www.artila.com

Matrix-700

HOW TO BACK UP
THE FILE SYSTEM OF
MATRIX-700/710/713?

Matrix-700/710/713 FW-V3 become main stream

The default firmware image of our Matrix-700/710/713 Box Computer was upgraded from V1 to V3 since 2019Q4

Key Features	V3	V1
Release Date	2019-08-13	2017-05-11
eMMC capacity	16GB	8GB
Linux Kernel	4.19.x	4.9.x (or 4.14.x)
GCC	8.3.0	6.2.0
GLIBC	2.29	2.24
Backup/Restore mechanism	via USB drive or SD Card	via SD card

The major difference between V3 and V1 is:

- The **backup/restore mechanism** of the V3 is much more convenient than the V1.
- V3 supports backup/restore via **USB drive**, while V1 only support backup/restore via SD card.

Please refer to the following sections for more detailed information.

- How to backup the file system of the Matrix-700/710/713 V3
- How to restore the file system of the Matrix-700/710/713 V3
- How to backup the file system of the Matrix-700/710/713 V1
- How to restore the file system of the Matrix-700/710/713 V1
- How to upgrade the Matrix-700/710/713 from V1 to V3
- How to recover a bricked (or can't Bootup) Matrix-700/710/713 V1
- How to recover a bricked (or can't Bootup) Matrix-700 V3
- How to restore the Matrix-700/710/713 V3 to factory default

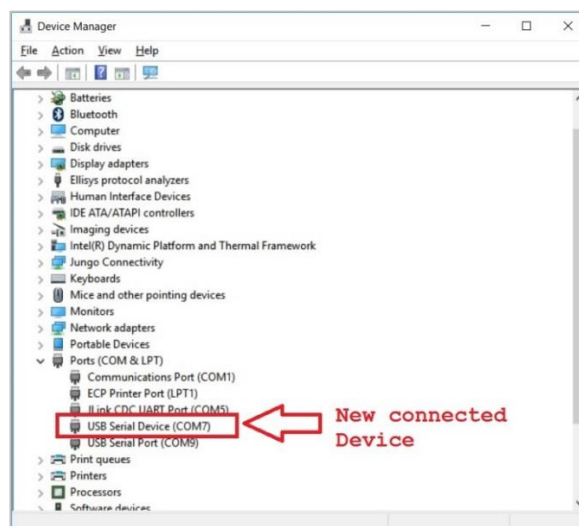# How to backup the file system of the Matrix-700/710/713 V3

1. Insert an empty 16GB(or above) USB drive (FAT32 format). Let's say the USB drive maps to **/dev/sda1**.

2. Power-on Matrix-700/710/713 ("Ready" LED in green)
   After system ready ("Ready" LED turns to yellow),
   Connect the Matrix-700/710/713's USB/serial console to a PC

3. It shows *USB Serial Device "COMx" at Device Manager / PC* Windows:
   X : depends on your PC's environment

4. Communicate via this Serial device (EX. By TeraTerm @115200,N81).

5. Execute the command "**backup /dev/sda1**" and **"y"**, this command will force Matrix-700/710/713 to boot again to start the backup process.

```
# backup /dev/sda1
Backup to /dev/sda1, Sure?(y/n)
y
.......
```

6. The **READY** LED will be blinking during the backup process
   This process may take **20~30** minutes
   USB/serial console is NOT accessible during the backup process

7. The Matrix-700/710/713 will automatically reboot again when the backup process is finished.

8. Remove the USB drive and keep it properly as the golden copy.

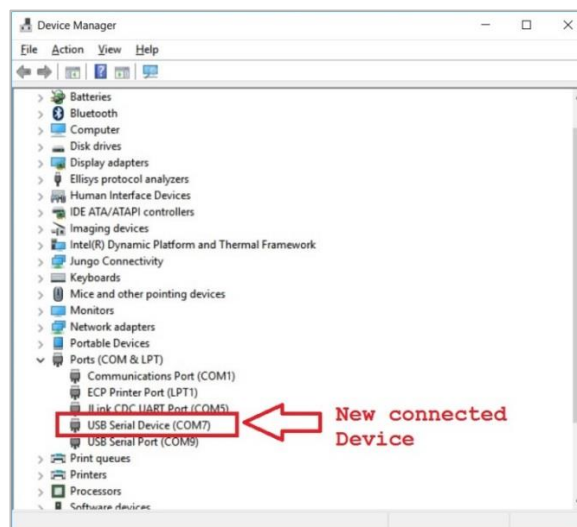# How to restore the file system of the Matrix-700/710/713 V3

1. Insert the golden copy USB drive. Let's say the USB drive maps to **/dev/sda1**.

2. Power-on Matrix-700/710/713 ("Ready" LED in green)
    After system ready ("Ready" LED turns to yellow)
    Connect the Matrix-700/710/713's USB/serial console to a PC

3. It shows *USB Serial Device "COMx" at Device Manager / PC* Windows:
    X : depends on your PC's environment

4. Communicate via this Serial device (EX. By TeraTerm @115200,N81).

5. Execute the command "**restore /dev/sda1"** and **"y"**, this command will force Matrix-700/710/713 to boot again to start the restore process.

```
# restore /dev/sda1
Restore from /dev/sda1, Sure?(y/n)
y
……
```
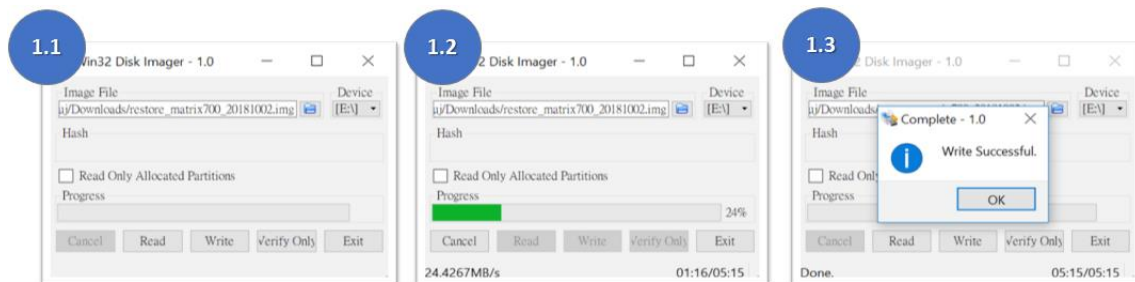
6. The **READY** LED will be blinking during the restore process,
    This process may take 20~30minutes
    USB/serial console is NOT accessible during the restore process.

"Ready" LED in green

7. The Matrix-700/710/713 will automatically reboot again when the restore process is finished.

8. Remove the USB drive.

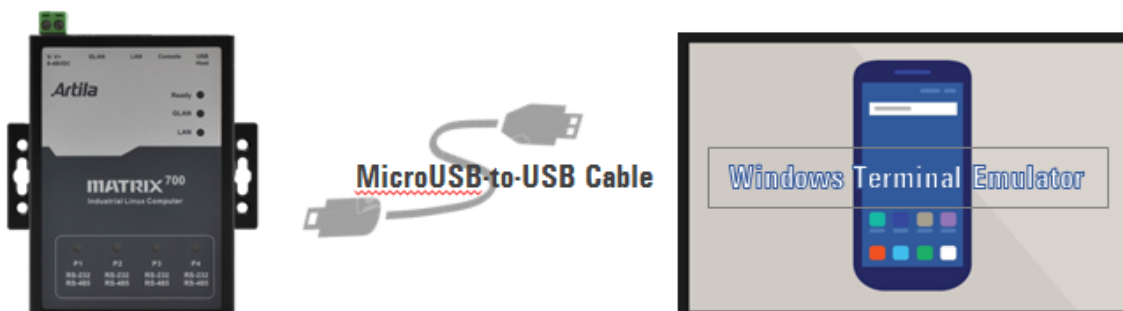# How to backup the file system of the Matrix-700/710/713 V1

1   Prepare a bootable SD card (16GB or above)

   1.1   Download the <u>V1 image</u> from Artila web site.

      Example (for Matrix-700):

      http://www.artila.com/download/A5D35/Linux/image/Matrix-700/restore_matrix700_20181002.img

   1.2   Download <u>Win32 Disk Imager</u> from SourceForge web site

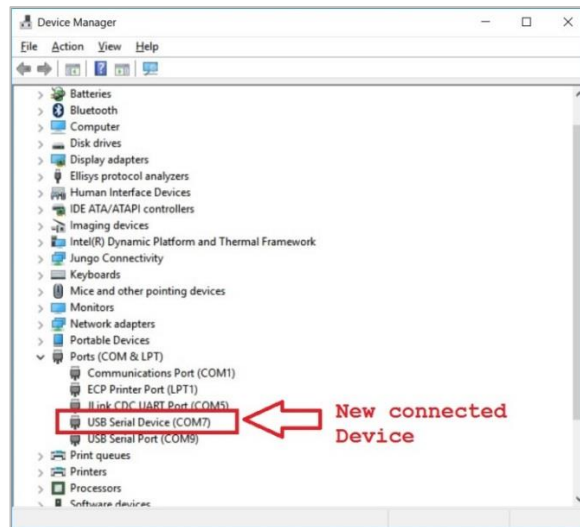   1.3   Use Win32 Disk Imager to make a bootable SD card with V1 image.

2   Power OFF the Matrix-700/710/713, open the box and insert the SD card

3   Power ON the Matrix-700/710/713 and connect its USB/serial console to a PC
(Ex. using TeraTerm@115200,N81)

4   It shows *USB Serial Device "COMx" at Device Manager / PC* Windows:
    X : depends on your PC's environment

5   Communicate via this Serial device (EX. By TeraTerm @115200,N81).

6   Execute the **backup** command and **"y"**, this command will force the
    Matrix-700/710/713 to reboot again to start the backup process.

```
# backup
Are you sure to backup system?(y/n)
y
......
```

7   The **READY** LED will be blinking during the backup process
    This process may take 20~30minutes
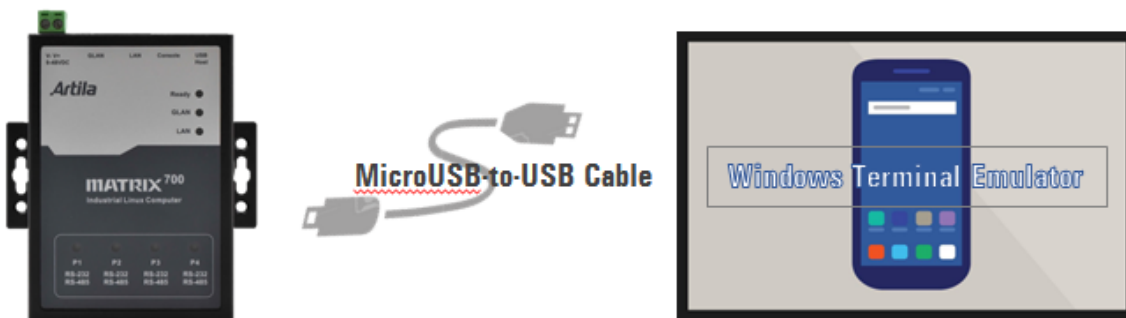   USB/serial console is NOT accessible during the backup process

"Ready" LED in green

8   The Matrix-700/710/713 will automatically reboot again when the backup process is
    finished.

9   Power OFF the Matrix-700/710/713 and remove the SD card.

10 Keep the SD card properly as the golden copy.

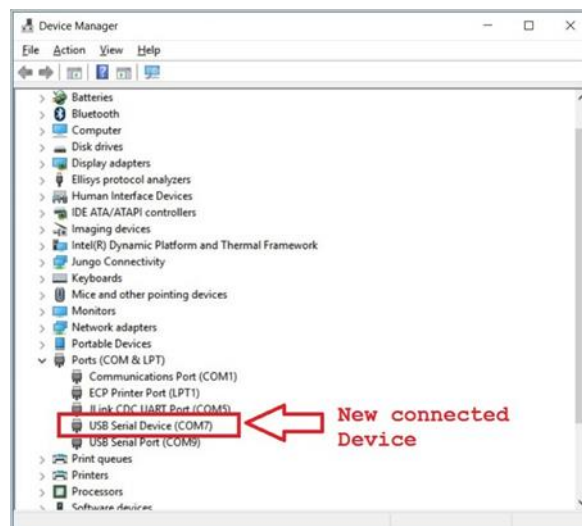# How to restore the file system of the Matrix-700/710/713 V1

1. Power OFF the Matrix-700/710/713, open the box and insert the golden copy SD card.

2. Power-on Matrix-700/710/713 ("Ready" LED in green)
   After system ready ("Ready" LED turns to yellow),
   Connect the Matrix-700/710/713's USB/serial console to a PC

3. It shows *USB Serial Device "COMx" at Device Manager / PC* Windows:
   X : depends on your PC's environment

4.   Communicate via this Serial device (EX. By TeraTerm @115200,N81).

5.   Execute the **restore** command and **"y"**, this command will force the Matrix-700/710/713 to reboot again to start the restore process.

```
# restore
Are you sure to recovery system?(y/n)
y
……
```
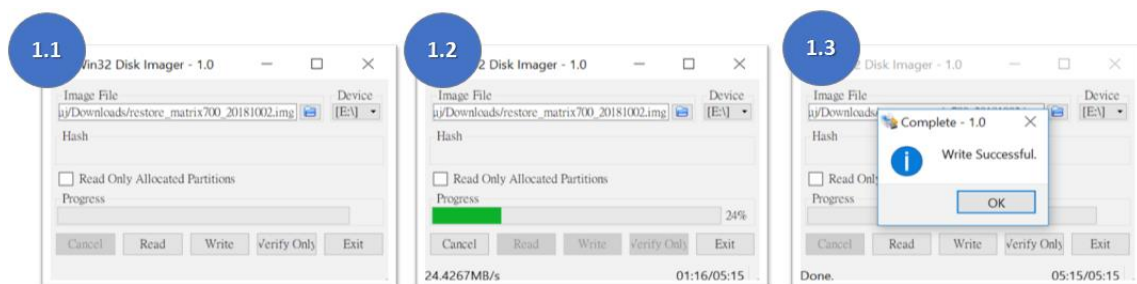
6.   The **READY** LED will be blinking during the restore process,
      This process may take 20~30minutes
      USB/serial console is NOT accessible during the restore process.

7.   The Matrix-700/710/713 will automatically reboot again when the restore process is finished.

8.   Power OFF the Matrix-700/710/713 and remove the golden copy SD card

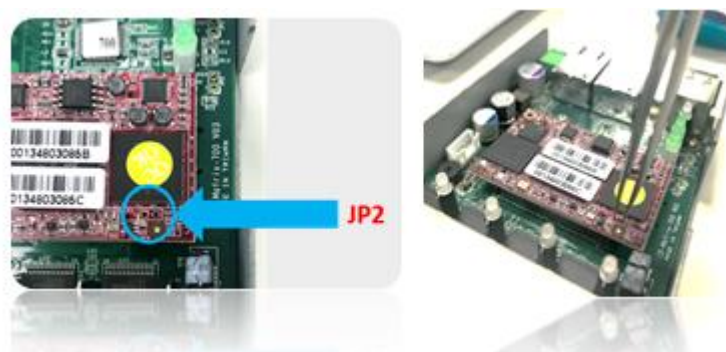# How to upgrade the Matrix-700/710/713 from V1 to V3

1. Prepare a bootable SD card (16GB or above)

    1.1   Download the V3 upgrade image from Artila web site

    Example (for Matrix-700):

    http://www.artila.com/download/A5D35/Linux/image/Matrix-700/upgrade_matrix700v3_20191126.img

    1.2   Download Win32 Disk Imager from SourceForge web site

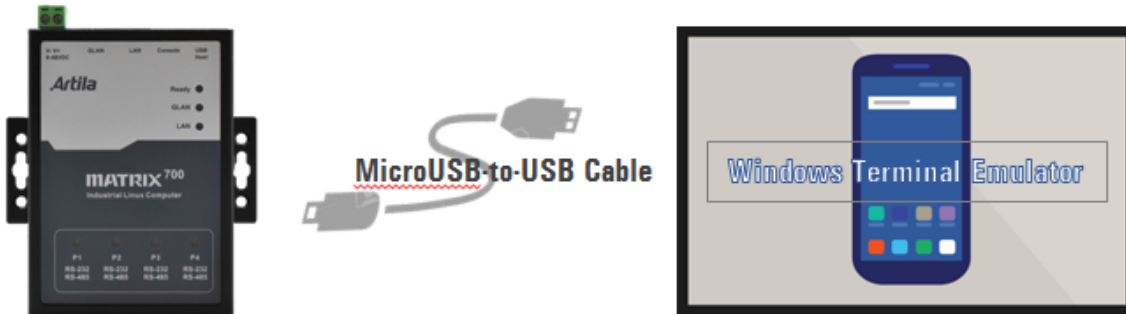   1.3   Use Win32 Disk Imager to make a bootable SD card with V1 image.

2. Power OFF the Matrix-700/710/713, open the box and insert the SD card

3. Be sure to SHORT JP2 (located on the red module) FIRST
    3.1   Then power ON the Matrix-700/710/713
    3.2   Count *3 seconds* after system beep
    3.3   then leave JP2 OPEN

4. Power-on Matrix-700/710/713 ("Ready" LED in green)
   After system ready ("Ready" LED turns to yellow)
   Connect the Matrix-700/710/713's USB/serial console to a PC

5. Communicate via this Serial device (EX. By TeraTerm @115200,N81).

6. Execute the **restore** command and **"y"**, this command will force the
   Matrix-700/710/713 to reboot again to start the recovery process.
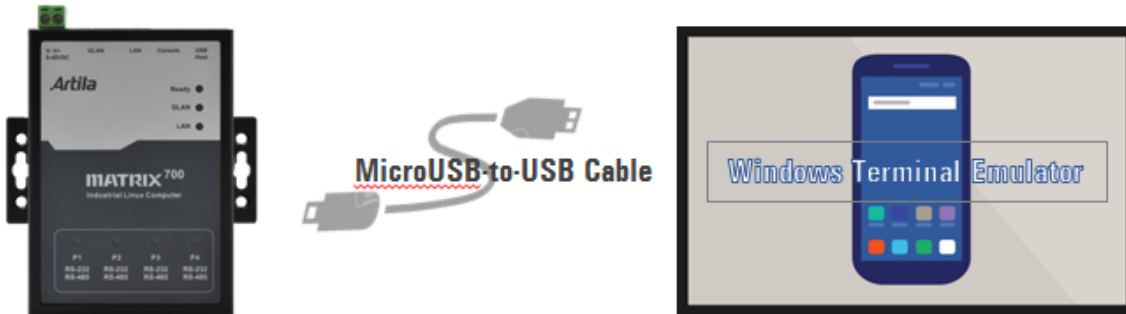
```
# restore
Are you sure to recovery system?(y/n)
y
……
```

7. The **READY** LED will be blinking during the upgrade process,
   This process may take 20~30minutes
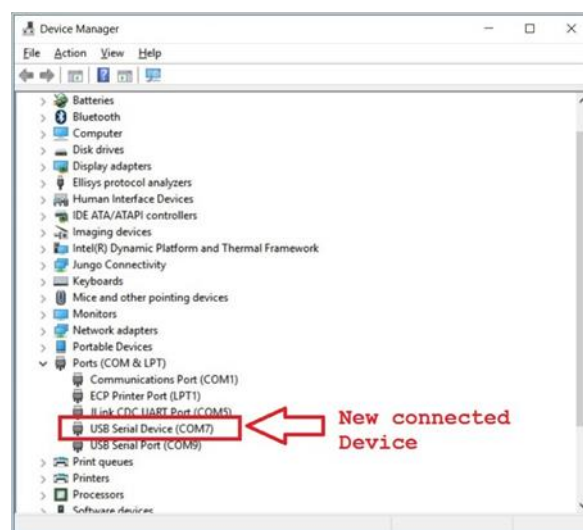   USB/serial console is NOT accessible during the upgrade process.

"Ready" LED in green

8. The Matrix-700/710/713 will automatically reboot again when the upgrade process
   is finished.

9. Matrix-700/710/713 boot, "Ready" LED is in green
   After system ready, "Ready" LED turns to yellow
   Then, connect the Matrix-700/710/713's USB/serial console to a PC

10. It shows *USB Serial Device "COMx" at Device Manager / PC* Windows:
    X : depends on your PC's environment

11. Communicate via this Serial device (EX. By TeraTerm @115200,N81).

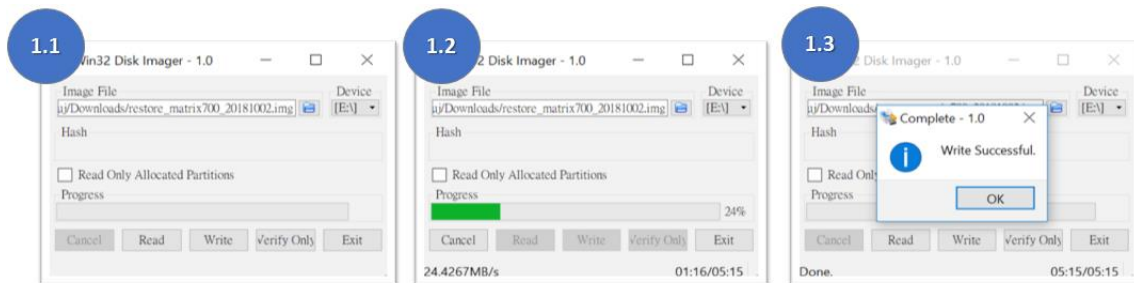12. Execute the **uname** command to verify the version shown as below

```
# uname -a
......4.19.83-yocto-standard #1 Mon Nov 11 10:19:40 UTC 2019......
```

13. Power OFF the Matrix-700/710/713 and remove the SD card.

How to recover a bricked (or Can't Bootup)
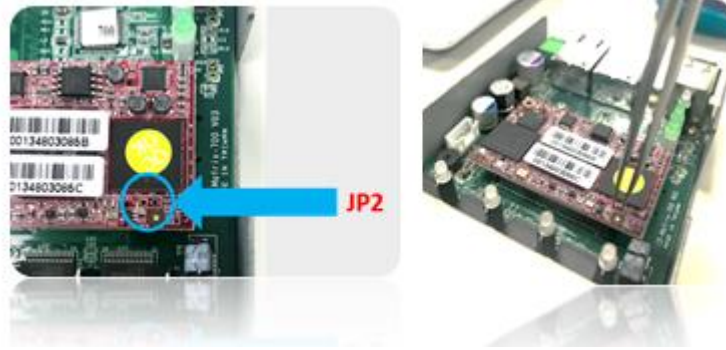
Matrix-700/ 710/713   V1

1   Prepare one SD card (16GB or above)

   1.1   Download [V1 restore image] from Artila Web site

       Example (for Matrix-700):

       http://www.artila.com/download/A5D35/Linux/image/Matrix-700/restore_matrix700_20181002.img

   1.2   Download [Win32 Disk Imager] from SourceForge website

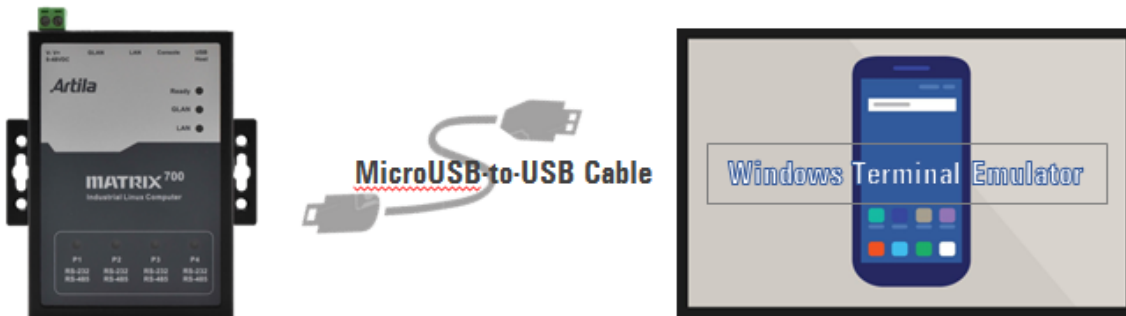   1.3   Progress restore image onto SD card via Win32 Disk Imager (refer to following figures):

2   Power off the Matrix-700/710/713, unscrew and open top cover
   Insert the SD card which is with restore image installed.
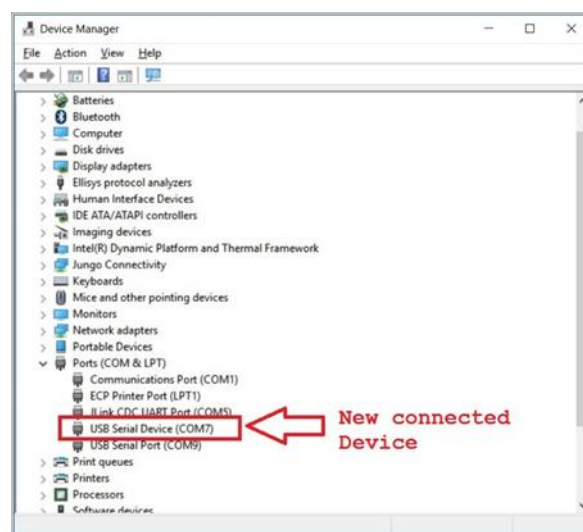

3   Be sure to SHORT JP2 (located on the red module) FIRST

   3.1   Then power ON the Matrix-700/710/713

   3.2   Count *3 seconds* after system beep

   3.3   then leave JP2 OPEN

4   Power-on Matrix-700/710/713 ("Ready" LED in green)
     After system ready ("Ready" LED turns to yellow),
     Connect the Matrix-700/710/713's USB/serial console to a PC

5   It shows *USB Serial Device "COMx" at Device Manager / PC* Windows:
     X : depends on your PC's environment

6   Communicate via this Serial device (EX. By TeraTerm @115200,N81).

7   Execute the command "**restore**" and **"y"**, this command will force
    Matrix-700/710/713 to boot again to start the restore process.

```
# restore
Are you sure to recovery system?(y/n)
y
……
```

8   The **READY** LED will be blinking during the recover process
    This process may take 20~30minutes
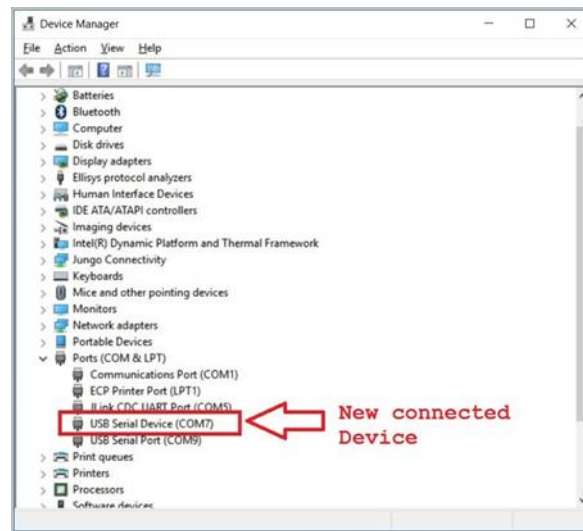   USB/serial console is NOT accessible during the restore process.

"Ready" LED in green

9   The Matrix-700/710/713 will automatically reboot again when the recover process is
    finished.

10 Power-on Matrix-700/710/713 ("Ready" LED in green)
    After system ready ("Ready" LED turns to yellow)
    Connect the Matrix-700/710/713's USB/serial console to a PC

MicroUSB-to-USB Cable   Windows Terminal Emulator

11 It shows *USB Serial Device "COMx" at Device Manager / PC* Windows:
   X : depends on your PC's environment

12 Communicate via this Serial device (EX. By TeraTerm @115200,N81).

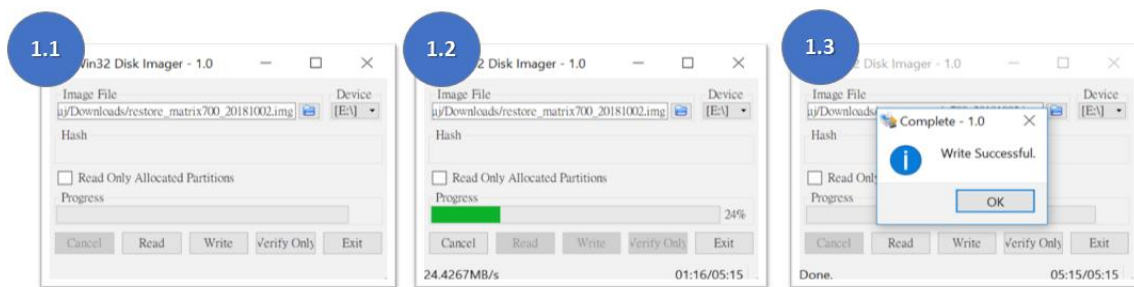13 Execute commend "**uname** -a", It shows the version of Firmware as following:

```
# uname -a
…… 4.9.27-yocto-standard #1 Mon May 8 14:48:31 CST 2017 ……
```

14 Power off the Matrix-700/710/713, remove SD card
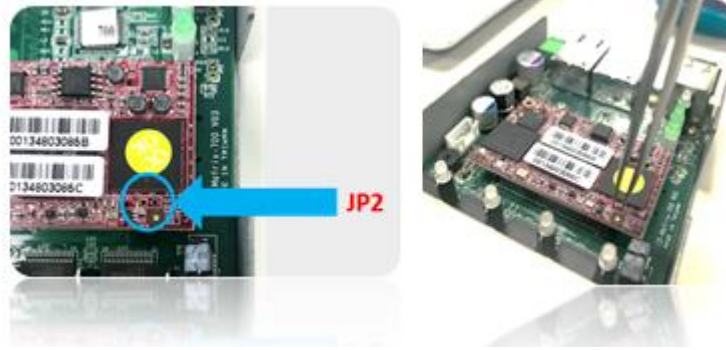
How to recover a bricked (or Can't Bootup) Matrix-700 V3

1   Prepare one SD card (16GB or above)

    1.1   Download V3 restore image from www.artila.com

    http://www.artila.com/download/A5D35/Linux/image/Matrix-700/restore_matrix700v3_20200220.img

    1.2   Download Win32 Disk Imager from SourceForge website

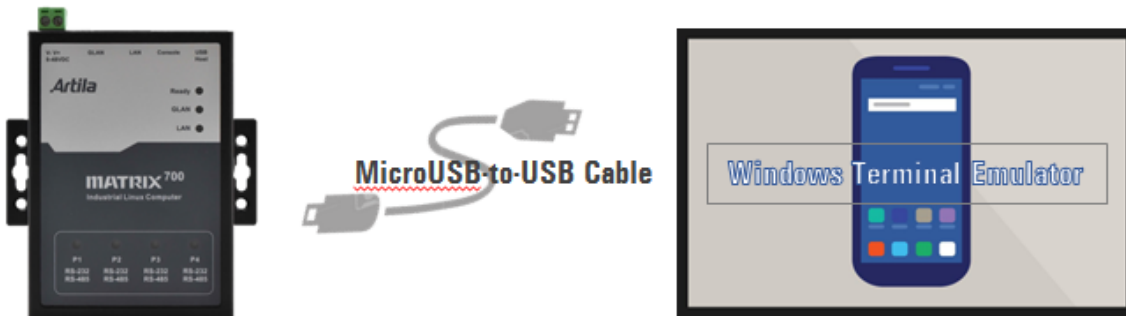   1.3   Progress restore image onto SD card via Win32 Disk Imager (refer to following figures):

2   Power off the Matrix-700, unscrew and open top cover
Insert the SD card which is with restore image installed.
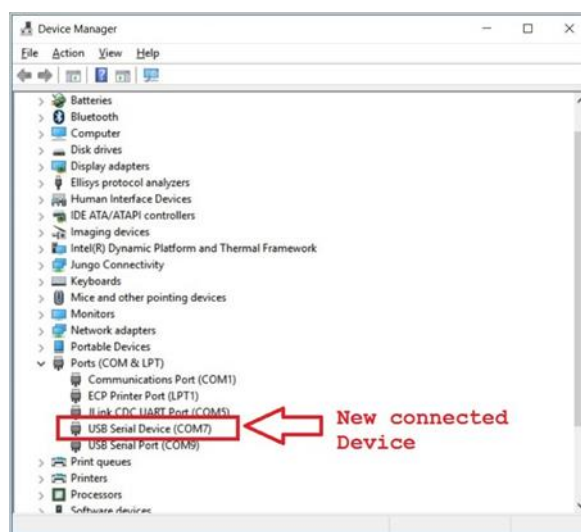

MicroSD Card

3   Be sure to SHORT JP2 (located on the red module) FIRST

    3.1   Then power ON the Matrix-700/710/713

    3.2   Count *3 seconds* after system beep

    3.3   then leave JP2 OPEN

4   Power-on Matrix-700 ("Ready" LED in green)
     After system ready ("Ready" LED turns to yellow),
     Connect the Matrix-700's USB/serial console to a PC

5   It shows *USB Serial Device "COMx" at Device Manager / PC* Windows:
     X : depends on your PC's environment

6   Communicate via this Serial device (EX. By TeraTerm @115200,N81).

7   Execute the command "**restore**" and **"y"**, this command will force
     Matrix-700/710/713 to boot again to start the restore process.

```
# restore
Are you sure to recovery system?(y/n)
y
......
```
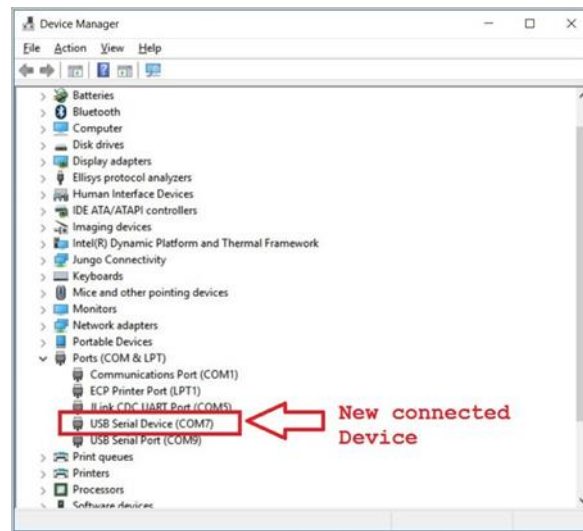
8   The **READY** LED will be blinking during the backup process
     This process may take 20~30minutes
      USB/serial console is NOT accessible during the recover process

9   The Matrix-700/710/713 will automatically reboot again when recover process is
     finished.

10   When system ready ("Ready" LED turns to yellow),
     Connect the Matrix-700's USB/serial console to a PC

11 It shows *USB Serial Device "COMx" at Device Manager / PC* Windows:
    X : depends on your PC's environment

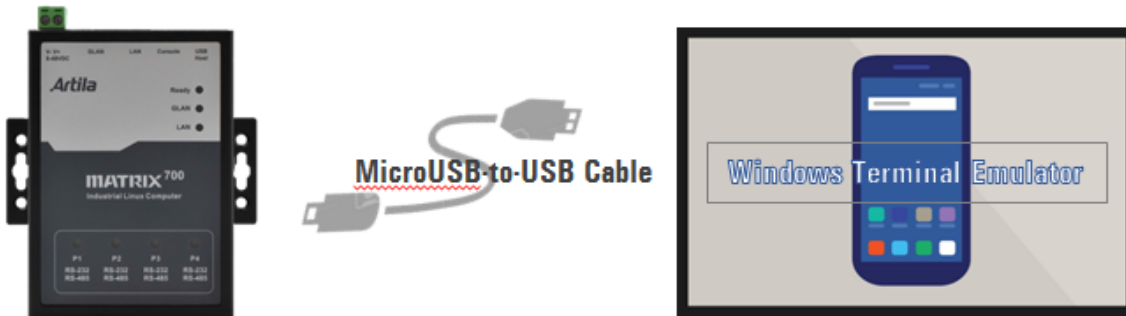12 Communicate via this Serial device (EX. By TeraTerm @115200,N81).

13 Execute commend "**uname** -a", It shows the version of Firmware as following:

```
# uname -a
...... 4.19.83-yocto-standard #1 Mon Nov 11 10:19:40 UTC 2019......
```
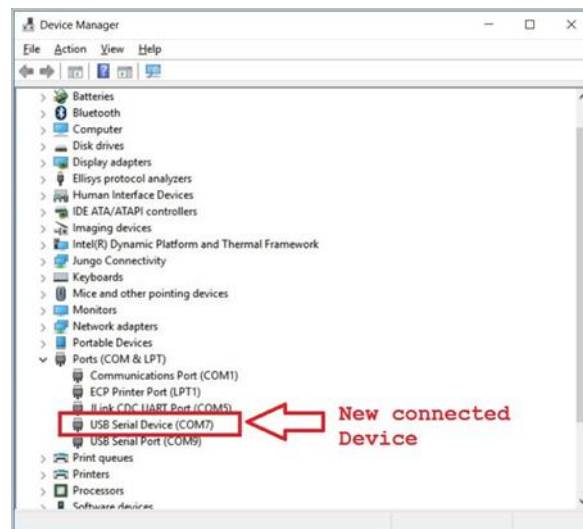
14 Power off the Matrix-700, remove SD card

How to restore the Matrix-700/710/713 V3 to factory default

1 Power-on Matrix-700 ("Ready" LED in green)
   After system ready ("Ready" LED turns to yellow),
   Connect the Matrix-700's USB/serial console to a PC

2 It shows *USB Serial Device "COMx" at Device Manager / PC* Windows:
   X : depends on your PC's environment

3 Communicate via this Serial device (EX. By TeraTerm @115200,N81).

4 Execute the command "**restore factory" and "y"**, this command will force
   Matrix-700/710/713 to boot again to start the restore process.

```
# restore factory
Restore from factory, Sure?(y/n)
y
……
```

5   The **READY** LED will be blinking during the restore process
    This process may take 20~30minutes.
    USB/serial console is NOT accessible during the restore process.

6   The Matrix-700/710/713 will automatically reboot again when the backup process is finished.