

Managed USB Hub Software Manual

Revision A0

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1 Introduction

The Managed USB Hub provides useful GUI and command-based utilities for different applications to access and control it manually or programmatically.

1.1 Supported Platforms

- Microsoft Windows 32-bit and 64-bit: USBCTL GUI and CUSBC.exe Command Prompt Utilities
- Linux: Intel/AMD based and ARM based CPU: cusbi and cusba console script
- Mac OS: CUSBM_GUI and CUSBM console script

The GUI were user-friendly to control the hubs manually. The console utilities are designed to be easily integrated with your application program written in most of the languages such as C++, C#, VB, PHP, Swift... etc.

1.2 Supported Functions:

The Managed USB Hub console/script utilities were precisely designed to support your application software for Windows, Linux and Mac OS multiple platforms by its consistent command format. The same command format helps you to port your application software to these popular platforms with only a little modification. The supported commands are list below.

Functions	Commands	Command Options	Description
Get Command Help Messages	/? none		Simply type the command with the following “/?” or without any argument to show the usage for all commands
Query Hub(s)	/Q /Q: Control_Port_Name	/F	Search all hubs detected and available Please note that the Control_Port_Name will be different in Windows (COMn), Linux (ttyUSBn) and Mac OS (Control Port id) platforms
Set Port States	/S	Optional	/S is to set the port states

	<p>/F</p> <p>States Input Format:</p> <p>1: means On</p> <p>0: means Off</p> <p>T: means Toggle (invert the current state)</p> <p>B: States are packed in a binary string</p> <p>H: States are packed in a hexadecimal string</p>	Password String	<p>temporarily, the states will be lost if the hub is reset or powered off</p> <p>/F is to set the port states and “remember” them permanently in the flash memory so the states will be activated whenever the hub is reset or powered off/on</p> <p>The password string is required once you have changed the password other than the factory default password</p>
Get Port States	/G	-B -H	<p>This command is to get the current port states and output in 3 formats:</p> <p>-B in string stands for binary-bit-mapped states</p> <p>-H in string stands for hexadecimal-bit-mapped states</p> <p>If there is no command option followed, it will show the common readable description instead</p>
Change Password	/P	Password String(s)	<p>Change the password to prevent from any unauthorized accesses</p> <p>The password has been limited to 8 characters maximum, the default password is “pass”, if you keep the password as this default, you don’t need to enter any password string for any command.</p>
Save Port States as Power on Default	/W	Optional Password String	<p>Save the current port states to the flash memory permanently. And this states will be kept and retrieved anytime the hub is reset or power off and power on again</p>
Restore to Factory Default Settings	/D	Optional Password String	<p>This command will restore the hub to its factory default settings:</p> <p>Password: “pass”</p> <p>Port States: All port are On.</p>
Hardware	/R	Optional	This command performed a

Reset the Entire Hub		Password String	hardware rest to the hub. All downstream port devices will be disconnected and reconnected automatically
----------------------	--	-----------------	--

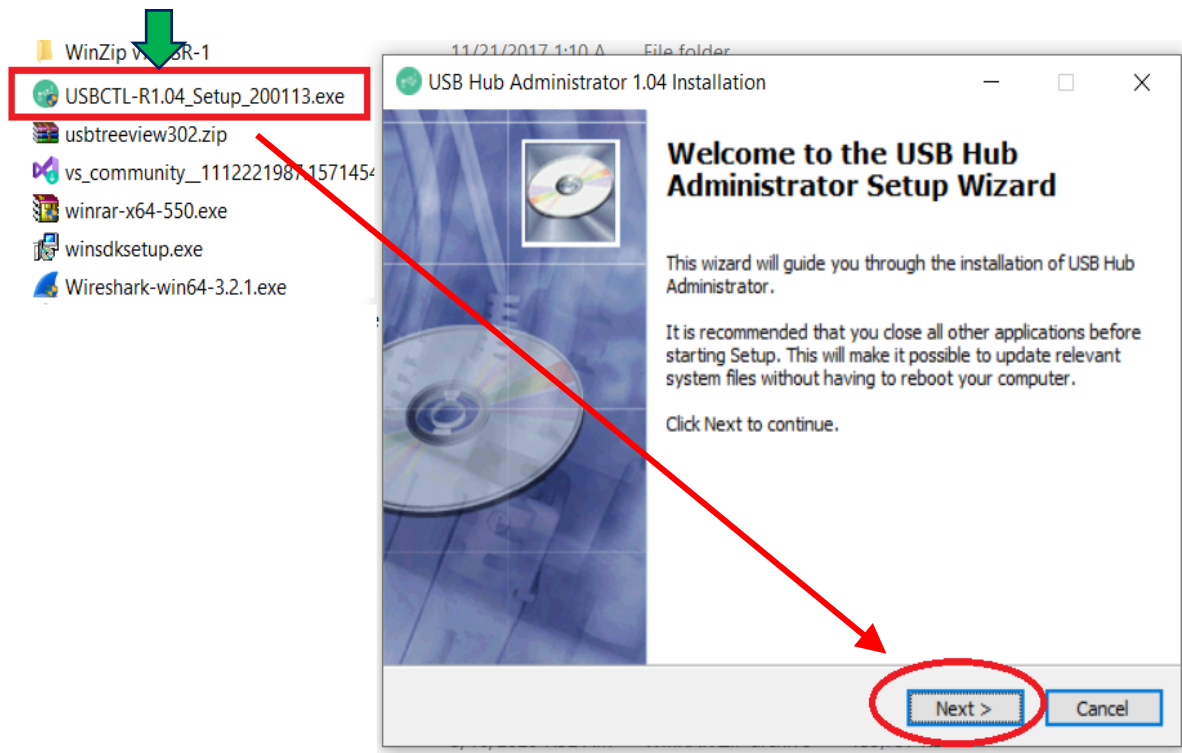


2 Windows: USBCTL Software Package

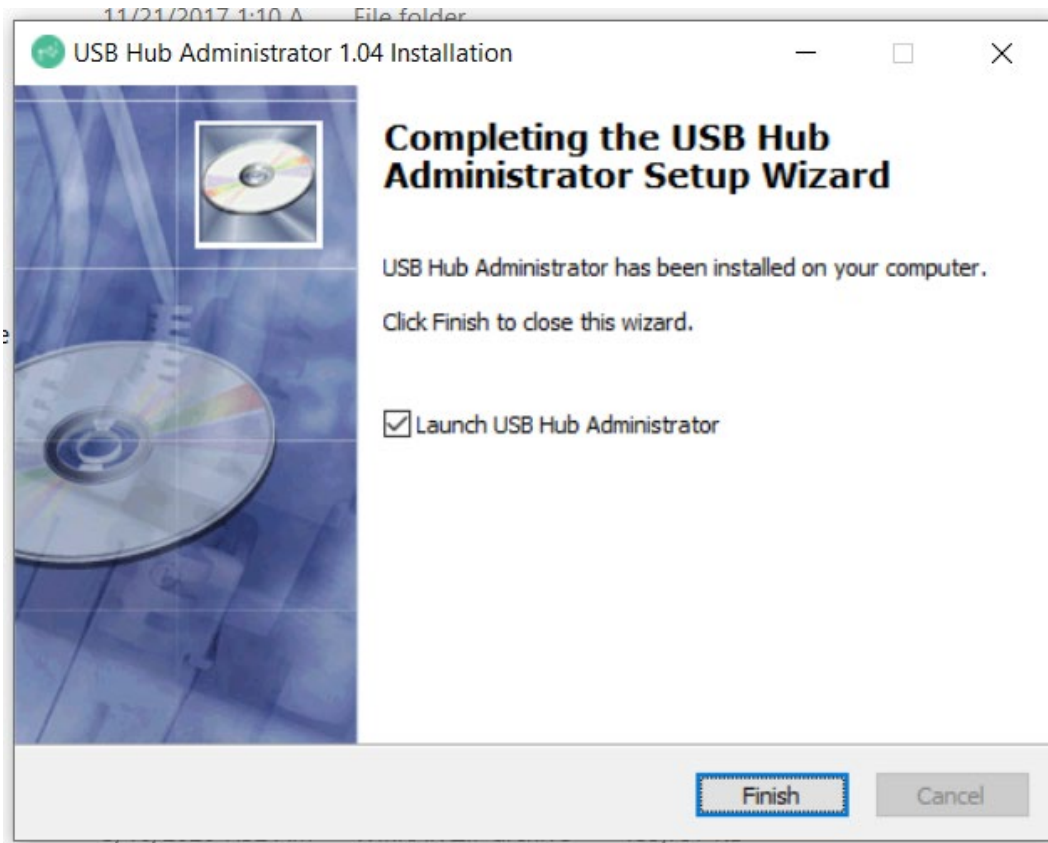
The **USBCTL Software Package** (or called **USB Hub Administrator**) includes the USBCTL.exe Windows GUI and the CUSBC.exe Command Prompt utilities. They are shipped along with the Managed USB Administrator installer package. Once the installer is executed, the USBCTL.exe shortcut will be generated on the Desktop and the CUSBC.exe will be copied to the specific folder. The environment variable on Windows was modified accordingly to execute CUSBC.exe at anywhere in command prompt.

2.1 Installing USBCTL Software Package

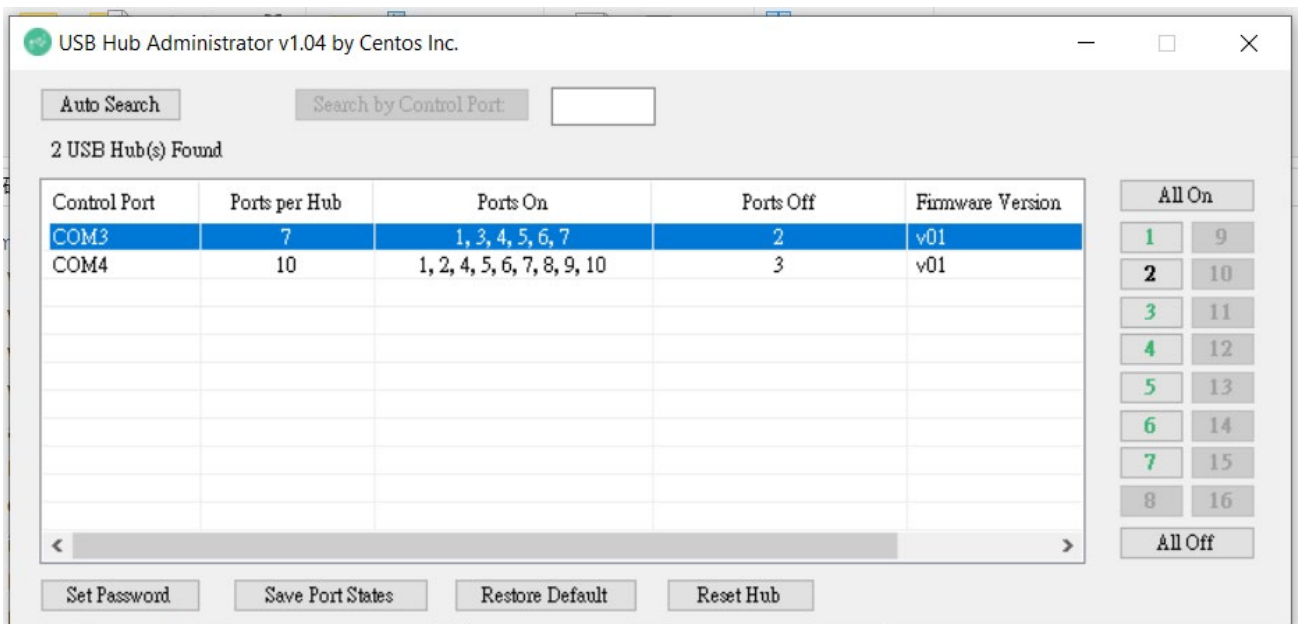
- 1 To install the USBCTL Software Package, simply double click on the USBCTL installer:



- Follow the instructions prompted by the installer until you complete the whole installation:

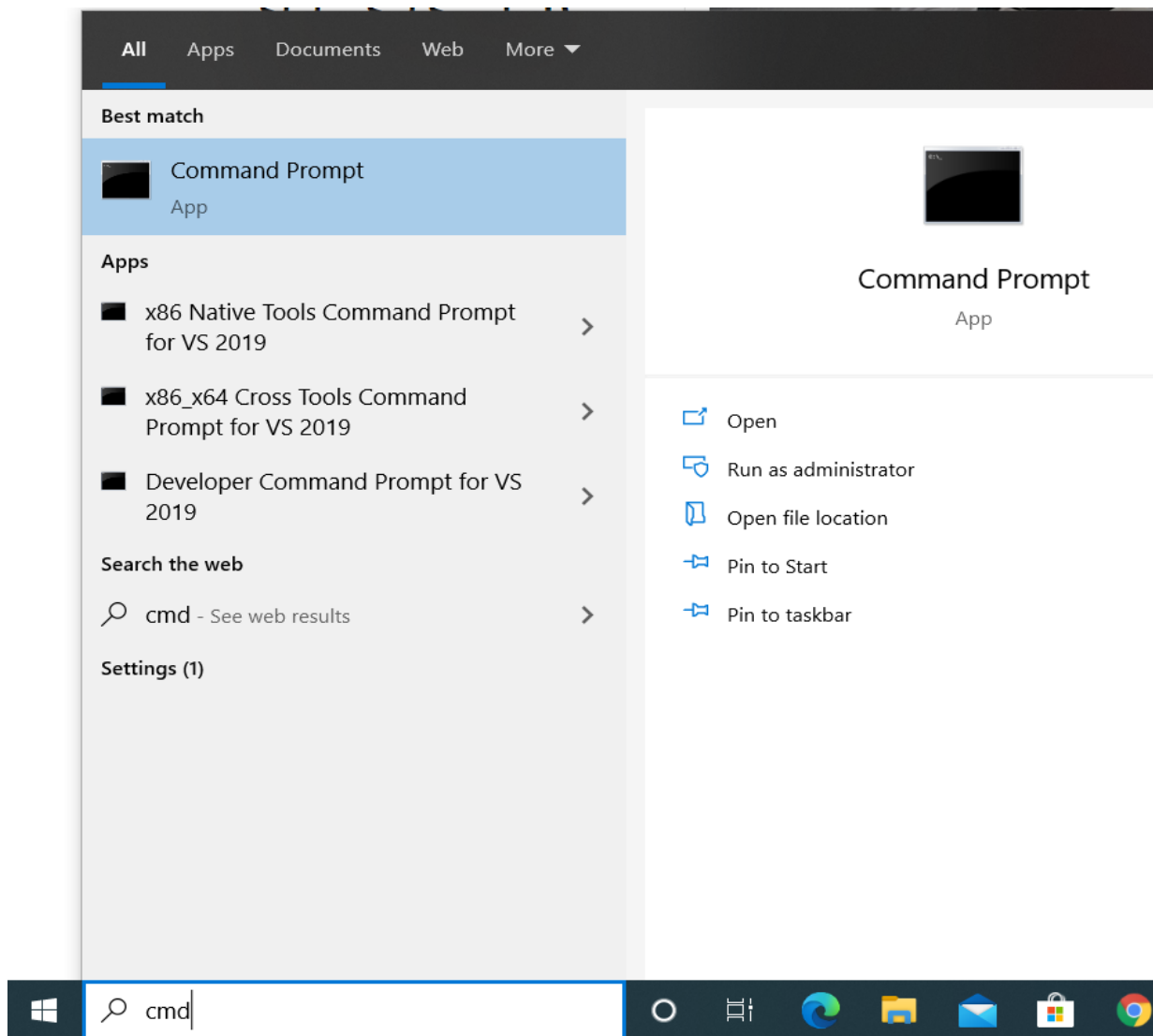


- Launch the USB Hub Administrator GUI, click **Auto Search** to detect all the hubs installed. And you are ready to control the them immediately.

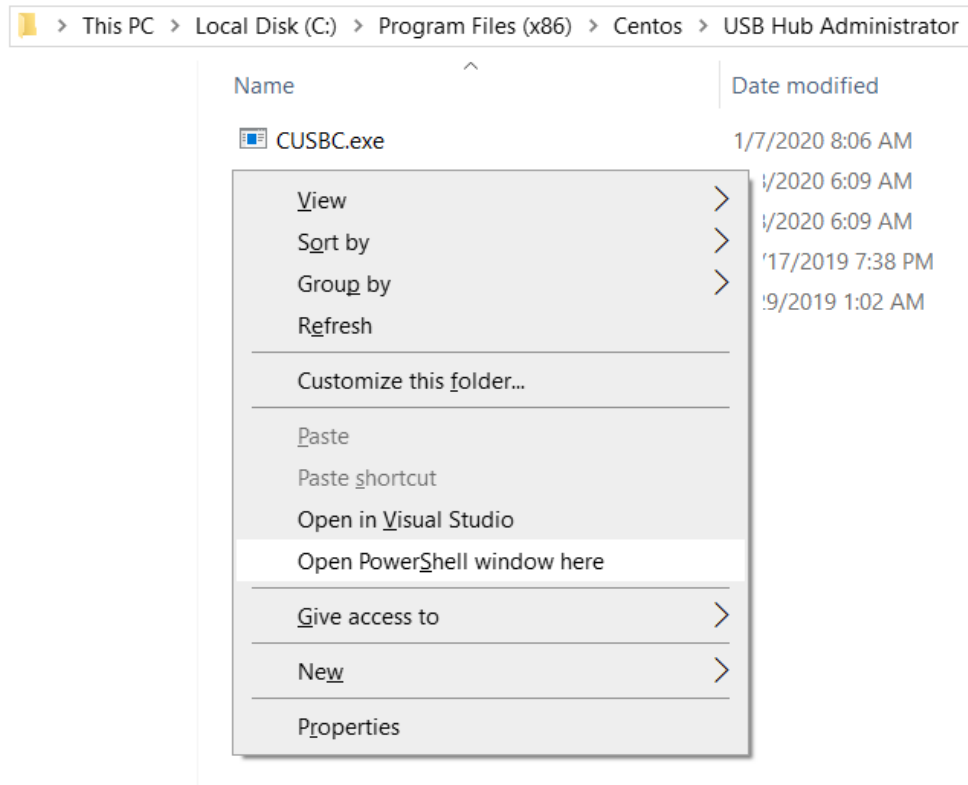


2.2 Running the Windows Command Prompt

- A. To run the Windows command prompt, type **cmd** in Windows Search Box, then press <Enter>:



- B. Or you can open a Command Prompt window to the folder which CUSBC.exe located, and **Shift+Right-Click** the folder in File Explorer and then choose “**Open PowerShell window here**” and click:



2.3 Query all hubs

At the beginning, you may want to know the connected Managed Hubs' information so you know how to control it. You can type **CUSBC /Q**


```
PS C:\Program Files (x86)\Centos\USB Hub Administrator> CUSBC /Q
1 USB Managed Hub(s) Found.
COM3, 7 ports, On=1,2,3,4,5,6,7, Off=None, FW=v01
PS C:\Program Files (x86)\Centos\USB Hub Administrator> █
```

The hub information was displayed as above screenshot. This information is very important for your later control use. The information tells you:

- Control Port is **COM3**, it was assigned by the system automatically. This information will be used for any command on CUSBC.exe.
- The hub has **7 ports**
- Current Port States: **All ports** are **On**, **no ports** are **Off**.
- Firmware version is **v01**

2.4 CUSBC Help Message

You can get the CUSBC Help Message when type **CUSBC /?** or **CUSBC** without any argument. The help message then will be displayed as the following screenshot:

 Windows PowerShell

```
Usage: CUSBC command [password] [argument]
command:
  /Q      query (no password is required)
  Usage:  CUSBC /Q [option]
          CUSBC /Q:COMn [option]
  /Q:     query all Managed USB Hubs
  /Q:COMn query the Managed USB Hub on COMn (n = 1 to 255)
  option  -F      output in formatted string

  /S      set port states (password is required)
  Usage:  CUSBC /S:COMn [pass] [states]
  COMn    control port number of the Managed USB Hub (n = 1 to 255)
  pass    password, default is used if this argument is not specified
  states  port states to be set on, off, toggle or given binary/hex states
          1:3,4    port 3 and 4 on
          0:3      port 3 off
          T:1,2    toggle port 1 and 2 states
          0:ALL    all ports off
          B:0101   binary, port 1 and 3 on, port 2, 4 off
          H:A601   byte hex (little-endian A6 01 ...):
                  port 2, 3, 6, 8, 9 on, the others off

  /F      set port states and save to flash as the initial states
  Usage:  similar to set port states (/S)

  /P      change password (8 characters maximum)
  Usage:  CUSBC /P:COMn [old_password] new_password
  COMn    control port number of the Managed USB Hub (n = 1 to 255)
  old_password old password, default assumed if omitted
  new_password new password

  /G      get current port states (no password is required)
  Usage:  CUSBC /G:COMn [option]
  /G:COMn control port number of the Managed USB Hub (n = 1 to 255)
  option  -B      output in formatted binary string
          -H      output in formatted little-endian hex string

  /W      save states to flash as the initial states (password is required)
  Usage:  CUSBC /W:COMn [pass]

  /D      restore to factory default settings (password is required)
  Usage:  CUSBC /D:COMn [pass]

  /R      reset the entire Managed USB Hub (password is required)
  Usage:  CUSBC /R:COMn [pass]

Example: To control port 3 of the hub, follow the steps below:
CUSBC /Q (auto search all the hubs connected)
CUSBC /S:COM3 0:3 (turn OFF port 3, assumed COM3 is found by the /Q command)
CUSBC /S:COM3 1:3 (turn ON port 3)
```

2.5 CUSBC Command Format

The CUSBC command format as follows. There are 3 portion parameters: command, password and command argument. The password and argument are optional for some commands.

CUSBC *command* [*password*] [*argument*]

where

command: It consists of a slash (/), a command character and a colon (:) plus a COM port number, e.g. /S:COM3 is a valid parameter

password: It consists of maximum 8 characters.

Argument: It is to tell the CUSBC what value to be set in the hub

Examples:

The following examples guide you how to issue the commands to control the hub:

1. To query the hubs: Type **CUSBC /Q**

```
PS C:\Program Files (x86)\Centos\USB Hub Administrator> CUSBC /Q
1 USB Managed Hub(s) Found.
COM3 7 ports, On=1,2,3,4,5,6,7, Off=None, FW=v01
PS C:\Program Files (x86)\Centos\USB Hub Administrator> █
```

2. Given the control port COM3 by the above Query command, you can issue Get the Port States command: Type **CUSBC /G:COM3**

```
PS C:\Program Files (x86)\Centos\USB Hub Administrator> CUSBC /G:COM3
On=1,2,3,4,5,6,7 Off=None
PS C:\Program Files (x86)\Centos\USB Hub Administrator> █
```

You can see all 7 ports are On, there is no port is Off.

3. Suppose you want to turn port 3 and 4 to Off, then you need to provide the command argument: Type **CUSBC /S:COM3 0:3,4**

where

“0:” means to set the ports to Off, if you want to turn it to On, replace it with “1:” instead

“3,4” means port 3 and port 4 will be set

```
PS C:\Program Files (x86)\Centos\USB Hub Administrator> CUSBC /S:COM3 0:3,4
PS C:\Program Files (x86)\Centos\USB Hub Administrator> CUSBC /G:COM3
On=1,2,5,6,7 Off=3,4
PS C:\Program Files (x86)\Centos\USB Hub Administrator> █
```

You will see the LEDs of the port 3 and 4 are Off. We have sent another Get Port States command, you can see the port states displayed and tell you port 3 and 4 are Off.

- If you want to turn On port 4, please type **CUSBC /S:COM3 1:4**

```
PS C:\Program Files (x86)\Centos\USB Hub Administrator> CUSBC /S:COM3 1:4
PS C:\Program Files (x86)\Centos\USB Hub Administrator> CUSBC /G:COM3
On=1,2,4,5,6,7 Off=3
PS C:\Program Files (x86)\Centos\USB Hub Administrator> █
```

You can see the port 4 is On and only port 3 is still Off.

2.6 Get the Port States: /G

This Get Port States command (/G) is to read the current port states from the hub. It can report in 3 formats: description, binary-encoded string and hexadecimal-encoded string. The first format is user friendly to read, however, the later 2 formats are easily to be handled programmatically.

CUSBC /S:COMn [option]

Where

- COMn** Control Port assigned by the System, e. g. COM3
- Option** Output format, **-B** for binary-bit-mapped sting and **-H** for hexadecimal-bit-mapped string

- Get Port States in common description: **CUSBC /G:COM3**

```
PS C:\Program Files (x86)\Centos\USB Hub Administrator> CUSBC /G:COM3
On=3,5,6,7 Off=1,2,4
```

- Get Port States in bit-mapped string format: **CUSBC /G:COM3 -B**

```
PS C:\Program Files (x86)\Centos\USB Hub Administrator> CUSBC /G:COM3 -B
1110100
```

Bit-map	111 0100
	↑ ↑
Port #	765 4321

- Get Port States in hexadecimal-bit-mapped string: **CUSBC /G:COM3 -H**

```
PS C:\Program Files (x86)\Centos\USB Hub Administrator> CUSBC /G:COM3 -H
F4FFFFFF
```

Hexadecimal	F4 (LSB)	FF	FF	FF (MSB)
Bit-map	1111 0100	1111 1111	1111 1111	1111 1111
Port #	8765 4321	16 ~ 9	24 ~ 17	32 ~ 25

2.7 Set Port States: /S and /F

There are 2 commands to set the port states, /S and /F. Both work with the same command format except /S is to set the port states temporarily (once the hub is powered off and powered on again, these unsaved port states will be lost), however, /F is to set the port states and saved them to the flash memory permanently. No matter you do a hardware reset or power off the hub, the saved port states will be retrieved when it is restarted. There is another command /W (to be described in the later paragraph) to save the current port states to the flash memory without changing it. Logically, /F command functions like executing a /S command and a /W command.

CUSBC /S:COMn [password] states

Where

- COMn** Control Port assigned by the System, e. g. COM3
- password** if you have not set the password, you don't need to enter this option. However, you need to enter the password once you have set your own password with /P command (to be described in later paragraph)
- states** It consists of 2 ports, one is what states you want to change, the other is which ports you want to change.

States to change:

- 0:** Off
- 1:** On
- T:** Toggle (invert)
- B:** Bit mapped string
- H:** Hexadecimal bit mapped string

Ports to be changed:

ALL: All ports

Ports by a list: The port numbers are listed with a coma delimiter (,). For example, 1,2,5

Bit-mapped-string for **B** and **H** options

Examples:

Query hubs to get the control port: **CUSBC /Q**

Assumes you were given COM3 control port by the above Query command, try the following command examples and check the corresponding port state LEDs on the hub whether they act correctly:

Turn Off port 3: **CUSBC /S:COM3 pass 0:3**

Turn On port 3: **CUSBC /S:COM3 pass 1:3**

Try again without password: **CUSBC /S:COM3 0:3**

Toggle (invert) port 3: **CUSBC /S:COM3 T:3**

Toggle (invert) port 3: **CUSBC /S:COM3 T:3**

Turn Off port 1 and 2: **CUSBC /S:COM3 0:1,2**

Turn On all ports: **CUSBC /S:COM3 1:ALL**

Turn Off port 3 by a bit-mapped string (if your hub is 7-port): **CUSBC /S:COM3 B:1111110**

Turn Off port 3 by a bit-mapped string (if your hub is 4-port): **CUSBC /S:COM3 B:1110**

To set the port states by a hexadecimal bit-mapped string, let's explain how the port states were mapped to the corresponding bits in the string. The string consists 4 bytes which indicate 32 bits for 32-port states. A "1" indicates On, "0" indicates Off. The 4 bytes were aligned in little-endian.

If you want to express the port 1, 2, 4 are Off. The string should be **F4 FF FF FF**:

Hexadecimal	F4 (LSB)	FF	FF	FF (MSB)
Bit-map	1111 0100	1111 1111	1111 1111	1111 1111
Port #	8 7 6 5 4 3 2 1	16 ~ 9	24 ~ 17	32 ~ 25

Turn Off port 1,2,4 by hexadecimal bit-mapped string: **CUSBC /S:COM3 H:F4FFFFFF**

2.8 Change Password: /P

The /P command is to set (or change) the access password of the Managed USB hub. The factory default password is “**pass**”. Once the password is changed successfully, you need to include the new password for your new commands afterwards.

CUSBC /P:COMn [old_password] new_password

Where

COMn	Control Port assigned by the System, e. g. COM3
old_password	The current password to be changed (8 characters maximum)
new_password	The new password (8 characters maximum)

Examples:

Set password from its factory default to the new password “**new**”: **CUSBC /P:COM3 new**

Change password “**new**” to “**new2**”: **CUSBC /P:COM3 new new2**

2.9 Save Port States as Power-on Default: /W

The /W command is to save the current port states to the hub’s internal flash memory. Once the port states were saved, the hub will initiate its port states according to these settings when it is powered up or reset.

CUSBC /W:COMn [password]

Where

COMn	Control Port assigned by the System, e. g. COM3
password	Access password, can be omitted if it is the same as the factory default

Examples:

Save the current port states: **CUSBC /W:COM3**

Save the current port states with the password “**pass**”: **CUSBC /W:COM3 pass**

2.10 Restore to Factory Default Settings: /D

The /D command is to restore the hub's factory default settings. If you want to restore the factory default settings while you have forgotten the password, then you have to use the push button on the hub (power off the hub, press the button and hold, power on the hub) instead. Once the hub has been restored to its factory default settings, its password is "**pass**" and **all ports are set to On**.

CUSBC /D:COMn [password]

Where

COMn Control Port assigned by the System, e. g. COM3
 password Access password, can be omitted if it is the same as the factory default

Examples:

Restore the factory default settings: **CUSBC /D:COM3**
 Restore the factory default settings with the password "**pass**": **CUSBC /D:COM3 pass**

2.11 Hardware Reset the Entire Hub: /R

In some cases, you may want to reset the hub without physically unplugging or powering it off. The /R command can do similarly for you.

CUSBC /R:COMn [password]

Where

COMn Control Port assigned by the System, e. g. COM3
 password Access password, can be omitted if it is the same as the factory default

Examples:

Reset the hub: **CUSBC /R:COM3**
 Reset the hub with the password "**pass**": **CUSBC /R:COM3 pass**

2.12 Using CUSBC.exe Programmatically

Some of the **CUSBC** command options are to return its output result in formatted strings. The formatted string is very helpful for your application software to parse it. Their formats are described below.

1. Query commands:

The application software usually need 2 commands, one is to query how many hubs detected and what are their control ports. The other command is to ask more information of the specific hub

- To query all connected hubs:

```
CUSBC /Q -F
0002COM3,4
```

Where

0002: 4 characters for number of hubs installed, 0002 indicates 2 hubs detected.
COM3,4: separated by the ‘,’ character, control ports are COM3 and COM4

- To get the information of each hub:

```
CUSBC /Q:COM3 -F
FBFFFFFF0Av01
```

Where

FBFFFFFF 8 characters hexadecimal bit-mapped, indicates the current Port States
0A 2 characters hexadecimal for number of ports, 0A means 10 ports
v01 3 characters for firmware version

To query the other hub:

```
CUSBC /Q:COM4 -F
FDFFFFFF07v01
```

2. Get Port States:

The Get Port States command provides 2 formatted string options:

- Bit-mapped: **-B**
 e.g.

CUSBC /G:COM3 -B

1111111011

The 10 characters (0 is off, 1 is on) indicate the port states for port 1 to 10 respectively. The rightmost character indicates port 1. The leftmost character indicates port 10. The above example indicates Port 3 is off

- Hexadecimal bit-mapped: **-H**
e.g.

CUSBC /G:COM4 -H

FBFFFFFF

The 8 hexadecimal bit-mapped characters (**FB FF FF FF**) indicates the 32 port states for port 1 to 32 respectively. They are mapped as the following table:

Hexadecimal	FB (LSB)	FF	FF	FF (MSB)
Bit-map	1111 1011	1111 1111	1111 1111	1111 1111
Port #	8765 4321	16 ~ 9	24 ~ 17	32 ~ 25

3. Set Port States:

Similar to the Get Port State commands mentioned above, the Set Port States command provides 2 formatted string options **B** and **H** as well:

- Bit-mapped: **-B**
e.g. The following command turns off Port 2 and 9 and the other ports are on

CUSBC /S:COM3 B:1011111101

- Hexadecimal bit-mapped: **-H**

e.g. The following command set port 1, 6, 10, 15, 20, 27 and 31 to off and the other ports are on:

CUSBC /S:COM3 H:DEBDF7BB

Hexadecimal	DE (LSB)	BD	F7	BB (MSB)
Bit-map	1101 1110	1011 1101	1111 0111	1011 1011
Port #	8765 4321	16 ~ 9	24 ~ 17	32 ~ 25

3 Linux (Intel: cusbi and ARM: cusba)

The **cusbi** (or **cusba** for ARM CPU) is the prebuilt Managed USB Hub control software which is running on an Intel/AMD CPU based Linux system. Once the **cusbi** is copied to the specific folder, you need to set the environment variable on Linux accordingly so it can be executed on the terminal at that folder. By the way, you need to login as the **root** to grant **cusbi** the privileges to access the hub.

3.1 Running the Linux Terminal

- A. The **cusbi** is shipped in a compressed file (such as **cusbi-r1.02.tar.gz**), you need to copy it to your Linux system. Please copy it to the Desktop (Ubuntu for example), then extract it.



- B. Then the **cusbi** is displayed on the Desktop, click the Terminal icon on the left screen to run the Terminal app:



- C. Before executing any **cusbi** command, we need to set up the environment:

- Go to **Desktop** folder
- To get **root** privileges in the Terminal window for accessing hub, type **sudo -s** then enter the password.
- Type **export PATH=\$PATH:~/Desktop** to add the path where the **cusbi** located (~/Desktop) to the PATH variable (it enables you to run **cusbi** without adding **./** two leading characters indicating the current folder every time). Please note that this command only adds the path temporarily. It will lose once you close the Terminal app. If you want to make this change permanently, you need to add it to **/etc/bash.bashrc** file with a text editor so it will be executed anytime the Terminal is opened.
- Type **echo \$PATH** to check if the **Desktop** string was correctly added to PATH variable or not. If it is correctly added, you are ready to control the Managed USB hub with **cusbi** utility.

```
Terminal
root@ubuntu: ~/Desktop
steve@ubuntu:~$ cd Desktop
steve@ubuntu:~/Desktop$ sudo -s
[sudo] password for steve:
root@ubuntu:~/Desktop# export PATH=$PATH:~/Desktop
root@ubuntu:~/Desktop# echo $PATH
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/home/steve/Desktop
root@ubuntu:~/Desktop#
```

D. To invoke the help message, you can type the following commands:

cusbi /?

cusbi

```
root@ubuntu: ~/Desktop
root@ubuntu:~/Desktop# cusbi
cusbi v1.02 for Linux/x86-64
Usage: cusbi command [password] [argument]
command:
  /Q      query (no password is required)
Usage:   cusbi /Q [option]
         cusbi /Q:ttyUSBn [option]
  /Q:     query all Managed USB Hubs
  /Q:ttyUSBn query the Managed USB Hub on ttyUSBn (n = 1 to 255)
option   -F      output in formatted string

  /S      set port states (password is required)
Usage:   cusbi /S:ttyUSBn [pass] [states]
ttyUSBn  control port number of the Managed USB Hub (n = 1 to 255)
pass     password, default is used if this argument is not specified
states   port states to be set on, off, toggle or given binary/hex states
         1:3,4   port 3 and 4 on
         0:3     port 3 off
         T:1,2   toggle port 1 and 2 states
```

3.2 Query all hubs

At the beginning, you may want to know the connected Managed Hubs' information so you know how to control it. You can type **cusbi /Q**

```
root@ubuntu: ~/Desktop
root@ubuntu:~/Desktop# cusbi /Q
ttyUSB0, 10 ports, On=1,2,4,5,6,7,8,9,10, Off=3, FW=v01
1 Managed USB Hub(s) Found.
root@ubuntu:~/Desktop#
```

The hub information was displayed as above screenshot. This information is very important for your later control use. The information tells you:

- Control Port is **ttyUSB0**, it was assigned by the system automatically. This information will be used for any command on **cusbi**.
- The hub has **10 ports**
- Current Port States: **All ports are On, no ports are Off.**
- Firmware version is **v01**

3.3 cusbi Help Message

You can get the **cusbi** Help Message when type **cusbi /?** or **cusbi** without any argument. The help message then will be displayed as the following screenshot:

```

root@ubuntu: ~/Desktop
root@ubuntu:~/Desktop# cusbi /?
cusbi v1.02 for Linux/x86-64
Usage: cusbi command [password] [argument]
command:
  /Q      query (no password is required)
  Usage:  cusbi /Q [option]
          cusbi /Q:ttyUSBn [option]
  /Q:     query all Managed USB Hubs
  /Q:ttyUSBn query the Managed USB Hub on ttyUSBn (n = 1 to 255)
  option  -F      output in formatted string

  /S      set port states (password is required)
  Usage:  cusbi /S:ttyUSBn [pass] [states]
  ttyUSBn control port number of the Managed USB Hub (n = 1 to 255)
  pass    password, default is used if this argument is not specified
  states  port states to be set on, off, toggle or given binary/hex states
          1:3,4    port 3 and 4 on
          0:3      port 3 off

```

3.4 cusbi Command Format

The cusbi command format as follows. There are 3 portion parameters: command, password and command argument. The password and argument are optional for some commands.

cusbi *command* [*password*] [*argument*]

where

- command* : It consists of a slash (/), a command character and a colon (:) plus a control port number, e.g. /S:ttyUSB0 is a valid parameter
- password*: It consists of maximum 8 characters.
- Argument*: It is to tell the cusbi what value to be set in the hub

Examples:

The following examples guide you how to issue the commands to control the hub:

1. To query the hubs: Type **cusbi /Q**

```
root@ubuntu: ~/Desktop
root@ubuntu:~/Desktop# cusbi /Q
ttyUSB0, 10 ports, On=1,2,4,5,6,7,8,9,10, Off=3, FW=v01
1 Managed USB Hub(s) Found.
root@ubuntu:~/Desktop#
```

2. Given the control port **tttyUSB0** by the above Query command, you can issue Get the Port States command: Type **cusbi /G:tttyUSB0**

```
root@ubuntu: ~/Desktop
root@ubuntu:~/Desktop# cusbi /G:tttyUSB0
On=1,2,4,5,6,7,8,9,10 Off=3
root@ubuntu:~/Desktop#
```

You can see all ports are On, there is no port is Off.

3. Suppose you want to turn port 3 and 4 to Off, then you need to provide the command argument: Type **cusbi /S:tttyUSB0 0:3,4**

where

“0:” means to set the ports to Off, if you want to turn it to On, replace it with “1:” instead

“3,4” means port 3 and port 4 will be set

```
root@ubuntu: ~/Desktop
root@ubuntu:~/Desktop# cusbi /S:tttyUSB0 0:3,4
root@ubuntu:~/Desktop# cusbi /G:tttyUSB0
On=1,2,5,6,7,8,9,10 Off=3,4
root@ubuntu:~/Desktop#
```

You will see the LEDs of the port 3 and 4 are Off. We have sent another Get Port States command, you can see the port states displayed and tell you port 3 and 4 are Off.

4. If you want to turn On port 4, please type **cusbi /S:tttyUSB0 1:4**

```
root@ubuntu: ~/Desktop
root@ubuntu:~/Desktop# cusbi /S:tttyUSB0 1:4
root@ubuntu:~/Desktop# cusbi /G:tttyUSB0
On=1,2,4,5,6,7,8,9,10 Off=3
root@ubuntu:~/Desktop#
```

You can see the port 4 is On and only port 3 is still Off.

3.5 Get the Port States: /G

This Get Port States command (/G) is to read the current port states from the hub. It can report in 3 formats: description, binary-encoded string and hexadecimal-encoded string. The first format is user friendly to read, however, the later 2 formats are easily to be handled programmatically.

cusbi /S:ttyUSBn [option]

Where

- ttyUSBn** Control Port assigned by the System, e. g. ttyUSB0
- Option** Output format, **-B** for binary-bit-mapped sting and **-H** for hexadecimal-bit-mapped string

- Get Port States in common description: **cusbi /G: ttyUSB0**

```

root@ubuntu: ~/Desktop
root@ubuntu:~/Desktop# cusbi /G:ttyUSB0
On=1,2,4,5,6,7,8,9,10 Off=3
root@ubuntu:~/Desktop#
    
```

- Get Port States in bit-mapped string format: **cusbi /G: ttyUSB0 -B**

```

root@ubuntu: ~/Desktop
root@ubuntu:~/Desktop# cusbi /G:ttyUSB0 -B
111111011
root@ubuntu:~/Desktop#
    
```

Bit-map	1	1	1111	1011
Port #	10	9	8765	4321

- Get Port States in hexadecimal-bit-mapped string: **cusbi /G:ttyUSB0 -H**

```

root@ubuntu: ~/Desktop
root@ubuntu:~/Desktop# cusbi /G:ttyUSB0 -H
FBFFFFFF
root@ubuntu:~/Desktop#
    
```

Hexadecimal	FB (LSB)	FF	FF	FF (MSB)
Bit-map	1111 1011	1111 1111	1111 1111	1111 1111
Port #	8765 4321	16 ~ 9	24 ~ 17	32 ~ 25

3.6 Set Port States: /S and /F

There are 2 commands to set the port states, /S and /F. Both work with the same command format except /S is to set the port states temporarily (once the hub is powered off and powered on again, these unsaved port states will be lost), however, /F is to set the port states and saved them to the flash memory permanently. No matter you do a hardware reset or power off the hub, the saved port states will be retrieved when it is restarted. There is another command /W (to be described in the later paragraph) to save the current port states to the flash memory without changing it. Logically, /F command functions like executing a /S command and a /W command.

CUSBC /S: ttyUSB0n[password] states

Where

- ttyUSBn** Control Port assigned by the System, e. g. ttyUSB0
- password** if you have not set the password, you don't need to enter this option. However, you need to enter the password once you have set your own password with /P command (to be described in later paragraph)
- states** It consists of 2 ports, one is what states you want to change, the other is which ports you want to change.

States to change:

- 0:** Off
- 1:** On
- T:** Toggle (invert)
- B:** Bit mapped string
- H:** Hexadecimal bit mapped string

Ports to be changed:

ALL: All ports

Ports by a list: The port numbers are listed with a coma delimiter (,). For example, 1,2,5

Bit-mapped-string for **B** and **H** options

Examples:

Query hubs to get the control port: `cusbi /Q`

Assumes you were given ttyUSB0 control port by the above Query command, try the following command examples and check the corresponding port state LEDs on the hub whether they act correctly:

- Turn Off port 3: `cusbi /S: ttyUSB0 pass 0:3`
- Turn On port 3: `cusbi /S: ttyUSB0 pass 1:3`
- Try again without password: `cusbi /S: ttyUSB0 0:3`
- Toggle (invert) port 3: `cusbi /S: ttyUSB0 T:3`
- Toggle (invert) port 3: `cusbi /S: ttyUSB0 T:3`
- Turn Off port 1 and 2: `cusbi /S: ttyUSB0 0:1,2`
- Turn On all ports: `cusbi /S: ttyUSB0 1:ALL`

Turn Off port 3 by a bit-mapped string (if your hub is 7-port): `cusbi /S: ttyUSB0 B:1111110`

Turn Off port 3 by a bit-mapped string (if your hub is 4-port): `cusbi /S: ttyUSB0 B:1110`

To set the port states by a hexadecimal bit-mapped string, let's explain how the port states were mapped to the corresponding bits in the string. The string consists 4 bytes which indicate 32 bits for 32-port states. A "1" indicates On, "0" indicates Off. The 4 bytes were aligned in little-endian.

If you want to express the port 1, 2, 4 are Off. The string should be **F4 FF FF FF**:

Hexadecimal	F4 (LSB)	FF	FF	FF (MSB)
Bit-map	1111 0100	1111 1111	1111 1111	1111 1111
Port #	8765 4321	16 ~ 9	24 ~ 17	32 ~ 25

Turn Off port 1,2,4 by hexadecimal bit-mapped string: `cusbi /S: ttyUSB0 H:F4FFFFFF`

3.7 Change Password: /P

The /P command is to set (or change) the access password of the Managed USB hub. The factory

default password is “**pass**”. Once the password is changed successfully, you need to include the new password for your new commands afterwards.

cusbi /P: `ttyUSBn` [old_password] new_password

Where

`ttyUSBn` Control Port assigned by the System, e. g. `tttyUSB0`
`old_password` The current password to be changed (8 characters maximum)
`new_password` The new password (8 characters maximum)

Examples:

Set password from its factory default to the new password “**new**”: **cusbi /P:tttyUSB0 new**

Change password “**new**” to “**new2**”: **cusbi /P:tttyUSB0 new new2**

3.8 Save Port States as Power-on Default: /W

The `/W` command is to save the current port states to the hub’s internal flash memory. Once the port states were saved, the hub will initiate its port states according to these settings when it is powered up or reset.

cusbi /W: `ttyUSBn` [password]

Where

`ttyUSBn` Control Port assigned by the System, e. g. `tttyUSB0`
`password` Access password, can be omitted if it is the same as the factory default

Examples:

Save the current port states: **cusbi /W:tttyUSB0**

Save the current port states with the password “**pass**”: **cusbi /W:tttyUSB0 pass**

3.9 Restore to Factory Default Settings: /D

The `/D` command is to restore the hub’s factory default settings. If you want to restore the factory default settings while you have forgotten the password, then you have to use the push button on the hub (power off the hub, press the button and hold, power on the hub) instead. Once the hub

has been restored to its factory default settings, its password is “**pass**” and **all ports are set to On**.

cusbi /D: `ttyUSBn` [password]

Where

`ttyUSBn` Control Port assigned by the System, e. g. `ttyUSB0`

password Access password, can be omitted if it is the same as the factory default

Examples:

Restore the factory default settings: **cusbi /D:ttyUSB0**

Restore the factory default settings with the password “**pass**”: **cusbi /D:ttyUSB0 pass**

3.10 Hardware Reset the Entire Hub: /R

In some cases, you may want to reset the hub without physically unplugging or powering it off. The `/R` command can do similarly for you.

cusbi /R: `ttyUSBn` [password]

Where

`ttyUSBn` Control Port assigned by the System, e. g. `ttyUSB0`

password Access password, can be omitted if it is the same as the factory default

Examples:

Reset the hub: **cusbi /R:ttyUSB0**

Reset the hub with the password “**pass**”: **cusbi /R:ttyUSB0 pass**

3.11 Using cusbi Programmatically

Some of the **cusbi** command options are to return its output result in formatted strings. The formatted string is very helpful for your application software to parse it. Their formats are described below.

4. Query commands:

The application software usually need 2 commands, one is to query how many hubs detected

and what are their control ports. The other command is to ask more information of the specific hub

- To query all connected hubs:

```
cusbi /Q -F
0002ttyUSB0,1
```

Where

0002: 4 characters for number of hubs installed, 0002 indicates 2 hubs detected.
ttyUSB0,1: separated by the ‘,’ character, control ports are ttyUSB0 and ttyUSB1

- To get the information of each hub:

```
cusbi /Q:ttyUSB0 -F
FBFFFFFF0Av01
```

Where

FBFFFFFF 8 characters hexadecimal bit-mapped, indicates the current Port States
0A 2 characters hexadecimal for number of ports, 0A means 10 ports
v01 3 characters for firmware version

To query the other hub:

```
cusbi /Q:ttyUSB1 -F
FDFFFFFFF07v01
```

5. Get Port States:

The Get Port States command provides 2 formatted string options:

- Bit-mapped: **-B**
 e.g.

```
cusbi /G:ttyUSB0 -B
1111111011
```

The 10 characters (0 is off, 1 is on) indicate the port states for port 1 to 10 respectively. The rightmost character indicates port 1. The leftmost character indicates port 10. The above example indicates Port 3 is off

- Hexadecimal bit-mapped: **-H**

e.g.

```
cusbi /G:ttyUSB0 -H
FBFFFFFF
```

The 8 hexadecimal bit-mapped characters (**FB FF FF FF**) indicates the 32 port states for port 1 to 32 respectively. They are mapped as the following table:

Hexadecimal	FB (LSB)	FF	FF	FF (MSB)
Bit-map	1111 1011	1111 1111	1111 1111	1111 1111
Port #	8765 4321	16 ~ 9	24 ~ 17	32 ~ 25

6. Set Port States:

Similar to the Get Port State commands mentioned above, the Set Port States command provides 2 formatted string options **B** and **H** as well:

- Bit-mapped: **-B**

e.g. The following command turns off Port 2 and 9 and the other ports are on

```
cusbi /S:ttyUSB0 B:1011111101
```

- Hexadecimal bit-mapped: **-H**

e.g. The following command set port 1, 6, 10, 15, 20, 27 and 31 to off and the other ports are on:

```
cusbi /S:ttyUSB0 H:DEBDF7BB
```

Hexadecimal	DE (LSB)	BD	F7	BB (MSB)
Bit-map	1101 1110	1011 1101	1111 0111	1011 1011
Port #	8765 4321	16 ~ 9	24 ~ 17	32 ~ 25

4 Mac OS: CUSBM Software Package

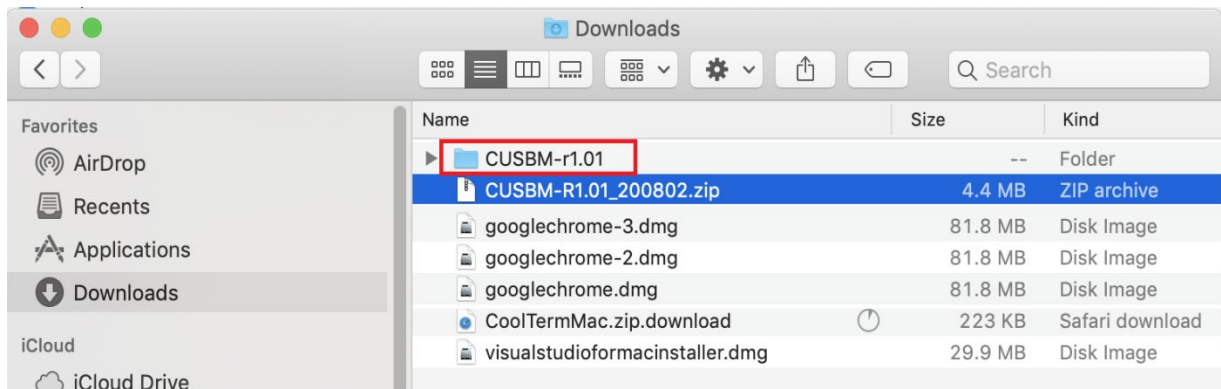
The CUSBM is the Managed USB Hub control software which is running on Mac terminal. It is shipped along with the CUSBM GUI software package. Once the GUI package is extracted, the CUSBM will be at the specific folder. You may need to modify the environment variable accordingly on Mac to execute it at anywhere in terminal.

The CUSBM Software Pack has been tested and verified on most of the recent MacOS versions. However, if you have any compatibility problem of running CUSBM package on the older MacOS version, we recommend you to upgrade to the most up-to-date-version to resolve the problem.

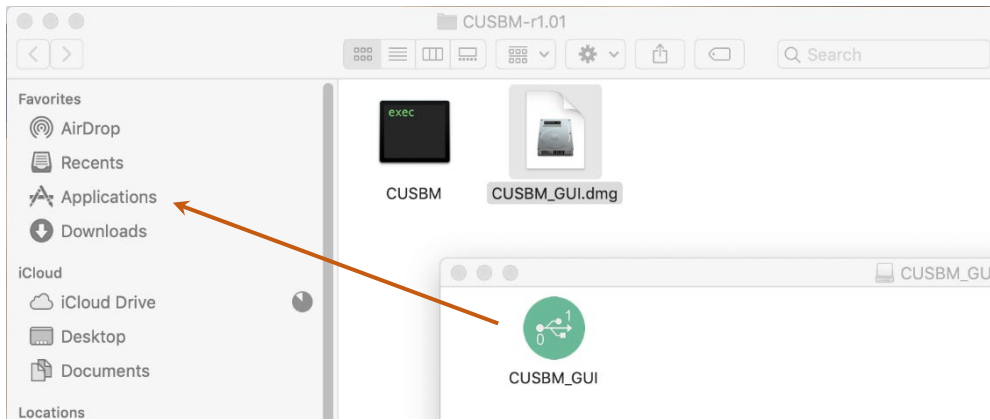
4.1 Installing CUSBM Software Package

The **CUSBM** Software Package includes a **CUSBM** console script and a **CUSBM_GUI** app. The following procedures show how to install both files.

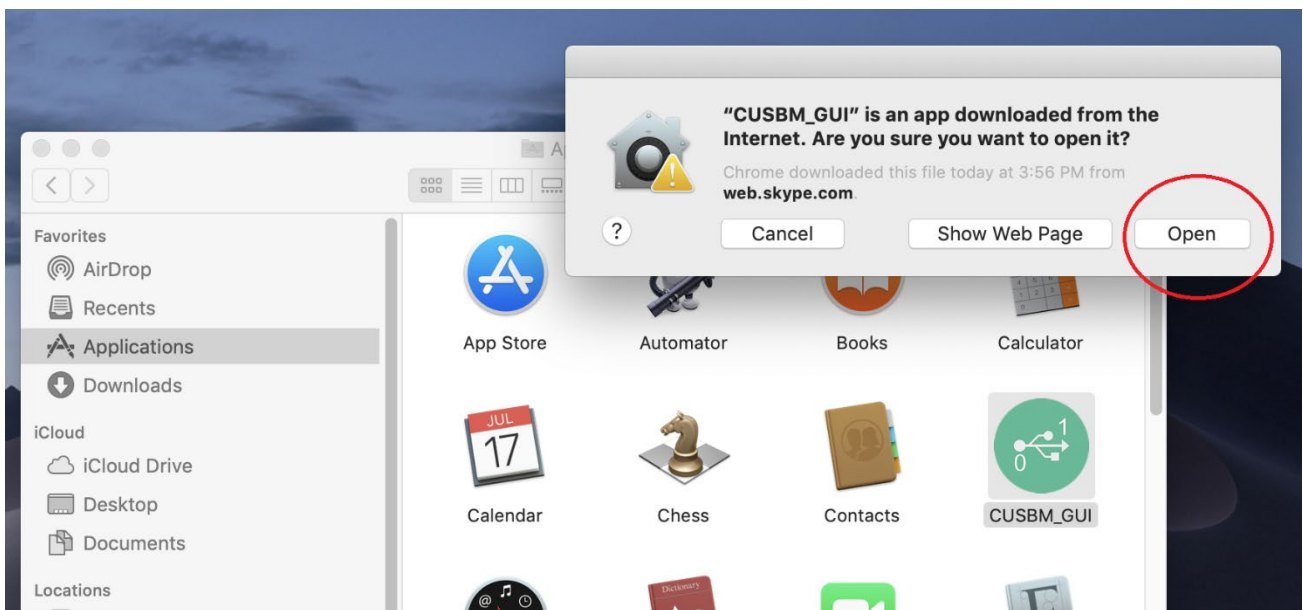
1. Suppose the Software Package was downloaded and saved in the **Downloads** folder, please click **Finder** icon in the dock, click **Downloads** folder, double click **CUSBM-R1.01_200802.zip** to extract it.



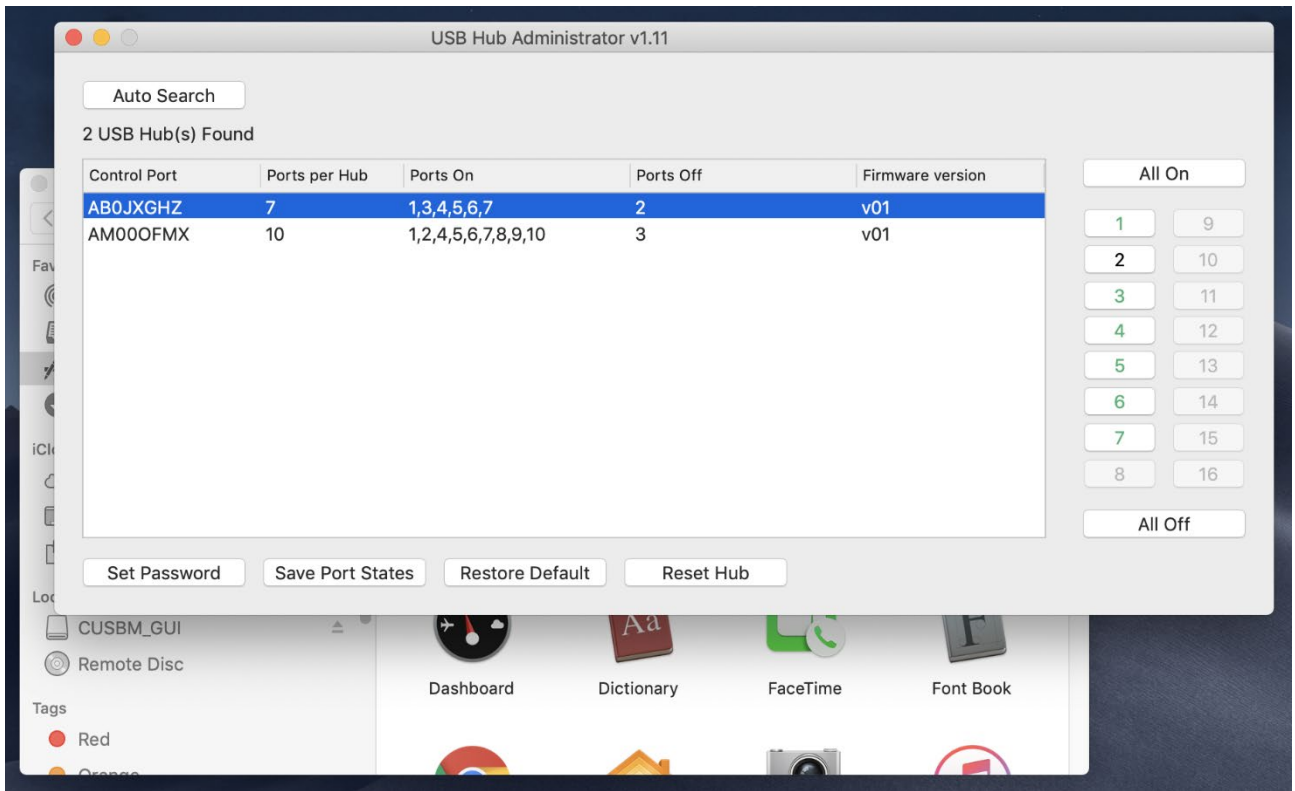
2. Double click **CUSBM_GUI.dmg** file in **CUSBM-r1.01** folder, the **CUSBM_GUI** app will be created. Drag its icon and drop into the Applications folder has completed the app installation.



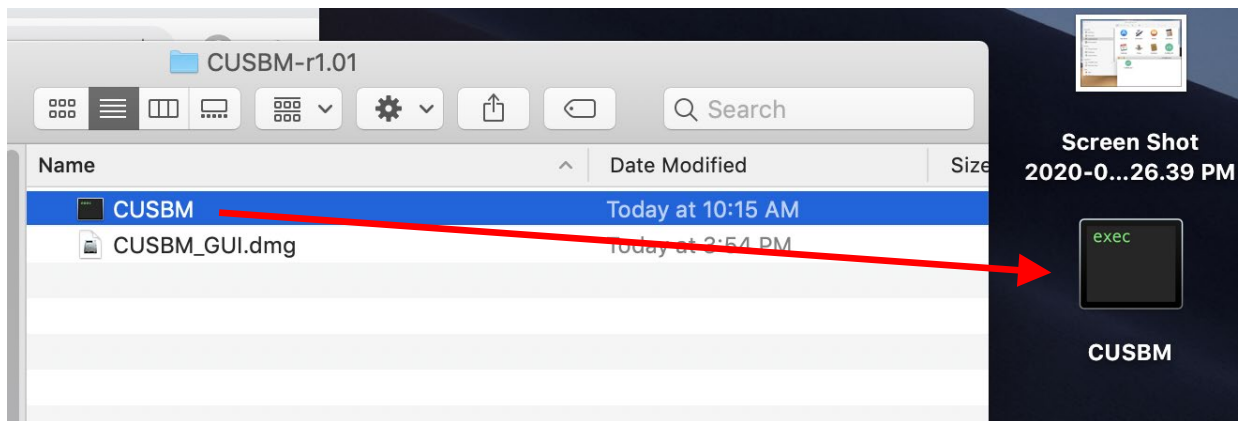
3. At the **Applications** folder, double click **CUSBM_GUI** icon to start the app. If you receive a note about that this app is from other developer instead of Apple AppStore, please click **Open** to run anyway.



4. Click Auto Search to detect the connected Hubs automatically. You are now can control the hubs with the CUSBM_GUI app.

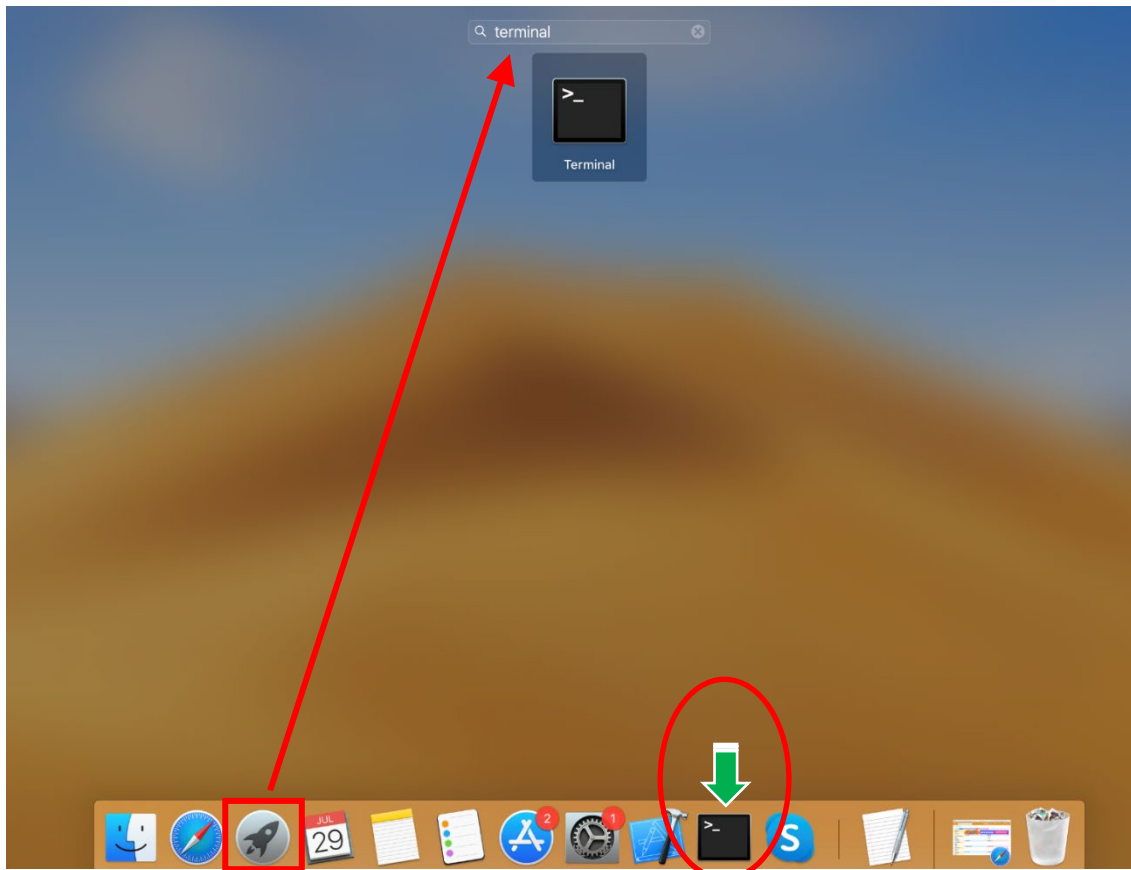


5. Drag the **CUSBM** script to the **Desktop** where we will explain how to use it to control the hub.



4.2 Open Terminal on Mac

- A. To run the Terminal app, click Launchpad in the Dock, type **terminal** in the search bar, and click the appeared **Terminal** app icon. Or if there is a **Terminal** icon in the dock, simply click it.



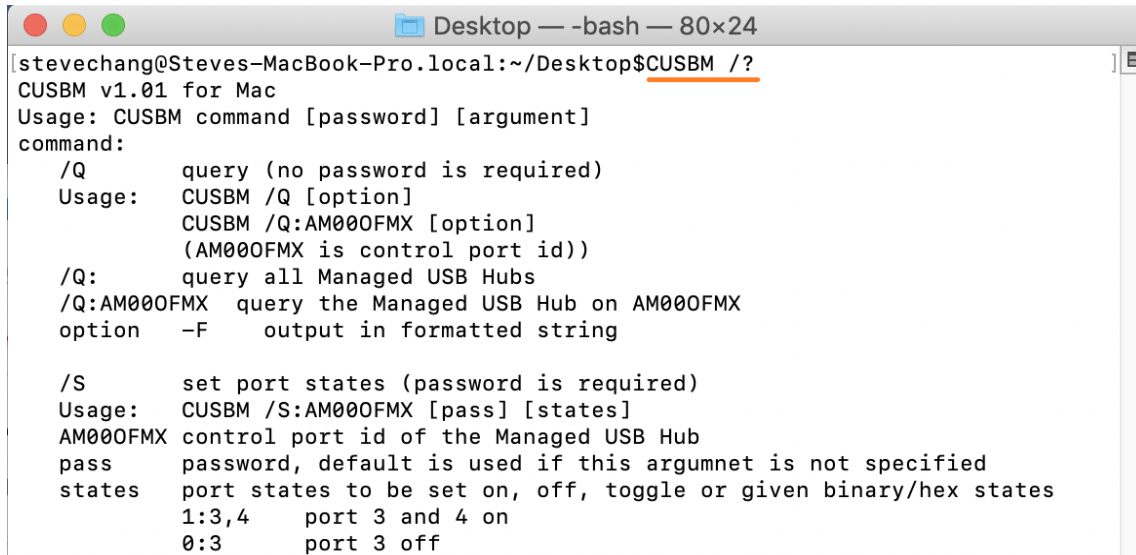
- B. If you have not dragged the **CUSBM** script to your Desktop, please do it before proceeding the following commands.
- Go to Desktop folder by typing **cd Desktop**
 - Type **export PATH=\$PATH:~/Desktop** to add the path where the **CUSBM** located (~/Desktop) to the PATH variable (it enables you to run **CUSBM** script without adding “./” two leading characters indicating the current folder afterwards). Please note that this command only adds the path temporarily. It will lose once you close the Terminal app. If you want to make this change permanently, you need to add it to **/etc/ bash.bashrc** file with a text editor so it will be executed anytime the Terminal is opened.
 - Type **echo \$PATH** to check if the “**Desktop**” string was correctly added to PATH variable or not. If it is correctly added, you are ready to control the Managed USB hub with **CUSBM** script.

```

Desktop — -bash — 80x24
[stevechang@Steves-MacBook-Pro.local:~$cd Desktop
[stevechang@Steves-MacBook-Pro.local:~/Desktop$export PATH=$PATH:~/Desktop
[stevechang@Steves-MacBook-Pro.local:~/Desktop$echo $PATH
/usr/local/bin:/usr/bin:/bin:/usr/sbin:/sbin:/usr/local/share/dotnet:~/dotnet/tools:/Library/Frameworks/Mono.framework/Versions/Current/Commands:/Applications/Xamarin Workbooks.app/Contents/SharedSupport/path-bin:/Users/stevechang/Desktop
stevechang@Steves-MacBook-Pro.local:~/Desktop$
    
```

4.3 CUSBM Help Message

You can get the **CUSBM** Help Message when type **CUSBM /?** or **CUSBM** without any argument. The help message then will be displayed as the following screenshot:



```

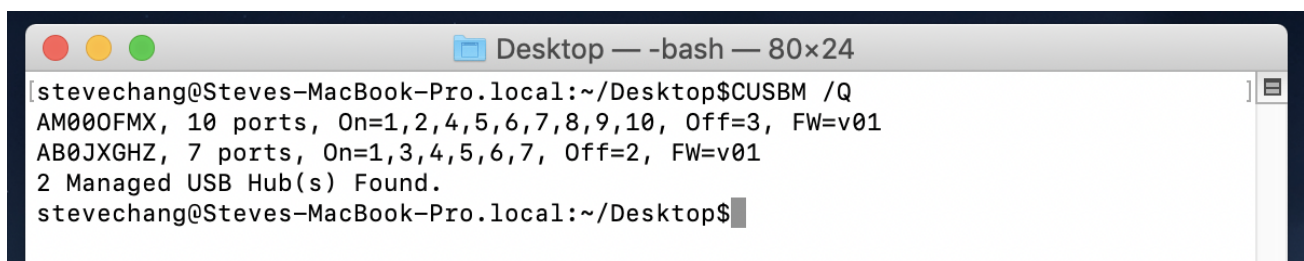
stevechang@Steves-MacBook-Pro.local:~/Desktop$CUSBM /?
CUSBM v1.01 for Mac
Usage: CUSBM command [password] [argument]
command:
  /Q      query (no password is required)
  Usage:  CUSBM /Q [option]
          CUSBM /Q:AM000FMX [option]
          (AM000FMX is control port id)
  /Q:     query all Managed USB Hubs
  /Q:AM000FMX query the Managed USB Hub on AM000FMX
  option  -F      output in formatted string

  /S      set port states (password is required)
  Usage:  CUSBM /S:AM000FMX [pass] [states]
  AM000FMX control port id of the Managed USB Hub
  pass     password, default is used if this argumnet is not specified
  states   port states to be set on, off, toggle or given binary/hex states
           1:3,4   port 3 and 4 on
           0:3     port 3 off

```

4.4 Query all hubs

At the beginning, you may want to know the connected Managed Hubs' information so you know how to control it. You can type **CUSBM /Q**



```

stevechang@Steves-MacBook-Pro.local:~/Desktop$CUSBM /Q
AM000FMX, 10 ports, On=1,2,4,5,6,7,8,9,10, Off=3, FW=v01
AB0JXGHZ, 7 ports, On=1,3,4,5,6,7, Off=2, FW=v01
2 Managed USB Hub(s) Found.
stevechang@Steves-MacBook-Pro.local:~/Desktop$

```

The hubs information was displayed as above screenshot. This information is very important for your later control use. The information tells you:

- 2 Hubs were detected
- Control Port are **AM000FMX** and **AB0JXGHZ** respectively, they were assigned by the system automatically. This information will be used for any commands on **CUSBM** script.
- The first hub has **10 ports** and the other has **7 ports**
- Current Port States:

The first Hub: All ports are On except Port 3.

The second Hub: All ports are On except Port 2

- Both Hubs' Firmware version is **v01**

4.5 CUSBM Command Format

The CUSBM command format as follows. There are 3 portion parameters: command, password and command argument. The password and argument are optional for some commands.

CUSBM *command* [*password*] [*argument*]

where

command: It consists of a slash (/), a command character and a colon (:) plus a COM port name, e.g. /S: AM000FMX is a valid parameter

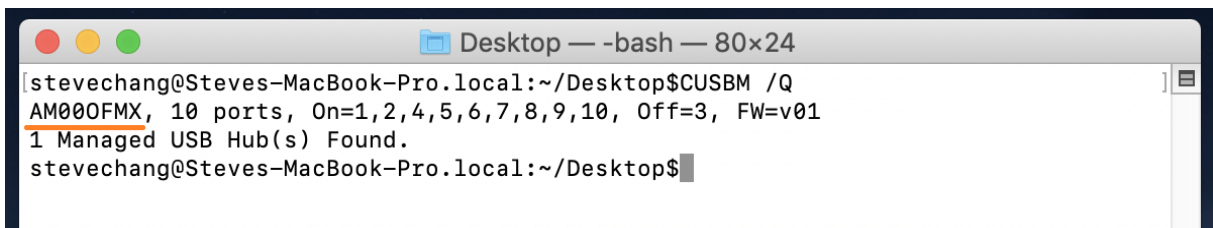
password: It consists of maximum 8 characters.

Argument: It is to tell the CUSBM what value to be set in the hub

Examples:

The following examples guide you how to issue the commands to control the hub:

- To query the hubs: Type **CUSBM /Q**

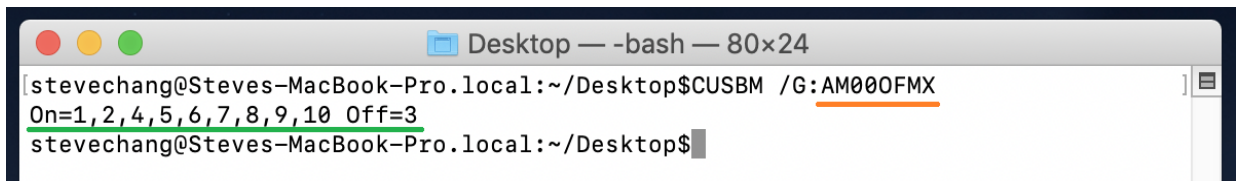


```

Desktop — -bash — 80x24
[stevechang@Steves-MacBook-Pro.local:~/Desktop$CUSBM /Q
AM000FMX, 10 ports, On=1,2,4,5,6,7,8,9,10, Off=3, FW=v01
1 Managed USB Hub(s) Found.
stevechang@Steves-MacBook-Pro.local:~/Desktop$

```

- Given the control port **AM000FMX** by the above Query command, you can issue Get the Port States command: Type **CUSBM /G:AM000FMX**



```

Desktop — -bash — 80x24
[stevechang@Steves-MacBook-Pro.local:~/Desktop$CUSBM /G:AM000FMX
On=1,2,4,5,6,7,8,9,10 Off=3
stevechang@Steves-MacBook-Pro.local:~/Desktop$

```

You can see all ports are On except Port 3.

- Suppose you want to turn port 3 and 4 to Off, then you need to provide the command argument: Type **CUSBM /S:AM000FMX 0:3,4**

where

“0:” means to set the ports to Off, if you want to turn it to On, replace it with “1:” instead
 “3,4” means port 3 and port 4 will be set

```

[stevechang@Steves-MacBook-Pro.local:~/Desktop$CUSBM /S:AM000FMX 0:3,4
[stevechang@Steves-MacBook-Pro.local:~/Desktop$CUSBM /G:AM000FMX
On=1,2,5,6,7,8,9,10 Off=3,4
stevechang@Steves-MacBook-Pro.local:~/Desktop$
  
```

You will see the LEDs of the port 3 and 4 are Off. We have sent another Get Port States command, you can see the port states displayed and tell you port 3 and 4 are Off.

- If you want to turn on port 4, please type **CUSBM /S: AM000FMX 1:4**

```

[stevechang@Steves-MacBook-Pro.local:~/Desktop$CUSBM /S:AM000FMX 1:4
[stevechang@Steves-MacBook-Pro.local:~/Desktop$CUSBM /G:AM000FMX
On=1,2,4,5,6,7,8,9,10 Off=3
stevechang@Steves-MacBook-Pro.local:~/Desktop$
  
```

You can see the port 4 is On and only port 3 is still Off.

4.6 Get the Port States: /G

This Get Port States command (/G) is to read the current port states from the hub. It can report in 3 formats: description, binary-encoded string and hexadecimal-encoded string. The first format is user friendly to read, however, the later 2 formats are easily to be handled programmatically.

CUSBM /S: [Comport_name](#) [\[option\]](#)

Where

- [Comport_name](#) Control Port assigned by the System, e. g. **AM000FMX**
- [Option](#) Output format, **-B** for binary-bit-mapped sting and **-H** for hexadecimal-bit-mapped string

- Get Port States in common description: **CUSBM /G: AM000FMX**

```

[stevechang@Steves-MacBook-Pro.local:~/Desktop$CUSBM /G:AM000FMX
On=1,2,4,5,6,7,8,9,10 Off=3
stevechang@Steves-MacBook-Pro.local:~/Desktop$
  
```

- Get Port States in bit-mapped string format: **CUSBM /G: AM000FMX -B**

```

stevechang@Steves-MacBook-Pro.local:~/Desktop$CUSBM /G:AM000FMX -B
1111111011
stevechang@Steves-MacBook-Pro.local:~/Desktop$
    
```

Bit-map	1	1	1111	1011
Port #	10	9	8765	4321

- Get Port States in hexadecimal-bit-mapped string: **CUSBM /G: AM000FMX -H**

```

stevechang@Steves-MacBook-Pro.local:~/Desktop$CUSBM /G:AM000FMX -H
FBFFFFFF
stevechang@Steves-MacBook-Pro.local:~/Desktop$
    
```

Hexadecimal	FB (LSB)	FF	FF	FF (MSB)
Bit-map	1111 1011	1111 1111	1111 1111	1111 1111
Port #	8765 4321	16 ~ 9	24 ~ 17	32 ~ 25

4.7 Set Port States: /S and /F

There are 2 commands to set the port states, /S and /F. Both work with the same command format except /S is to set the port states temporarily (once the hub is powered off and powered on again, these unsaved port states will be lost), however, /F is to set the port states and saved them to the flash memory permanently. No mater you do a hardware reset or power off the hub, the saved port states will be retrieved when it is restarted. There is another command /W (to be described in the later paragraph) to save the current port states to the flash memory without changing it. Logically, /F command functions like executing a /S command and a /W command.

CUSBC /S: `Comport_name` [password] states

Where

`Comport_name` Control Port assigned by the System, e. g. AM000FMX

password if you have not set the password, you don't need to enter this option. However, you need to enter the password once you have set your own password with /P command (to be described in later paragraph)

states It consists of 2 ports, one is what states you want to change, the other is which ports you want to change.

States to change:

0: Off

1: On

T: Toggle (invert)

B: Bit mapped string

H: Hexadecimal bit mapped string

Ports to be changed:

ALL: All ports

Ports by a list: The port numbers are listed with a coma delimiter (,). For example, 1,2,5

Bit-mapped-string for **B** and **H** options

Examples:

Query hubs to get the control port: **CUSBM /Q**

Assumes you were given AM000FMX control port by the above Query command, try the following command examples and check the corresponding port state LEDs on the hub whether they act correctly:

Turn Off port 3: **CUSBM /S: AM000FMX pass 0:3**

Turn On port 3: **CUSBM /S: AM000FMX pass 1:3**

Try again without password: **CUSBM /S: AM000FMX 0:3**

Toggle (invert) port 3: **CUSBM /S: AM000FMX T:3**

Toggle (invert) port 3: **CUSBM /S: AM000FMX T:3**

Turn Off port 1 and 2: **CUSBM /S: AM000FMX 0:1,2**

Turn On all ports: **CUSBM /S: AM000FMX 1:ALL**

Turn Off port 3 by a bit-mapped string (if your hub is 7-port): **CUSBM /S:COM3 B:1111110**

Turn Off port 3 by a bit-mapped string (if your hub is 4-port): **CUSBM /S:COM3 B:1110**

To set the port states by a hexadecimal bit-mapped string, let's explain how the port states were mapped to the corresponding bits in the string. The string consists 4 bytes which indicate 32 bits for

32-port states. A “1” indicates On, “0” indicates Off. The 4 bytes were aligned in little-endian.

If you want to express the port 1, 2, 4 are Off. The string should be **F4 FF FF FF**:

Hexadecimal	F4 (LSB)	FF	FF	FF (MSB)
Bit-map	1111 0100	1111 1111	1111 1111	1111 1111
Port #	8765 4321	16 ~ 9	24 ~ 17	32 ~ 25

Turn Off port 1,2,4 by hexadecimal bit-mapped string: **CUSBM /S: AM00OFMX H: F4FFFFFF**

4.8 Change Password: /P

The /P command is to set (or change) the access password of the Managed USB hub. The factory default password is “**pass**”. Once the password is changed successfully, you need to include the new password for your new commands afterwards.

CUSBM /P: [Comport_name](#) [old_password] new_password

Where

- [Comport_name](#) Control Port assigned by the System, e. g. AM00OFMX
- old_password The current password to be changed (8 characters maximum)
- new_password The new password (8 characters maximum)

Examples:

Set password from its factory default to password “**new**”: **CUSBM /P: AM00OFMX new**

Change password “**new**” to “**new2**”: **CUSBM /P: AM00OFMX new new2**

4.9 Save Port States as Power-on Default: /W

The /W command is to save the current port states to the hub’s internal flash memory. Once the port states were saved, the hub will initiate its port states according to these settings when it is powered up or reset.

CUSBM /W: [Comport_name](#) [password]

Where

Comport_name Control Port assigned by the System, e. g. AM000FMX
password Access password, can be omitted if it is the same as the factory default

Examples:

Save the current port states: **CUSBM /W: AM000FMX**
 Save the current port states with the password “**pass**”: **CUSBM /W: AM000FMX pass**

4.10 Restore to Factory Default Settings: /D

The /D command is to restore the hub’s factory default settings. If you want to restore the factory default settings while you have forgotten the password, then you have to use the push button on the hub (power off the hub, press the button and hold, power on the hub) instead. Once the hub has been restored to its factory default settings, its password is “**pass**” and **all ports are set to On**.

CUSBM /D: **Comport_name** [password]

Where

Comport_name Control Port assigned by the System, e. g. AM000FMX
password Access password, can be omitted if it is the same as the factory default

Examples:

Restore the factory default settings: **CUSBM /D: AM000FMX**
 Restore the factory default settings with the password “**pass**”: **CUSBM /D: AM000FMX pass**

4.11 Hardware Reset the Entire Hub: /R

In some cases, you may want to reset the hub without physically unplugging or powering it off. The /R command can do similarly for you.

CUSBM /R: **Comport_name** [password]

Where

Comport_name Control Port assigned by the System, e. g. AM000FMX


```
CUSBM /Q:AB0JXGHZ -F
FDFFFFFF07v01
```

8. Get Port States:

The Get Port States command provides 2 formatted string options:

- Bit-mapped: **-B**
e.g.

```
CUSBM /G:AM00OFMX -B
1111111011
```

The 10 characters (0 is off, 1 is on) indicate the port states for port 1 to 10 respectively. The rightmost character indicates port 1. The leftmost character indicates port 10. The above example indicates Port 3 is off

- Hexadecimal bit-mapped: **-H**
e.g.

```
CUSBM /G:AM00OFMX -H
FBFFFFFF
```

The 8 hexadecimal bit-mapped characters (**FB FF FF FF**) indicates the 32 port states for port 1 to 32 respectively. They are mapped as the following table:

Hexadecimal	FB (LSB)	FF	FF	FF (MSB)
Bit-map	1111 1011	1111 1111	1111 1111	1111 1111
Port #	8765 4321	16 ~ 9	24 ~ 17	32 ~ 25

9. Set Port States:

Similar to the Get Port State commands mentioned above, the Set Port States command provides 2 formatted string options **B** and **H** as well:

- Bit-mapped: **-B**
e.g. The following command turns off Port 2 and 9 and the other ports are on

```
CUSBM /S:AM00OFMX B:1011111101
```

- Hexadecimal bit-mapped: **-H**

e.g. The following command set port 1, 6, 10, 15, 20, 27 and 31 to off and the other ports are on:

CUSBM /S:AM00OFMX H:DEBDF7BB

Hexadecimal	DE (LSB)	BD	F7	BB (MSB)
Bit-map	1101 1110	1011 1101	1111 0111	1011 1011
Port #	8765 4321	16 ~ 9	24 ~ 17	32 ~ 25