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PIC16F13145 Family Silicon Errata and Data Sheet Clarifications

PIC16F13145 Family

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Introduction

The PIC16F13145 devices that you have received conform functionally to the current device data sheet (DS40002519**D**), except for the anomalies described in this document.

The silicon issues discussed in the following pages are for silicon revisions with the Device and Revision IDs listed in the table below.

The errata described in this document will be addressed in future revisions of the PIC16F13145 silicon.

Note: This document summarizes all silicon errata issues from all revisions of silicon, previous as well as current.

Table 1. Silicon Device Identification

Part Number	Device ID	Revision ID		
		A2	A3	A4
PIC16F13113	0x3121	0xA002	0xA003	0xA004
PIC16F13114	0x3124	0xA002	0xA003	0xA004
PIC16F13115	0x3127	0xA002	0xA003	0xA004
PIC16F13123	0x3122	0xA002	0xA003	0xA004
PIC16F13124	0x3125	0xA002	0xA003	0xA004
PIC16F13125	0x3128	0xA002	0xA003	0xA004
PIC16F13143	0x3123	0xA002	0xA003	0xA004
PIC16F13144	0x3126	0xA002	0xA003	0xA004
PIC16F13145	0x3129	0xA002	0xA003	0xA004

Important: Refer to the **Device/Revision ID** section in the device data sheet for more detailed information on Device Identification and Revision IDs for your specific device.

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Silicon Issue Summary

Table 2. Silicon Issue Summary

Module	Feature	Item No.	Issue Summary	Affected Revisions		
				A2	A3	A4
Analog-to-Digital Converter (ADC)	ADC Clock Period (T_{AD})	1.1.1	The ADC operates at half of the specified speed.	X		
Electrical Specifications	I_{PD}	1.2.1	Power-down currents (I_{PD}) may be higher than the data sheet specifications.	X		
Program Flash Memory (PFM)	Instruction Fetch	1.3.1	The First Instruction Fetch by the CPU Under Certain Conditions Will Fail.	X	X	

Note: Only those issues indicated in the last column apply to the current silicon revision.

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1. Silicon Errata Issues

NOTICE This document summarizes all silicon errata issues from all revisions of silicon, previous and current. Only the issues indicated by the bold font in the following tables apply to the current silicon revision.

1.1. Module: Analog-to-Digital Converter with Computation (ADCC)

1.1.1. The ADC Operates at Half of the Specified Speed

The minimum ADC Clock Period (T_{AD}) is specified as 1 µs in the device data sheet; however, the actual minimum T_{AD} is 2 µs.

Work around

None.

Affected Silicon Revisions

A2	A3	**A4**					
X							

1.2. Module: Electrical Specifications

1.2.1. Power-Down Currents (I_{PD}) May Be Higher Than the Data Sheet Specifications

All Power-Down Currents (I_{PD}) may be up to 5 µA higher than the values listed in the data sheet's **"Electrical Specifications"** section.

Work around

None.

Affected Silicon Revisions

A2	A3	**A4**					
X							

1.3. Module: Program Flash Memory (PFM)

1.3.1. The First Instruction Fetch by the CPU Under Certain Conditions Will Fail

The first instruction fetch by the CPU will fail immediately after Power-up, a device Reset, waking up from Sleep, or jumping into an Interrupt Service Routine (ISR). This failure occurs when the device frequency is above 16 MHz (F_{OSC} **>** 16 MHz).

Work arounds

Option 1: Reduce the device frequency to 16 MHz or below (F_{OSC} **≤** 16 MHz).

Option 2: If the device must operate above 16 MHz:

1. Open the **Project Properties** window (see The First Instruction Fetch by the CPU Under Certain Conditions Will Fail).
2. Under the **XC8 Linker** categories tab, fill in the information as shown below:
   a. In the **Option categories** drop-down menu, select **Fill Flash Memory**:
      - In the **Which area to fill** field, select **Provide Range to fill**
      - In the **How to fill it** field, select **Constant or incrementing value**

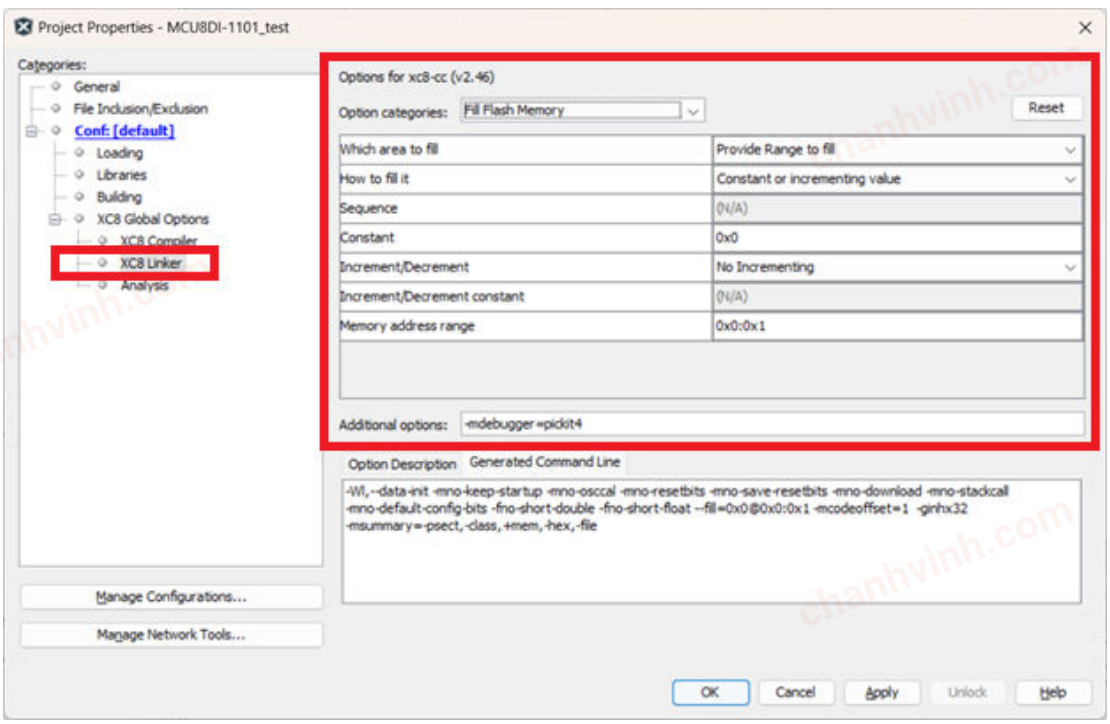
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- In the **Constant** field, enter **0x0**
- In the **Increment/Decrement** field, select **No Incrementing**
- In the **Memory address range** field, enter '**0x0:0x1**
- In the **Additional options** field, enter `-mdebugger=type`, where *type* is the type of debugger tool used for programming/debugging the device as defined in the table below:

Type	Debugger selected
none	No debugger
icd2	MPLAB® ICD 2
icd3	MPLAB ICD 3
icd4	MPLAB ICD 4
icd5	MPLAB ICD 5
pickit2	PICkit™ 2
pickit3	PICkit 3
pickit4	PICkit 4
pickit5	PICkit 5
realice	MPLAB REAL ICE™ In-circuit Emulator
ice4	MPLAB ICE 4 In-circuit Emulator
snap	MPLAB Snap

Figure 1-1. Project Properties "Fill Flash Memory" Option Category Window View

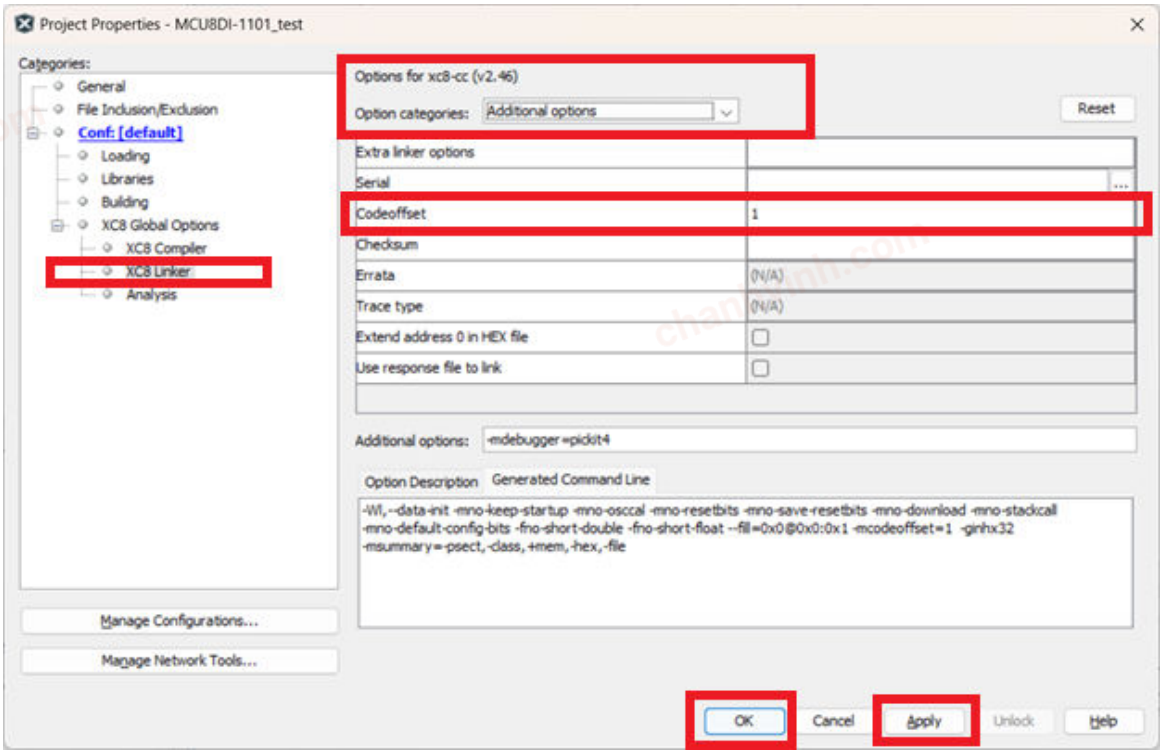


b. In the **Option categories** drop-down menu (see Figure 1-2), select **Additional options**:
   - In the **Codeoffset** field, enter **1**
   - Press the **Apply** button, then press the **OK** button

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Figure 1-2. Project Properties "Additional Options" Option Category Window View



3. Add two `NOP()` instructions immediately after any `SLEEP` instruction(s):

```
#include "mcc_generated_files/system/system.h"

int main(void)
{
    SYSTEM_Initialize();
    INTERRUPT_GlobalInterruptEnable();
    WeatherStation_Initialize();

    while(1)
    {
        if(tmr1_tick == 1)
        {
            WeatherStation_Print();
            tmr1_tick = 0;
        }
        SLEEP();        // Wait for interrupt
        NOP();
        NOP();          // Ensure instruction pre-fetched while sleeping
                        // is safe to execute on awakening
    }
}
```

Affected Silicon Revisions

A2	A3	**A4**					
X	X						

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2. Data Sheet Clarifications

The following typographic corrections and clarifications are to be noted for the latest version of the device data sheet (DS40002519**D**):

Note:
Corrections are shown in **bold**. Where possible, the original bold text formatting has been removed for clarity.

2.1. None

There are no known data sheet clarifications as of this publication date.

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3. Appendix A: Revision History

Doc Rev.	Date	Comments
F	10/2025	Updated Data Sheet revision letter (D); other minor updates and improvements.
E	11/2024	Added silicon revision A4.
D	07/2024	Update to errata item 1.3.1.
C	06/2024	Corrected the revision history so document revision matches revision history; added errata item 1.3.1.
B	05/2024	Update to the data sheet revision letter; added silicon revision A3.
A	12/2023	Initial release of this document.

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