Overview

The USB MSC RAM disk application is a simple demonstration program that uses the KSDK software. It is enumerated as a u-disk. Users can read and write the SD card as a standard u-disk.

System Requirement

Hardware requirements

- J-Link ARM
- P&E Micro Multi-link universal
- Mini/micro USB cable
- USB A to micro AB cable
- Hardware (tower/base board, ...) for a specific device
- Personal Computer(PC)

Software requirements

- The project files for lite version example are in:

  <SDK_Install>/boards/<board>/usb_examples/usb_device_msc_sdcard_lite/<RTOS>/<toolchain>.

  For non-lite version example, the path is:

  <SDK_Install>/boards/<board>/usb_examples/usb_device_msc_sdcard/<RTOS>/<toolchain>.

  Note

  The RTOSes are bare metal and FreeRTOS OS.

Getting Started

Hardware Settings

- The Jumper settings:

  J11 5-6, J24 1-2 for micro USB connector. 1-2, J24 2-3, and remove J11 5-6 for using TWR-SER mini USB connector.

Prepare the example

1. Download the program to the target board.
2. Connect the target board to the external power source (the example is self-powered).
3. Power off the target board. And then power on again.
4. Connect a USB cable between the PC and the USB device port of the board.

Note

For detailed instructions, see the appropriate board User's Guide.

Run the example

1. Plug in the SD card to the board.
2. Plug in the MSD disk device, which is running the usb_device_msc_sdcard example, into the PC. A USB Mass Storage Device is enumerated in the Device Manager.
3. If the RAM disk function is enabled, Windows OS prompts the option to scan the u-disk.

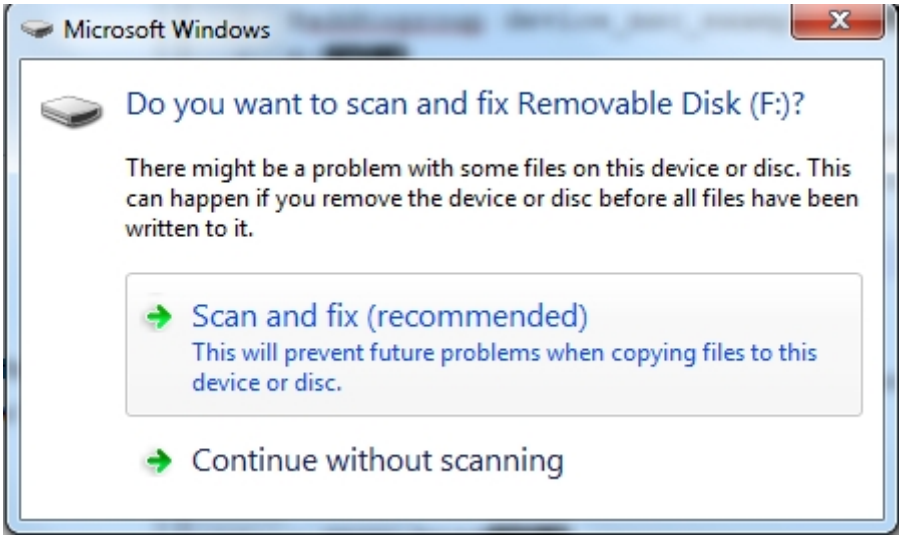

Figure 1: Sdcard scan

the computer will display the capacity of removable disk.

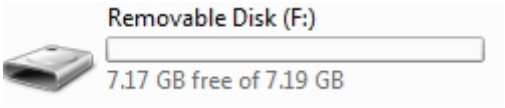

Figure 2: SD card

Note

The USB_DEVICE_MSC_READ_BUFF_SIZE and USB_DEVICE_MSC_WRITE_BUFF_SIZE macros limit the device identification and data transfer speed. The larger the buffer size, the faster the data transfer speed. The buffer size should be a multiple of 512 with the smallest value being 512.
The USB SD card example has the following work mode. Note that different modes have different throughputs-:

(a) The USB_DEVICE_CONFIG_USE_TASK is not enabled and the value is zero.
The USB SD card example USB_DeviceMscCallback function works in the USB IRQ handle function.

(b) The USB_DEVICE_CONFIG_USE_TASK is enabled. The USB SD card example code works in task mode.
USB_DeviceMscCallback is called in the task. In this use case, the throughput is lower than the throughput in use case 1.

(c) The USB_DEVICE_CONFIG_USE_TASK and USB_DEVICE_MSC_USE_WRITE_TASK are enabled.
The write is used to optimize the throughput and the throughput is almost the same as in use case 1.

(d) The USB_DEVICE_CONFIG_USE_TASK is not enabled and the USB_DEVICE_MSC_USE_WRITE_TASK is enabled. This use case is not allowed.