Recovery manual for the Crane platform computers

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Eisuke

- Raspberry Pi 3 (For ROS host)
- Jetson Xavier NX (For Lidar camera)
- RockPi X (Embedded PC)

Raspberry Pi 3

How to recovery the Raspberry Pi 3 1/2

Preparing the recovery

1. Shutdown the Raspberry Pi 3, if it's possible.

2. Disconnect POE (Ethernet) cable from it. It will be turned off. Remove the SD card from it.

3. Insert the SD card for recovery to your laptop. Copy "raspi_buckup_07142021_forCrane_pi3.7z" to your laptop. And then, Unzip it.

Note: After unzipping, the file size will be **128GB**. Watch your free space.

4. Install the "SD Card Formatter" and "Win32 Disk Imager". You can get them from "Utility" folder of the SD card for recovery or download from the following web links.
   https://www.sdcard.org/downloads/formatter/
   https://sourceforge.net/projects/win32diskimager/

How to recovery the Raspberry Pi 3 2/2

Recovery

1. Insert the SD card from Raspberry Pi 3 to your laptop.

2. Launch the “SD Card Formatter”. Select card source and click “Format” button. Close the application when finished.

3. Launch the “Win32 Disk Imager”. Choose path of the unzipped image file path to “Image File”. And then, click “Write” button. You can verify the SD card data with “Verify” button, if you need.

4. Return the SD card to Raspberry Pi 3. And then, Insert POE (Ethernet) cable to it. It will be turned on.

5. Connect the Raspberry Pi 3 with the VNC. And, Make sure it is launched.

Note: If it’s not launched, the SD card or hardware may be faulty. Need to change them to another one and try again.

Jetson Xavier NX

How to recovery the Jetson Xavier NX 1/2

Preparing the recovery

1. Shutdown the Jetson Xavier NX, if it's possible.

2. Disconnect POE (Ethernet) cable from it. It will be turned off. Remove the SD card from it. And then, Insert the SD card to your laptop.

3. Write a Jetson Nano Developer Kit Image (JetPack) to the SD card. Follow the instructions in the link below to write the image. Any version of the kit image will do. **Do not skip this step**.
   https://developer.nvidia.com/embedded/learn/get-started-jetson-xavier-nx-devkit

4. Remove the SD card from Jetson, And insert the SD card for recovery to your laptop. Copy "JetsonXavierNX_opencv453_08102021.7z" to your laptop. And then, Unzip it.

Note: After unzipping, the file size will be **128GB**. Watch your free space.

5. Copy the "DD for Windows R2" to your laptop. You can get them from "Utility" folder of the SD card for recovery or download from the following web links.
   http://download.si-linux.co.jp/dd_for_windows/DDWinR2_beta_Ver1.0.7067.22284.zip

How to recovery the Jetson Xavier NX 2/2

Recovery

1. Launch the “DD for Windows R2”. Click “Drive” button. Click leftmost radio button of SD card drive. Do not click the other buttons.

2. Click “Restore” button and start to write the image.

Note: An error will occur when the write completes, but you can ignore it.

3. Return the SD card to Jetson Xavier NX. And then, Insert POE (Ethernet) cable to it. It will be turned on.

4. Connect the Jetson Xavier NX with the VNC. And, Make sure it is launched.

Note: If it’s not launched, the SD card or hardware may be faulty. Need to change them to another one and try again.

RockPi X

The recovery method differs depending on the state before recovery.

If it does not boot completely, go to "Prepare for full recovery".
If you want to restore it in a bootable state, go to "Restore". Do not do "Prepare for full recovery".

How to recovery the RockPi X 1/2

Prepare for full recovery

1. Shutdown the RockPi X, if it's possible.

2. Disconnect POE (Ethernet) cable from it. It will be turned off.

3. Detach it from the base of winchbot and disconnect dummy HDMI adapter. Connect your display via HDMI, keyboard, and mouse, and connect power to the USB Type C port.

4. Follow the link below to do a clean install of Ubuntu, version 18.04.
   https://wiki.radxa.com/RockpiX/install/ubuntu

5. Install the TimeShift with following command.
   - sudo apt install timeshift

6. Unzip "timeshift.7z" and copy "timeshift" folder to RockPi X in the root directory of the C drive.

How to recovery the RockPi X 2/2

Restore

1. Launch the TimeShift from application button on the Ubuntu Dock. You can search it.
2. Select “RSYNC” and click “Next”. Select “sda1” and click “Finish”.
3. Select a snapshot. Its date is 2021-09-21. Click “Restore” on the top of it.
4. Select “sda1” as the target. And then, Click “Restore”.
5. Select a snapshot. Its date is 2021-09-21.
6. Click “Restore” button.