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Chapter 1 Introduction

1.1 General Description

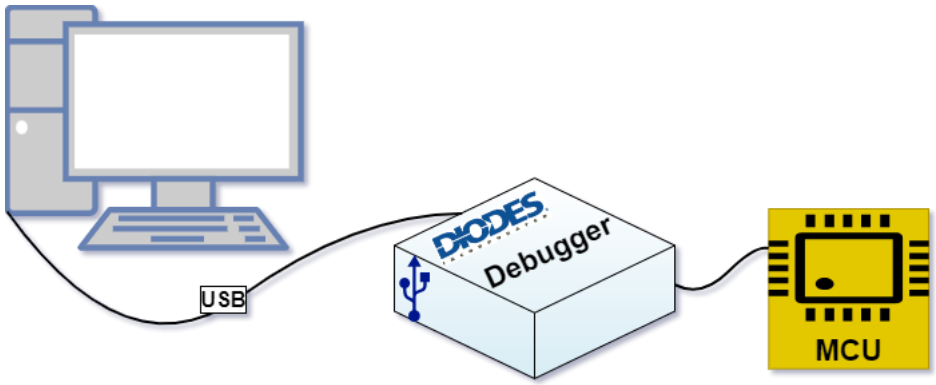
The Diodes Incorporated (Diodes) debugger is a debugging tool for Diodes' Cortex®-M0 microprocessors. It uses collaborative development software for programming design in embedded systems. The Diodes debugger is used by connecting to a PC through a USB port, to download and upload the program onto an emulation (EMU) board to implement programming debug and modification. This tool can be adopted to develop consumer/multimedia applications on Diodes' integrated circuit products.

1.2 Features

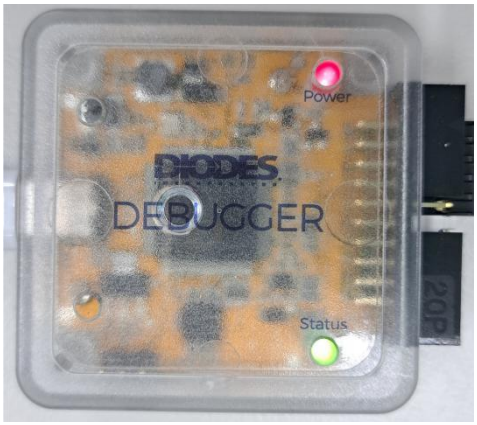
- USB bus power, no extra DC power input and low power consumption
- Supports Keil® for ARM®
- Built-in DC power supply for EMU Board (DC supply: 5V/3.3V/OFF selectable)
- Power Supply Current: 200mA
- Built-in high speed 32-bit ARM Cortex-M4 CPU core
- High compatibility in using Windows USB driver (HID class)
- USB Type-C® supported
- Built-in system programming mechanism for firmware self-upgrading
- High-speed serial interface engine (SIE) for ICE serial clock generation
- Overcurrent detection
- Enhanced burst mode download
- Adaptive fast clock selection with different EMU board download speeds
- Supports SRAM/Internal FLASH download with EMU board
- Debug interface voltage range: 1.65V to 5.5V
- Small compact and lightweight
- General purpose program development for embedded system design

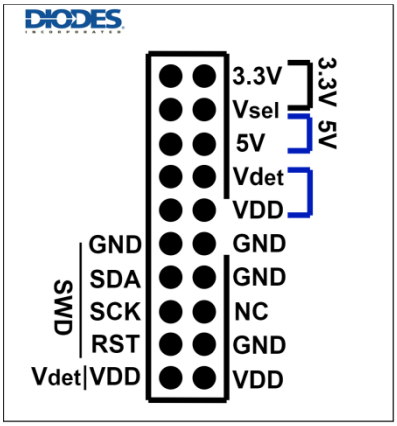
1.3 Contents

- **Diodes Debugger x 1**
- **USB cable x 1**
- **Debug cables x 2**



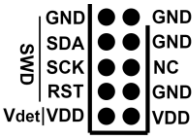
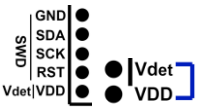
1.4 Diodes Debugger Introduction





SWD Pin definitions:

Power & Status LED	**LED indicator of USB's power and connection status**
DC Power Selection	**Supplying target board's power with 3.3V or 5V options**
Vdet | VDD	**Debug interface voltage set, Range: 1.65V to 5.5V, also used for detecting target board.**

Attachment	Debug Cable / Debug Board	Connect Port
SWD [Serial Wire Debug] 10pin cable		
SWD [Serial Wire Debug] 5 pin cable (VDD Short Vdet)		

Note: The Diodes Debugger should be used associated with a proper cable in a variety of target boards.

Debug Interfaces	Target IC Series	Supported Tool
SWD	**M0**	**Keil for ARM**

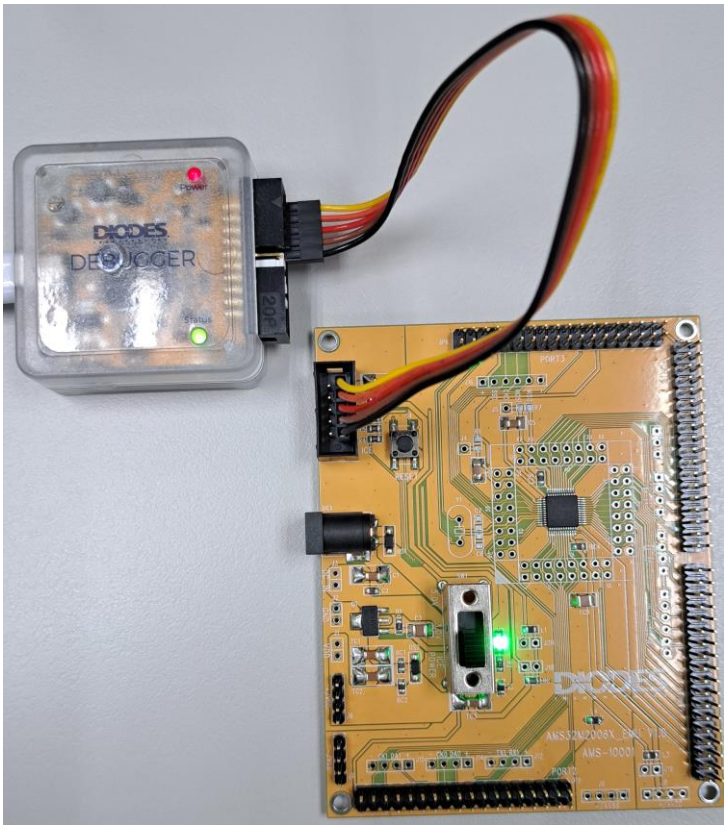
Chapter 2 Connecting EMU Board

2.1 Connection between Diodes Debugger and PC

Make sure the Diodes Debugger is connected to PC through a **USB cable**. If Diodes Debugger connects with a PC properly, the Power LED will be illuminated red and the Status LED will be illuminated green.

Note: Please connect the development board with the specified cable only.

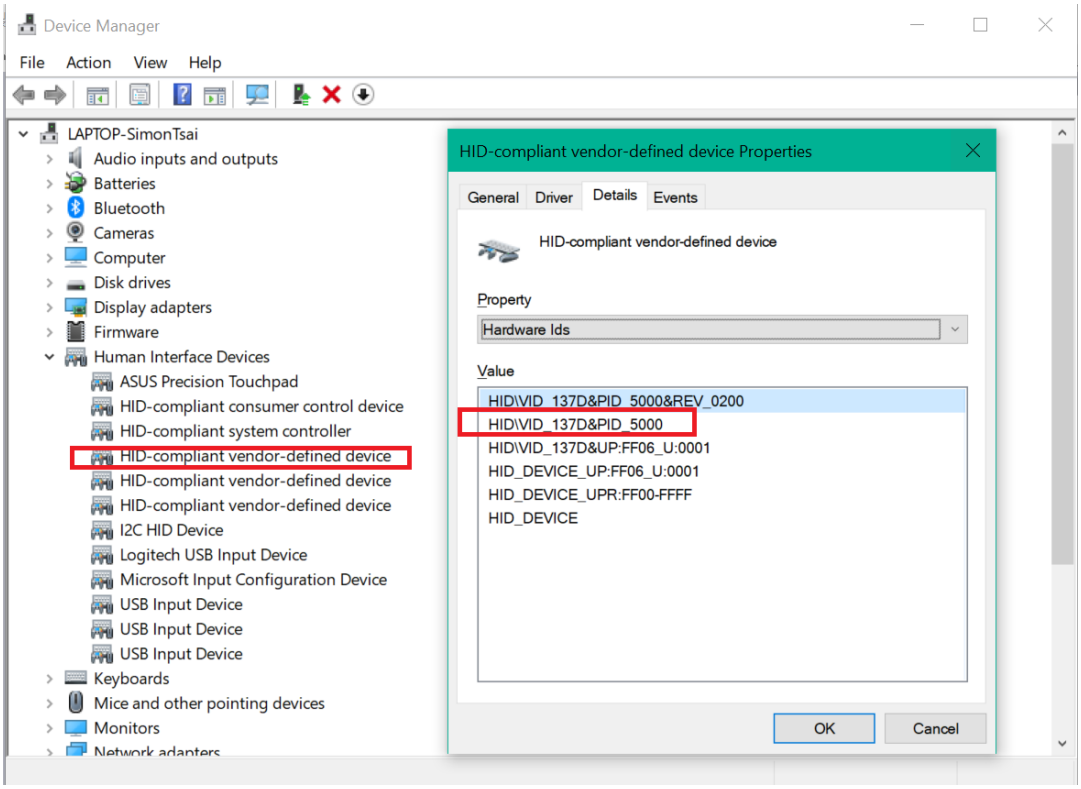
2.2 Connection between Diodes Debugger and SWD I/F



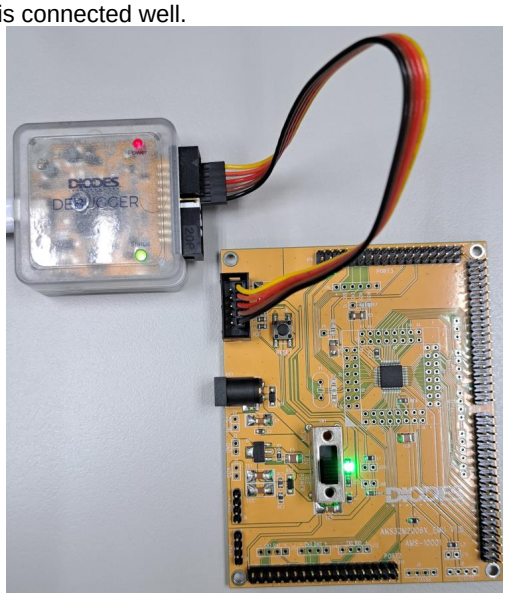
2.3 Troubleshooting

If a program is unable to be loaded into the ICE from IDE, please check the following steps carefully:

1. How do I know if Diodes Debugger is connected to a PC properly?
→ Check the Device Manager Information of USB HID-compliant vendor-defined device (VID:137D; PID:5000)
Note: the VID PID is a unique number and is different for each device.

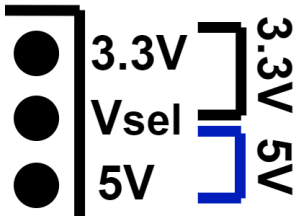


2. How do I know if the Diodes Debugger is connected to the EMU Board properly?
→Check that the connector is connected well.

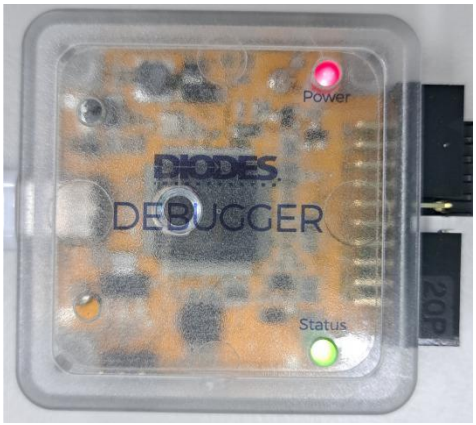


→ Check that the target board's power switch is at the correct position.

→ Make sure the power selections are at the correct position (5V / 3.3V), if using the Diodes Debugger power source. The default short setting is 5V.



→ For those target boards requiring higher voltage power, an external power supplier should be used.
→ If the Power or Status LED light is not on, please reconnect the USB cable.



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