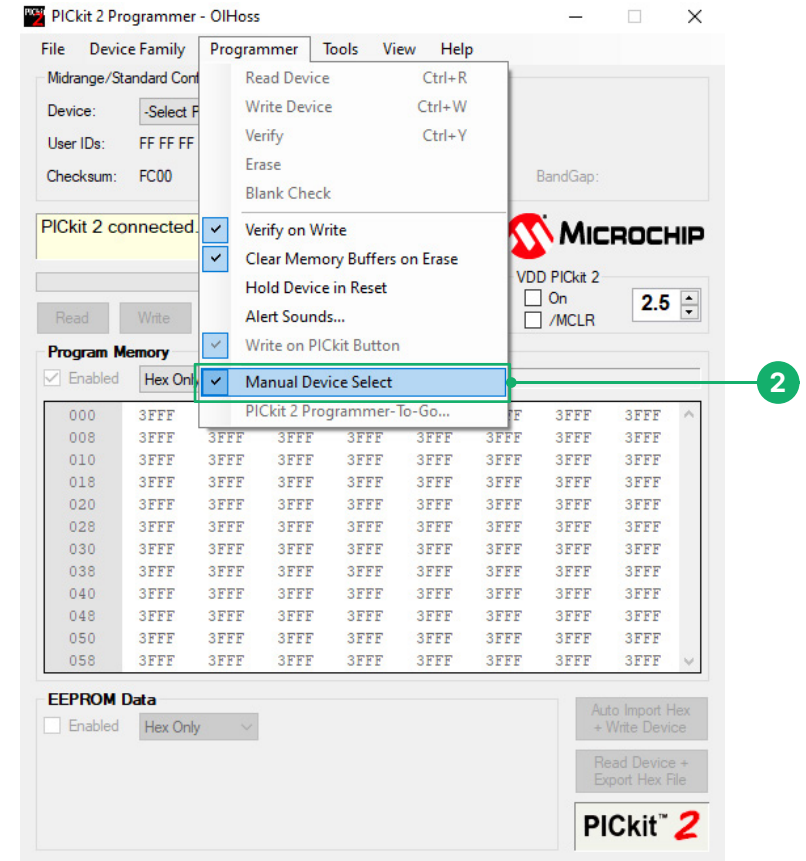
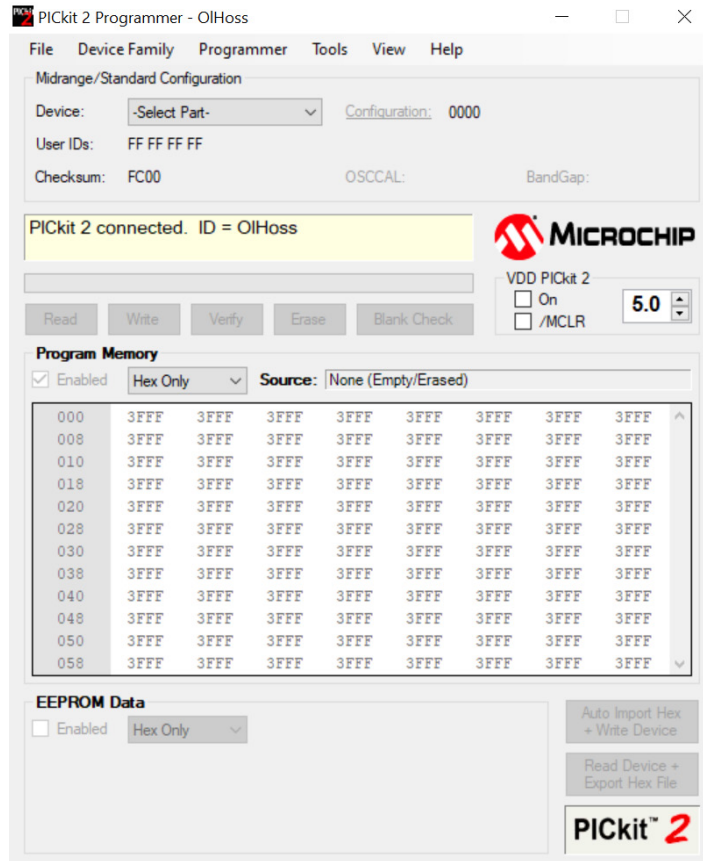
The programmer will indicate programming activity using the **BSY** and **TGT** LEDs:

LED	Status	Description
TGT	ON	Target device power is present and detected
	OFF	No target power detected
BSY	ON	Programming operation in progress
	OFF	Programmer is idle or programming completed

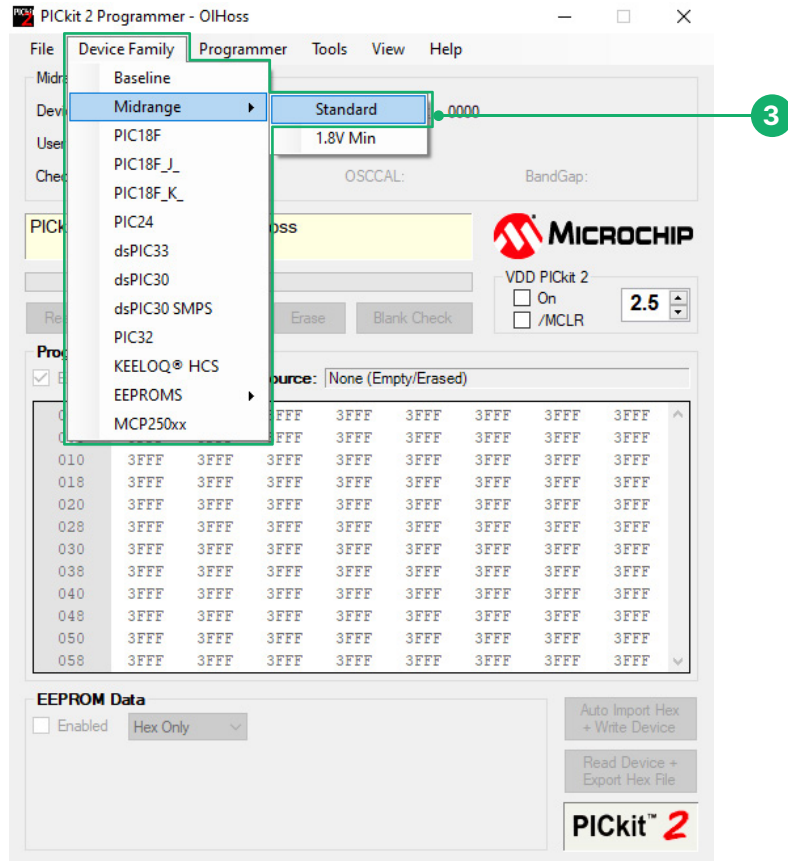
Software Operation – Programmer-To-Go Mode

1- Connect the programmer and launch the **PICKit 2** programmer software.

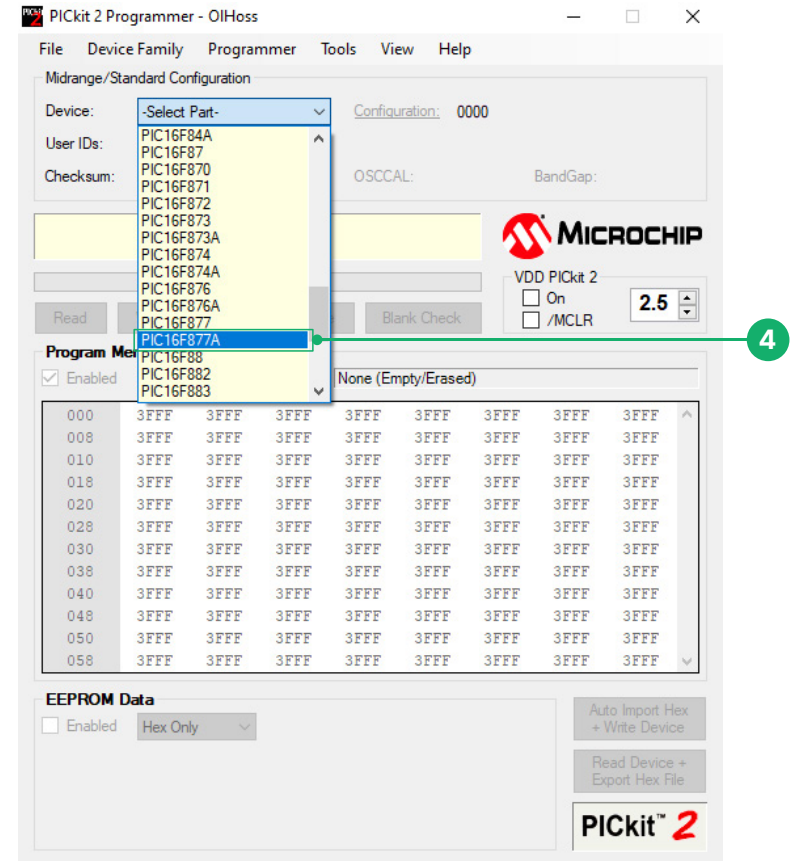
2- Select: Programmer → Manual Device Select



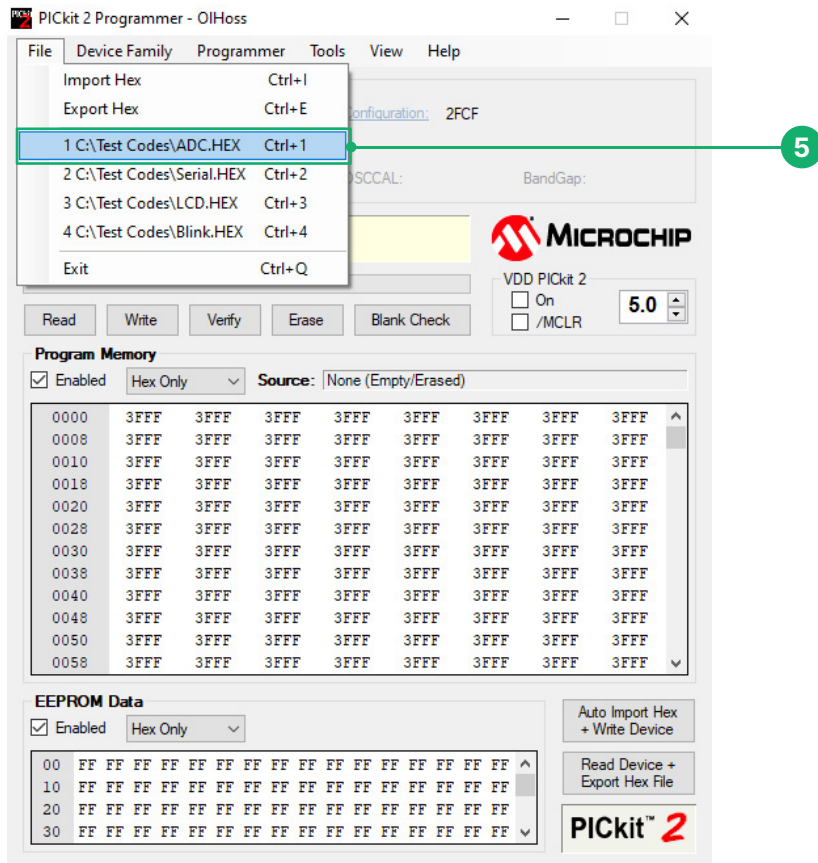
3- Select the device family of the target microcontroller.



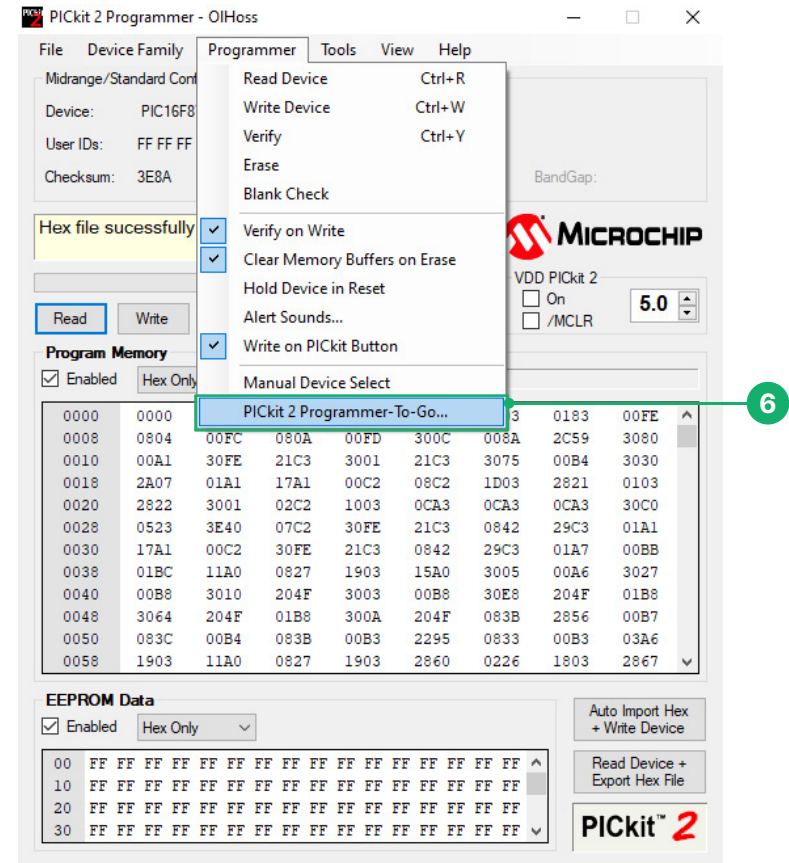
4- Select the target device name.



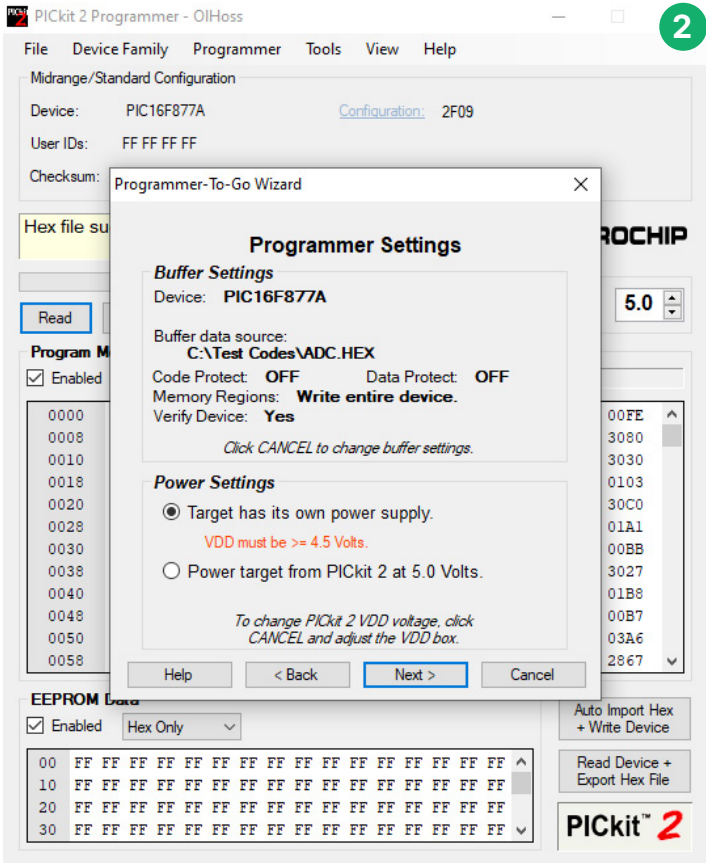
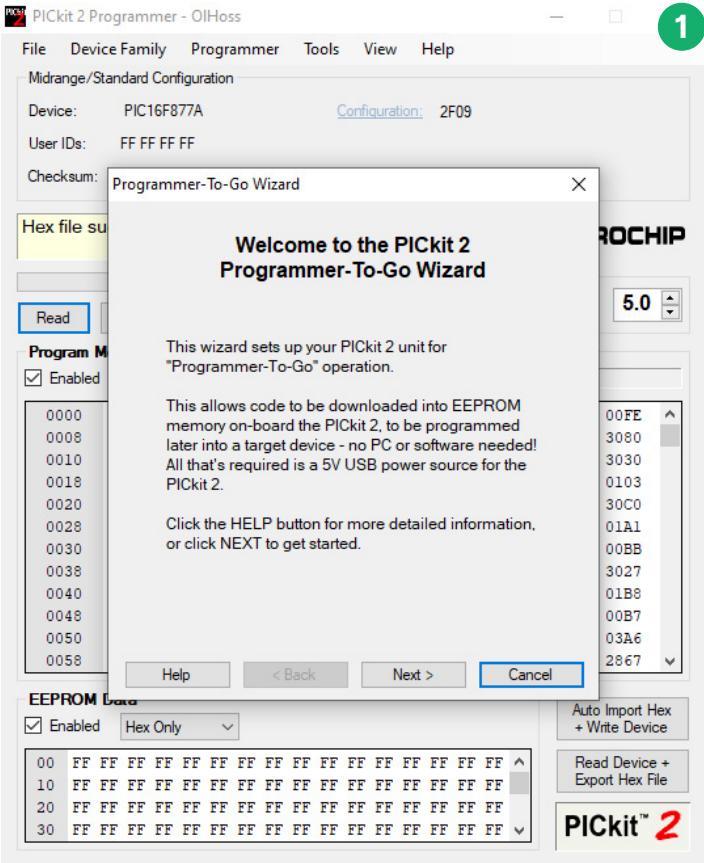
5- Import the desired HEX file.

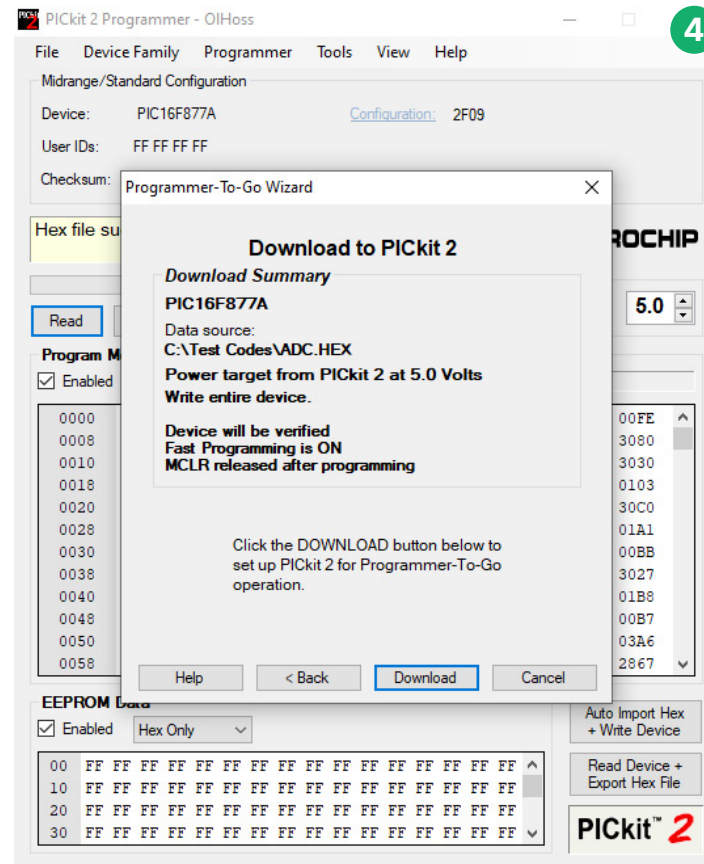
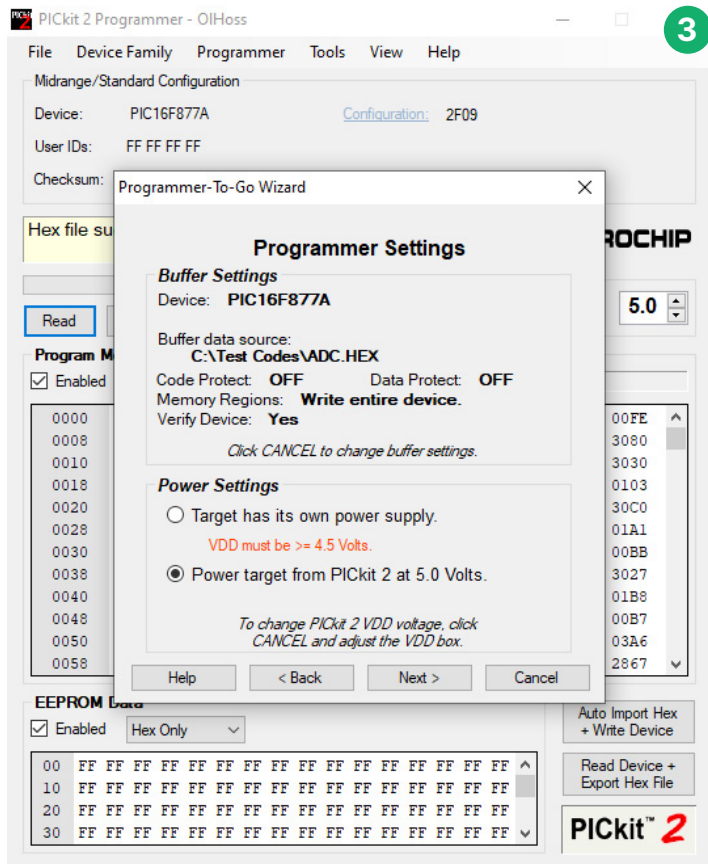


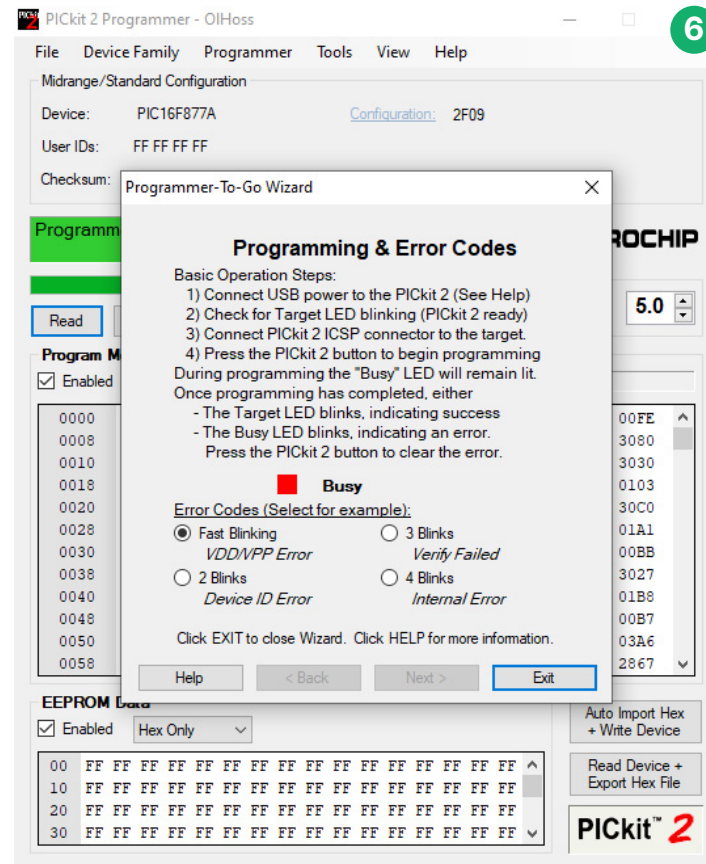
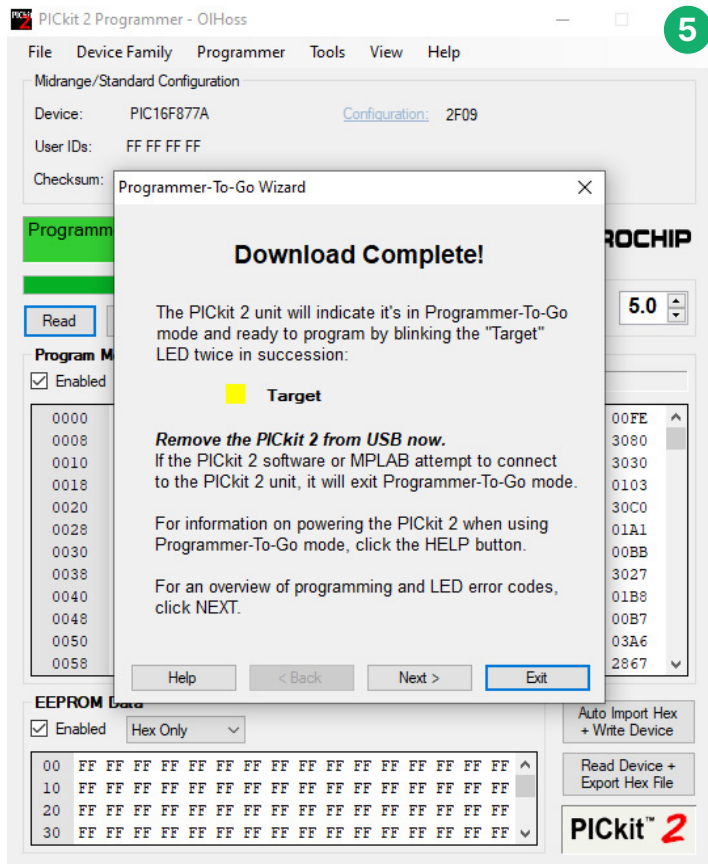
6- Select: Programmer → **PICkit 2** Programmer-To-Go



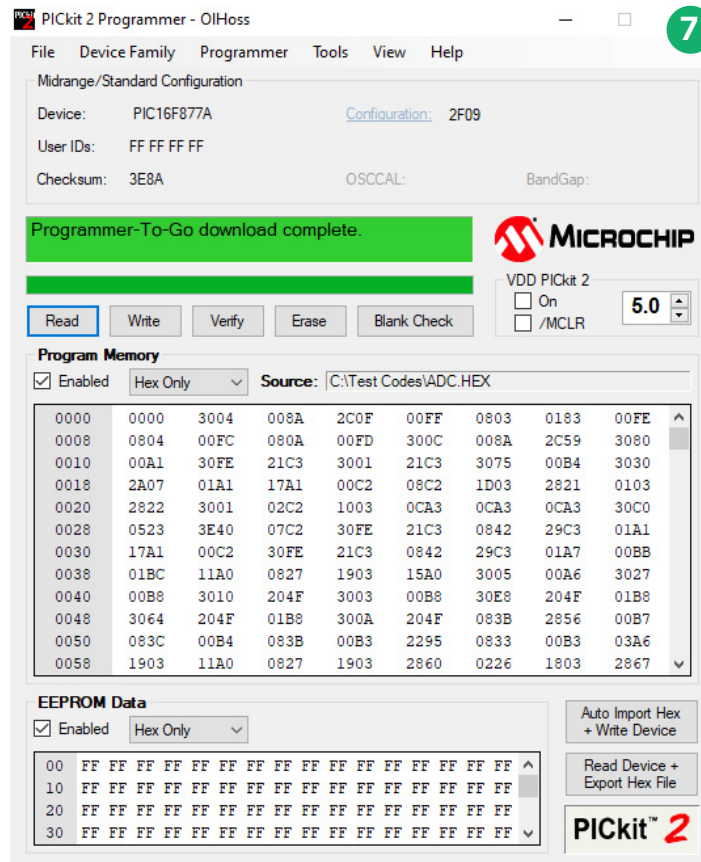
7- Follow the on-screen wizard to download the firmware image into the programmer.



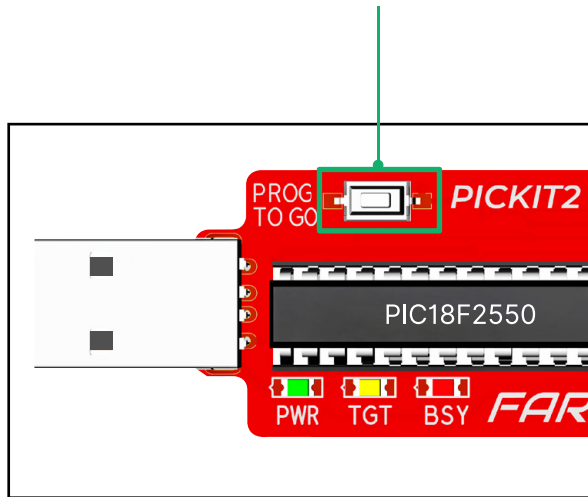




Disconnect the programmer from the computer.



- 8- Connect the target device.
- 9- Connect the programmer to any 5V USB power source.
- 10- Press the **PROG** pushbutton to begin programming.



Debugging Support

The **PICkit 2** supports in-circuit debugging for compatible PIC microcontrollers.

When used with MPLAB IDE, the debugger provides:

- Run and Halt Control.
- Single-Step Execution.
- Breakpoints.
- Register Monitoring.
- RAM Inspection.
- Variable Monitoring.

Debugging Requirements

- Supported PIC device with built-in ICD hardware.
- MPLAB IDE configured in Debug Mode.
- Proper ICSP connections.
- Available PGC and PGD pins.
- Compatible **PICkit 2** firmware.

Not all programmable devices support debugging.

Device Support

The **PICkit 2** supports a large selection of Microchip Flash-based PIC microcontrollers, including many devices from the following families:

Baseline Devices

PIC10F200	PIC10F202	PIC10F204	PIC10F206
PIC10F220	PIC10F222		
PIC12F508	PIC12F509	PIC12F510	PIC12F519
PIC16F505	PIC16F506	PIC16F526	
PIC16F54	PIC16F57	PIC16F59	

Midrange/1.8V Min Devices

PIC16F722	PIC16LF722		
PIC16F723	PIC16LF723	PIC16F724	PIC16LF724
PIC16F726	PIC16LF726	PIC16F727	PIC16LF727
PIC16F1933	PIC16F1934	PIC16F1936	PIC16F1937
PIC16F1938	PIC16F1939		
PIC16LF1933	PIC16LF1934	PIC16LF1936	PIC16LF1937
PIC16LF1938	PIC16LF1939		

Midrange/Standard-Devices

>> All 'LF' versions of devices are supported

PIC12F609	PIC12HV609		
PIC12F615	PIC12HV615		
PIC12F629	PIC12F635	PIC12F675	PIC12F683
PIC16F610	PIC16HV610	PIC16F616	PIC16HV616
PIC16F627	PIC16F628	PIC16F639	
PIC16F627A	PIC16F628A	PIC16F648A	
PIC16F630	PIC16F631	PIC16F636	PIC16F676
PIC16F677	PIC16F684	PIC16F685	PIC16F687
PIC16F688	PIC16F689	PIC16F690	
PIC16F72			
PIC16F73	PIC16F74	PIC16F76	PIC16F77
PIC16F716			
PIC16F737	PIC16F747	PIC16F767	PIC16F777
PIC16F785	PIC16HV785		
PIC16F84A	PIC16F87	PIC16F88	
PIC16F818	PIC16F819		
PIC16F870	PIC16F871	PIC16F872	
PIC16F873	PIC16F874	PIC16F876	PIC16F877
PIC16F873A	PIC16F874A	PIC16F876A	PIC16F877A
PIC16F882			
PIC16F883	PIC16F884	PIC16F886	PIC16F887
PIC16F913	PIC16F914	PIC16F916	PIC16F917
PIC16F946			

PIC18F Devices

>> All 'LF' versions of devices are supported

PIC18F242	PIC18F252	PIC18F442	PIC18F452	PIC18F6585	PIC18F6620	PIC18F6621	PIC18F6622
PIC18F248	PIC18F258	PIC18F448	PIC18F458	PIC18F6627	PIC18F6628	PIC18F6680	PIC18F6720
PIC18F1220	PIC18F1320	PIC18F2220		PIC18F6722	PIC18F6723		
PIC18F1230	PIC18F1330		PIC18F1330-ICD	PIC18F8310	PIC18F8390	PIC18F8393	PIC18F8410
PIC18F2221	PIC18F2320	PIC18F2321	PIC18F2331	PIC18F8490	PIC18F8493		
PIC18F2410	PIC18F2420	PIC18F2423	PIC18F2431	PIC18F8520	PIC18F8525	PIC18F8527	PIC18F8585
PIC18F2450	PIC18F2455	PIC18F2458	PIC18F2480	PIC18F8620	PIC18F8621	PIC18F8622	PIC18F8627
PIC18F2510	PIC18F2515	PIC18F2520	PIC18F2523	PIC18F8628			
PIC18F2525	PIC18F2550	PIC18F2553	PIC18F2580	PIC18F8680	PIC18F8720	PIC18F8722	PIC18F8723
PIC18F2585							
PIC18F2610	PIC18F2620	PIC18F2680	PIC18F2682				
PIC18F2685							
PIC18F4220	PIC18F4221	PIC18F4320	PIC18F4321				
PIC18F4331	PIC18F4410	PIC18F4420	PIC18F4423				
PIC18F4431	PIC18F4450	PIC18F4455	PIC18F4458				
PIC18F4480							
PIC18F4510	PIC18F4515	PIC18F4520	PIC18F4523				
PIC18F4525	PIC18F4550	PIC18F4553	PIC18F4580				
PIC18F4585							
PIC18F4610	PIC18F4620	PIC18F4680	PIC18F4682				
PIC18F4685	PIC18F6310	PIC18F6390	PIC18F6393				
PIC18F6410	PIC18F6490	PIC18F6493	PIC18F6520				
PIC18F6525	PIC18F6527						

PIC18F_J_Devices

PIC18F24J10	PIC18LF24J10			PIC18F86J90			
PIC18F24J11	PIC18LF24J11	PIC18F24J50	PIC18LF24J50	PIC18F87J10	PIC18F87J11	PIC18F87J50	PIC18F87J60
PIC18F25J10	PIC18LF25J10			PIC18F87J90			
PIC18F25J11	PIC18LF25J11	PIC18F25J50	PIC18LF25J50	PIC18F96J60	PIC18F96J65	PIC18F97J60	
PIC18F26J11	PIC18LF26J11	PIC18F26J50	PIC18LF26J50				
PIC18F44J10	PIC18LF44J10						
PIC18F44J11	PIC18LF44J11	PIC18F44J50	PIC18LF44J50				
PIC18F45J10	PIC18LF45J10						
PIC18F45J11	PIC18LF45J11	PIC18F45J50	PIC18LF45J50				
PIC18F46J11	PIC18LF46J11	PIC18F46J50	PIC18LF46J50				
PIC18F63J11	PIC18F63J90	PIC18F64J11	PIC18F64J90				
PIC18F65J10	PIC18F65J11	PIC18F65J15	PIC18F65J50				
PIC18F65J90							
PIC18F66J10	PIC18F66J11	PIC18F66J15	PIC18F66J16				
PIC18F66J50	PIC18F66J55	PIC18F66J60	PIC18F66J65				
PIC18F66J90							
PIC18F67J10	PIC18F67J11	PIC18F67J50	PIC18F67J60				
PIC18F67J90							
PIC18F83J11	PIC18F83J90	PIC18F84J11	PIC18F84J90				
PIC18F85J10	PIC18F85J11	PIC18F85J15	PIC18F85J50				
PIC18F85J90							
PIC18F86J10	PIC18F86J11	PIC18F86J15	PIC18F86J16				
PIC18F86J50	PIC18F86J55	PIC18F86J60	PIC18F86J65				

PIC18F_K_Devices

PIC18F13K22	PIC18LF13K22	PIC18F14K22	PIC18LF14K22
PIC18F13K50	PIC18LF13K50	PIC18F14K50	PIC18LF14K50
PIC18F14K50-ICD			
PIC18F23K20	PIC18F24K20	PIC18F25K20	PIC18F26K20
PIC18F43K20	PIC18F44K20	PIC18F45K20	PIC18F46K20

PIC24 Devices

PIC24F04KA200	PIC24F04KA201	
PIC24F08KA101	PIC24F08KA102	
PIC24F16KA101	PIC24F16KA102	
PIC24FJ16GA002	PIC24FJ16GA004	
PIC24FJ32GA002	PIC24FJ32GA004	
PIC24FJ32GA102	PIC24FJ32GA104	
PIC24FJ48GA002	PIC24FJ48GA004	
PIC24FJ64GA002	PIC24FJ64GA004	
PIC24FJ64GA102	PIC24FJ64GA104	
PIC24FJ64GA006	PIC24FJ64GA008	PIC24FJ64GA010
PIC24FJ96GA006	PIC24FJ96GA008	
PIC24FJ128GA006	PIC24FJ128GA008	PIC24FJ128GA010
PIC24FJ128GA106	PIC24FJ128GA108	PIC24FJ128GA110
PIC24FJ192GA106	PIC24FJ192GA108	PIC24FJ192GA110
PIC24FJ256GA106	PIC24FJ256GA108	PIC24FJ256GA110
PIC24FJ32GB002	PIC24FJ32GB004	
PIC24FJ64GB002		

PIC24FJ64GB106	PIC24FJ64GB108	PIC24FJ64GB110
PIC24FJ128GB106	PIC24FJ128GB108	PIC24FJ128GB110
PIC24FJ192GB106	PIC24FJ192GB108	PIC24FJ192GB110
PIC24FJ256GB106	PIC24FJ256GB108	PIC24FJ256GB110
PIC24HJ12GP201	PIC24HJ12GP202	
PIC24HJ16GP304		
PIC24HJ32GP202	PIC24HJ32GP204	
PIC24HJ32GP302	PIC24HJ32GP304	PIC18F14K50
PIC24HJ64GP202	PIC24HJ64GP204	
PIC24HJ64GP206	PIC24HJ64GP210	
PIC24HJ64GP502		
PIC24HJ64GP504	PIC24HJ64GP506	PIC24HJ64GP510
PIC24HJ128GP202	PIC24HJ128GP204	
PIC24HJ128GP206	PIC24HJ128GP210	
PIC24HJ128GP306		
PIC24HJ128GP502	PIC24HJ128GP504	
PIC24HJ128GP506	PIC24HJ128GP510	
PIC24HJ256GP206	PIC24HJ256GP210	PIC24HJ256GP610

dsPIC33 Devices

dsPIC33FJ06GS101	dsPIC33FJ06GS102	dsPIC33FJ06GS202
dsPIC33FJ16GS402	dsPIC33FJ16GS404	
dsPIC33FJ16GS502	dsPIC33FJ16GS504	
dsPIC33FJ12GP201	dsPIC33FJ12GP202	
dsPIC33FJ16GP304		
dsPIC33FJ32GP202	dsPIC33FJ32GP204	
dsPIC33FJ32GP302	dsPIC33FJ32GP304	
dsPIC33FJ64GP202	dsPIC33FJ64GP204	
dsPIC33FJ64GP206	dsPIC33FJ64GP306	dsPIC33FJ64GP310
dsPIC33FJ64GP706	dsPIC33FJ64GP708	dsPIC33FJ64GP710
dsPIC33FJ64GP802	dsPIC33FJ64GP804	
dsPIC33FJ128GP202	dsPIC33FJ128GP204	
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dsPIC33FJ128GP706	dsPIC33FJ128GP708	dsPIC33FJ128GP710
dsPIC33FJ256GP506	dsPIC33FJ256GP510	dsPIC33FJ256GP710
dsPIC33FJ128GP802	dsPIC33FJ128GP804	
dsPIC33FJ12MC201	dsPIC33FJ12MC202	
dsPIC33FJ16MC304		
dsPIC33FJ32MC202	dsPIC33FJ32MC204	
dsPIC33FJ32MC302	dsPIC33FJ32MC304	
dsPIC33FJ64MC202	dsPIC33FJ64MC204	
dsPIC33FJ64MC506	dsPIC33FJ64MC508	dsPIC33FJ64MC510
dsPIC33FJ64MC706	dsPIC33FJ64MC710	
dsPIC33FJ64MC802	dsPIC33FJ64MC804	

dsPIC33FJ128MC202	dsPIC33FJ128MC204	
dsPIC33FJ128MC506	dsPIC33FJ128MC510	dsPIC33FJ128MC706
dsPIC33FJ128MC708	dsPIC33FJ128MC710	
dsPIC33FJ256MC510	dsPIC33FJ256MC710	
dsPIC33FJ128MC802	dsPIC33FJ128MC804	

dsPIC33 Devices

dsPIC30F2010	dsPIC30F2011	dsPIC30F2012
dsPIC30F3010	dsPIC30F3011	dsPIC30F3012
dsPIC30F3013	dsPIC30F3014	
dsPIC30F4011	dsPIC30F4012	dsPIC30F4013
dsPIC30F5011	dsPIC30F5013	dsPIC30F5015
dsPIC30F5016		
dsPIC30F6010A	dsPIC30F6011A	dsPIC30F6012A
dsPIC30F6013A	dsPIC30F6014A	dsPIC30F6015

dsPIC30 SMPS Devices

dsPIC30F1010	
dsPIC30F2020	dsPIC30F2023

PIC32 Devices

PIC32MX320F032H	PIC32MX320F064H	PIC32MX320F128L
PIC32MX320F128H		
PIC32MX340F128H	PIC32MX340F128L	
PIC32MX340F256H		
PIC32MX340F512H		
PIC32MX360F256L	PIC32MX360F512L	
PIC32MX420F032H		
PIC32MX440F128L	PIC32MX440F128H	
PIC32MX440F256H	PIC32MX440F512H	
PIC32MX460F256L	PIC32MX460F512L	

MCP250xx CAN Devices

MCP25020	MCP25025
MCP25050	MCP25055

PIC32 Devices

HCS200	HCS201	HCS300	HCS301	HCS320
HCS360	HCS361	HCS362		

Troubleshooting

Problem	Possible Cause	Solution
Programmer not detected	USB connection issue	Reconnect the programmer and run "Check Communication."
Target not detected	Incorrect ICSP wiring	Verify ICSP pin connections
Programming failed	Insufficient target power	Verify target supply voltage
Verify failed	Incorrect HEX file or device selection	Confirm device type and reload HEX file
Debugging unavailable	Device does not support ICD	Use a supported debug-capable device
TGT LED off	No target voltage detected	Check power source and wiring

BSY LED Error Indications (PTG) Mode

The BSY LED may indicate specific error conditions through blinking patterns. Only error indications are listed below.

BSY LED Pattern	Error Condition
• • • •	Target device not detected
• • • • • •	Device family not supported
• • • • • • • •	Programming failed
• • • • • • • • • •	Verification failed
• • • • • • • • • • • •	Target voltage out of range
Continuous blinking	Communication error between programmer and target device

Package Contents

- **PICKit 2** Programmer/Debugger.
- USB Type-A Male to Type-A Female Extension Cable.
- -6Pin ICSP Programming Cable (2.54 mm XH Connector).

For the latest product updates and documentation, visit: www.fares-pcb.com
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