Manual CD-berry

Description

The CD-berry is a small USB cdrom emulator, based on a Raspberry Pi Zero. A single iso file can be copied to the device and after this, the device can emulate a cdrom drive using this iso file.

Controls, indicators and connectors

The CD-berry has following controls, indicators and connectors:

1. At the bottom: Shutdown/Emergency button
2. At the top side: Emergency Led
3. At the top side: CD/USB drive/shutdown Led
4. Micro USB connector
5. Power and read/write activity Led

First time operation

1. Connect the CD-berry using a USB cable to USB connector 4
2. The CD-berry will boot. This might take about 30 seconds. The Power and read/write activity Led (5) will flash
3. The CD-berry will be mounted as an removable USB drive labeled CD-berry. Led 3 will blink using one short pulse each second
4. Copy an iso file to the mass storage device. Rename the file to “cdrom.iso” (without the quotes). This must be all lowercase characters!
5. Do not disconnect the device, but ‘Eject’ the USB drive. This essential to prevent corruption
6. The cdrom.iso file will be mounted in cdrom-emulation mode. Led 3 will blink using one long pulse each second

Normal operation

1. Connect the CD-berry using a USB cable with a micro USB connector
2. The CD-berry will boot. This might take about 30 seconds. The Power and read/write activity Led (5) will flash
3. If a cdrom.iso file has been copied to the device, then this file will be mounted in cdrom-emulation mode. If no cdrom.iso exists, the device will be mounted in USB drive mode

The device can switch between cdrom-emulation mode and USB drive mode by ejecting the mounted device. When no cdrom.iso file exists, the device will always switch to USB drive mode.

Shutting down

Because the device is essentially a small computing device, it should be shutdown gracefully. Do not remove the device without shutting down, otherwise corruption may occur, especially when the device is in USB drive mode. Do the following to perform a safe shutdown:

- When in cdrom-emulation mode, just press Button 1 for about three seconds. Led 3 will blink once per second with a 50/50 duty cycle while pressed, until the three seconds has expired: Then Led 3 will blink about 2 times per second and the shutdown starts. When the shutdown has completed, Led 5 will blink 10 times and then switch off. The device can now be removed
- When in USB drive mode, the procedure is a little different: Press Button 1 for about three seconds. Led 3 will blink once per second with a 50/50 duty cycle while pressed, until the three seconds has expired: Then Led 3 will blink about 2 times per second. Now, within 10 seconds, eject the USB drive using ‘Eject’. Then the shutdown initiates. When the shutdown

has completed, Led 5 will blink 10 times and then switch off. Now, The device can be removed. This procedure makes it possible to remove the USB drive safely. When the USB drive has not been ejected within 10 seconds, the shutdown will aborted and the device will resume normal operation in USB drive mode. Led 3 will start flashing shortly one time per second

Emergency button

When the device is removed by disconnecting the USB cable without a proper shutdown, the mass storage partition may be damaged. To reformat this partition, please use the following procedure. *Please note that **all data on the device will be erased**!*

1. Connect the device while pressing Button 1.
2. Release this button, when Led 2 is lit continuously
3. When the device is ready, Led 2 starts blinking once per second (50/50 duty cycle) for about 8 seconds
4. As soon as Led 2 starts blinking, press Button 1 for about three seconds until Led 2 starts blinking 2 times per second
5. The mass storage partition gets formatted. Led 5 will give some indication about this process
6. When formatting has completed, Led 2 will switch off and the device will be mounted in USB drive mode. The drive will be empty

When Button 1 has not been pressed three seconds to confirm the emergency procedure, the device will resume normal operation.

Cautions, warnings and additional possibilities

There are several other possibilities. Most of these possibilities may damage the device and thus not recommended. Performing these procedures is on your own risk!

- It is possible to remove the SD card from the device and insert it into a laptop or computer. This is not recommended. However, when you think you must, please note the following:
    1. Three partitions will appear. One is an ‘ext4’ partition, which is not supported by Windows. Therefore Windows might propose to format this partition. Doing this will render the device useless, because this is the OS partition
    2. Do **not** remove any of the partitions
    3. Always eject the SD card use safe removal
- The USB drive is formatted in NTFS format. It is possible, though not recommended, to reformat the USB drive and change this to FAT32. Doing this may slow down the writing speed
- When access to the CD-berry OS is necessary, use the following procedure. Modifying the CD-berry OS may damage the device and is on your own risk!

    1. Insert the SD card into a computer. Normally the first partition contains a file ‘config.txt’. Open this file using a text editor like Notepad++. Do not use notepad, because this file uses Unix/Linux conventions with regards to end-of-line characters
    2. Below [all] place a hash sign ‘#’ in front of ‘dtoverlay=bootconfig,bootvalue=normal’
    3. Insert this line below [all]:
       dtoverlay=bootconfig,bootvalue=ethernet;ip-address;netmask
       Replace ip-address and netmask, i.e:
       dtoverlay=bootconfig,bootvalue=ethernet;192.168.137.4;255.255.255.0
    4. Save the file
    5. Use safe removal to eject the SD card and insert it into the CD-berry
    6. Connect the CD-berry and wait until the boot-sequence has completed

7. A new Ethernet device will appear on the computer to which the CD-berry is connected. Configure an appropriate ip address and mask for this device
8. Use putty to connect to the address of the CD-berry. Logon using user ‘pi’, password ‘raspberry’
9. Use the Raspbian command poweroff to shut down the CD-berry when ready
10. To revert the CD-berry to normal operation:
    1. Insert the SD card again into a computer
    2. Open the config.txt
    3. Remove the line inserted in step 3.
    4. Remove the hash sign ‘#’ from the line starting with dtoverlay=bootconfig (see step 2)
    5. Save the file
    6. Use safe removal to eject the SD card and insert it into the CD-berry

Specifications

- Raspberry Pi Zero
- Raspbian Stretch OS
- 8.5 GB maximum cdrom size
- Writing speed: +/- 10 MB p/sec.
- Reading speed: +/- 20 MB p/sec.
- Power supply: 5V, 0.5 A, supplied by USB
- 16 GB micros SD card storage