

Table of Contents

1. What is Class B Library?.....	3
2. Tool Requirements.....	4
3. Installing Class B Library.....	5
4. What's New?.....	6
5. Migration Issues.....	7
6. Repairs and Enhancements.....	8
7. Known Issues.....	10
8. Frequently Asked Questions.....	11
9. Supported Device Families.....	12
10. Devices And Modules Support.....	13
11. List of Supported Diagnostics.....	14
12. Software License Information.....	15
13. Customer Support.....	16
14. The Microchip Website.....	17

1. What is Class B Library?

The dsPIC33A Class B Library is a collection of implemented diagnostics APIs of various modules of a microcontroller. These diagnostic APIs help in achieving the IEC 60730 standard to support the Class B compliance. These routines can be directly integrated with the end user's application to test and verify the critical functionalities of a microcontroller.

Note: This Class B library must be used along with other documents as specified in [Frequently Asked Questions](#)

2. Tool Requirements

- MPLAB X IDE v6.30 and above
- XC-DSC Compiler v3.31.01 and above
- dsPIC33AK512MPS512 DFP 1.3.185
- dsPIC33AK128MC106 DFP 1.4.172

3. Installing Class B Library

The library is provided as a zip file. Users can integrate the code with their application. While integrating, users should not modify the source code and shall only configure the library through config files and APIs. See [Frequently Asked Questions](#)

4. What's New?

In v3.1.0

This release has the diagnostics developed for the dsPIC33AK128MC106 device family with all the modules supported in v3.0.0.

In v3.0.0

This is the first version of the Class B library developed for the dsPIC33A family of devices. This release has the diagnostics developed for the dsPIC33AK512MPS512 device family with the following 10 modules.

1. ADC
2. CLOCK
3. CPU
4. CRC
5. FLASH
6. GPIO
7. INTERRUPT
8. PC
9. SRAM
10. TIMER

5. Migration Issues

NIL

6. Repairs and Enhancements

SI No	ID	Module	Description	Comments
1	CB_310_01	Flash	In the Flash CRC Test changed OR operator to AND operator in NULL pointer check to ensure both flashBlockStart and flashBlockEnd pointers are valid	Bugfix
2	CB_310_02	Flash	Added volatile qualifier to diagFlashModeEnabled variable to prevent compiler optimization issues	Bugfix
3	CB_310_03	ADC	For the ADC Software trigger corrected base address from controlReg to softTrigReg for software trigger register calculation in save and restore operations	Bugfix
4	CB_310_04	CPU	For testing the CPU SPLIM register an incorrect test pattern 0xAAAAAA8 was corrected to 0xAAAAAA88	Bugfix
5	CB_310_05	CPU	In the CPU VFA Register Test changed VFA register test to be skipped as the value is linker dependent and cannot be reliably tested with fixed value	Bugfix
6	CB_310_06	Timer	In timer Functional Test added DIAG_TIMER_MAX_COUNTS constant and overflow protection when calculating maximum timer count with large tolerance values	Bugfix
7	CB_310_07	Timer	As a part of the Timer Results Enum datatype, added DIAG_TIMER_RESULT_NONE state to enum for explicit initialization of test results before analysis	Bugfix
8	CB_310_08	PC	Initialized the result variable to 0 in diag_pc_programcount	Bugfix

SI No	ID	Module	Description	Comments
			ertest.c to prevent undefined behavior	
9	CB_310_09	Clock	Initialized status variable to 0 in diag_clock_fsmtest.c to prevent undefined behavior	Bugfix
10	CB_310_10	Clock	In the Clock Monitor Test, removed unused DIAG_CLOCK_GetClock MonFaultStatus function and replaced with direct variable access for code cleanup	Bugfix

7. Known Issues

NIL

8. Frequently Asked Questions

Q. What is the starting point to use this Class B library?

A. After unzipping the library, refer to the **"readme"** file at the base folder

Q. Can the code be modified while integrating with the application?

A. Other than the configuration header files, the code is not meant to be modified. Any such code changes could potentially invalidate the test reports. If there are any queries, improvement suggestions or any bugs, please contact Microchip.

Q. What are config files?

A. The header files under the **"inc"** folder of individual modules can contain some user configurable items along with the function prototypes. The files under **"src"** folder are **not** user configurable.

Q. What additional documents must be used along with this Library?

A. Refer to the **"readme"** file at the base folder

Q. Can the diagnostics be used with any device?

A. The short answer is NO. The diagnostics are developed for the highest variant in a particular family of devices. These diagnostics have to be ported to the lower variant of the same family of devices. The **"porting guide"** document provided with the release provides all the information needed to do this porting. The diagnostics are not guaranteed to work if they are used in the lower variants, without porting.

9. Supported Device Families

- dsPIC33AK512MPS512 www.microchip.com/dspic33ak512mps512
- dsPIC33AK128MC106 www.microchip.com/dspic33ak128mc106

10. Devices And Modules Support

	SRAM	FLASH	INTERRU PT	GPIO	CPU	ADC	TIMER	PC	CRC	CLOCK
dsPIC33A K512MPS 512	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
dsPIC33A K128MC1 06	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

11. List of Supported Diagnostics

Note:

Implemented Periodicity

S - Startup

P - Periodic

O - On demand

Module	Supported Diagnostics
SRAM	- SW_SRAM_REPLICATION_PRACTICE_01 (O) - SW_SRAM_ECC_SINGLE_DOUBLE_ERROR_DETECTION_TEST_01(S,P,O)
FLASH	- SW_FLASH_ECC_SINGLE_DOUBLE_ERROR_DETECTION_TEST_01(S,P,O) - SW_FLASH_INTEGRITY_READ_PRACTICE_01(P,O) - SW_FLASH_WRITE_VERIFY_PRACTICE_01(O) - SW_FLASH_MEMORY_CRC_PRACTICE_01(S,P,O)
GPIO	- SW_GPIO_PORTS_INPUT_PRACTICE_01(S,P,O) - SW_GPIO_PORTS_OUTPUT_TEST_01(S,P,O) - SW_GPIO_ACTIVITY_CHECK_01(O) - SW_GPIO_PORTS_INTERRUPT_GENERATION_TEST_01(S,P,O) - SW_GPIO_PPS_OUTPUT_CONNECTION_TEST_01 (S,P,O) - SW_IO_MONITOR_TEST_01 (S,P,O)
INTERRUPTS	- SW_INTERRUPT_SERVICING_TEST_01 (S,P,O) - SW_EXTERNAL_INTERRUPT_TEST_01 (S,P,O) - SW_INTERRUPT_FREQUENCY_CHECK_01(O) - SW_HARD_TRAP_TEST_01(S,P,O) - SW_ISR_CLEARED_CHECK_01(O)
TIMER	- SW_TIMER_FUNCTIONAL_TEST_02(S,P,O) - SW_TIMER_LINEARITY_TEST_01(P)
CPU	- SW_CPU_REGISTER_RESET_STATE_TEST_01(S) - SW_CPU_CONTROL_REGISTER_TEST_01(S,P,O) - SW_CPU_SELF_TEST_01(P,O)
ADC	- SW_ADC_BOUNDARY_MONITOR_TEST_01(S,P,O) - SW_ADC_LINEARITY_MONOTONICITY_TEST_01(S,P,O) - SW_ADC_STARTUP_TEST_01 (S,P,O)
CRC	SW_CRC_FUNCTIONAL_TEST_01(S,P,O)
CLOCK	SW_FAIL_SAFE_CLOCK_MONITOR_TEST(S,P,O)
PC	SW_PROGRAM_COUNTER_TEST(S,P,O)

12. Software License Information

This software is not re-distributable. A License file is usually distributed along with the software in the 'doc' folder. If it is not found, then check with the Microchip representative to get the relevant license before using this software.

13. Customer Support

Users of Microchip products can receive assistance through several channels:

- Distributor or Representative
- Local Sales Office
- Embedded Solutions Engineer (ESE)
- Technical Support

Customers should contact their distributor, representative or ESE for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in this document.

Technical support is available through the website at: www.microchip.com/support

14. The Microchip Website

Microchip provides online support via our website at www.microchip.com/. This website is used to make files and information easily available to customers. Some of the content available includes:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip design partner program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives