

PCI/PCle Serial Card

Linux User Manual

Version 2.5

2017.04.24



Revision History

Revision Date	Version	Pages	Description
April/04/2013	1.8	Partial	Revised
May/14/2013	1.9	Partial	Revised
January/15/2014	2.0	Partial	Revised
January/30/2014	2.1	Partial	Revised
February/07/2014	2.2	Partial	Revised
February/12/2016	2.3	Partial	Ubuntu 14.04 LTS (kernel3.13) added Ubuntu 14.10 (kernel 3.16) added Ubuntu 15.04 (kernel 3.19.3) added Ubuntu 15.10 (kernel 4.2.0) added Ubuntu latest version + last update (kernel 4.3.x) added Linux kernel 4.3 support.
April/11/2017	2.4	Partial	Revised
April/11/2017	2.5	Partial	Revised

Copyright 2015 SystemBase Co., Ltd. All rights reserved.

Websites <http://www.sysbas.com/>

Technical Support <http://www.solveit.com/>

Phone +82-2-855-0501

FAX +82-2-855-0580

16F Daerung Post Tower-1, 288, Digital-ro, Guro-gu,

Seoul, Republic of Korea, 08390

INDEX

1. OverVIEW	2
1.1 Supported Linux Kernel Versions	2
1.2 Support	2
2. RequireMENTS.....	3
3. How TO INSTALL.....	5
4. HOW TO REMOVE	6
5. HOW TO TEST	7
6. OTHER SETTINGS	9

1. OVERVIEW

Linux driver for PCI/PCIe Multi-port card series is provided in the form of a script, you can install the driver without other operations.

1.1 SUPPORTED LINUX KERNEL VERSIONS

Tested Linux		
Linux distribution	Kernel version	Architecture
Red hat 9.0	-	i386
CentOS 6	-	i386
Kubuntu 11.10	-	i386
Ubuntu 6.06.1	2.6.15	i386/amd64
Ubuntu 6.10	2.6.17	i386/amd64
Ubuntu 7.04	2.6.20	i386/amd64
Ubuntu 9.10	2.6.31	i386/amd64
Ubuntu 10.10	2.6.35	i386/amd64
Ubuntu 11.10	3.0.0	i386/amd64
Ubuntu 12.04.1	3.2.0	i386/amd64
Ubuntu 12.10	3.5.0	i386/amd64
Ubuntu 13.04	3.8.0	i386/amd64
Ubuntu 13.10	3.11.0	i386/amd64
Ubuntu 14.04	3.13.0	i386/amd64
Ubuntu 14.10	3.16.0	i386/amd64
Ubuntu 15.04	3.19.3	i386/amd64
Ubuntu 15.10	4.2.0	i386/amd64

1.2 SUPPORT

- Technical supports are available to all our customers for assistance in installation and operation.
- Help Hotline : +82-2-855-0501
- Technical Support Website: <http://www.solvline.com>

2. REQUIREMENTS

To install the driver, you need to check below 4 requirements first. When all of them is prepared, you can install the driver correctly.

1. Login as root (Super user).

You must login as root permission. You can check it from 'whoami' command.

After you login as root, your command prompt have # sign.

2. GCC (GNU C Compiler)

You must install GCC in your system before you install the driver.

When you type 'gcc -v', if it shows "gcc: command not found" as below, it means GCC is not installed.

```
sysbas@utu:/tmp# gcc -v
gcc: command not found
```

When you type 'gcc -v', if it shows as below, it means GCC is installed.

```
sysbas@utu:/tmp# gcc -v
Using built-in specs.
COLLECT_GCC=gcc
COLLECT_LTO_WRAPPER=/usr/lib/gcc/i686-linux-gnu/4.6.1/lto-wrapper
Target: i686-linux-gnu
Configured with: ../src/configure -v --with-pkgversion='Ubuntu/Linaro 4.6.1-9ubuntu3' --with-
bugurl=file:///usr/share/doc/gcc-4.6/README.Bugs --enable-languages=c,c++,fortran,objc,obj-
c++,go --prefix=/usr --program-suffix=-4.6 --enable-shared --enable-linker-build-id --with-
system-zlib --libexecdir=/usr/lib --without-included-gettext --enable-threads=posix --with-gxx-
include-dir=/usr/include/c++/4.6 --libdir=/usr/lib --enable-nls --with-sysroot=/ --enable-
clocale=gnu --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-plugin --enable-
objc-gc --enable-targets=all --disable-werror --with-arch-32=i686 --with-tune=generic --enable-
checking=release --build=i686-linux-gnu --host=i686-linux-gnu --target=i686-linux-gnu
Thread model: posix
gcc version 4.6.1 (Ubuntu/Linaro 4.6.1-9ubuntu3)
```

3. Kernel Source

Before you install driver, you need to check whether the kernel source files are installed in your system or not.

Type 'cd /usr/src' and check the result. If you see a screen as below, the kernel source is not

installed. In this case, you must install the kernel source files in your system.

```
sysbas@utu:/tmp# cd /user/src
sysbas@utu:/src# ls
```

If you see a screen as below, the kernel source is already installed.

```
sysbas@utu:/tmp# cd /user/src
sysbas@utu:/src# ls
linux-headers-3.0.0-12          linux-headers-3.0.0-12-generic
```

4. Make

Before you install the driver, you need to install 'make' utility in your system.

check

You can check whether the 'make' utility is installed in your system or not using 'make -v' command.

When it shows "make:command not found" as below, the "make" is not installed. You must install make utility in your system.

```
sysbas@utu:/tmp# make -v
make: command not found
```

When it shows as below, it means make utility is already installed in your system.

```
sysbas@utu:/tmp# make -v
GNU Make 3.81
Copyright (C) 2006 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.
There is NO warranty; not even for MERCHANTABILITY or FITNESS FOR A
PARTICULAR PURPOSE.

This program built for i686-pc-linux-gnu
```

3. HOW TO INSTALL

1. Turn off your system power.
2. Install a PCI/PCIe serial card in PCI or PCIe slot in your system.
3. Turn off your system power.
4. After the linux operation system boot up, login as root permission.
5. execute “sysbas_mpdrv.v**(version).sh” script file.

For better file path setting, type command “./sysbas_mpdrv.v**(version).sh” with current path.

After you execute the script, you can see a sub directory named “sysbas_mpdrv.v**(version)” in your work folder. And you also find a message system found your serial card(s) with model name, version, serial interface and number of port information as below.

```
root@utu:/tmp# ./sysbas_mpdrv.v21.0.sh
Verifying archive integrity... All good.
Uncompressing Enhanced Async Multi-Port(PCI/PCIe) Linux device drvier.....
=====
Enhanced Async Multi-Port(PCI/PCIe) Linux Device Driver
Version : 21.0      revision: 2015-01-21
=====
1 board(s) installed
Board No.1 : Multi-4 PCI (rev b0)
      /dev/ttyMP0 (RS232 , 16C105X)      /dev/ttyMP1 (RS232 , 16C105X)
      /dev/ttyMP2 (RS232 , 16C105X)
      /dev/ttyMP3 (RS232 , 16C105X)
root@utu:/tmp#
```

You can check the serial port that is installed using the “**dmesg | grep tty**” command.

```
root@utu:/tmp# dmesg | grep tty
[ 0.000000] console [tty0] enabled
[ 0.627793] 00:07: ttyS0 at I/O 0x3f8 (irp = 4, base_baud = 115200) is a 16550A
[ 12.993516] ttyMP0 at I/O 0xe040 (irp = 16) is a SB16C1050
[ 12.993967] ttyMP1 at I/O 0xe048 (irp = 16) is a SB16C1050
```

4. HOW TO REMOVE

1. Go to the directory where the driver is installed.

If you installed the driver at “~/tmp”, please go to “~/tmp/ sysbas_mpdrv.v**(version)” directory.

cd ~/tmp/sysbas_mpdrv.v(version)**

```
root@utu:# cd ~/tmp/sysbas_mpdrv.v21.0
root@utu:/tmp/sysbas__mpdrv.v21.0# ls
Install  Remove  async_multiport  ioctl  multidrop_test
```

2. Execute Remove command as below.

#!/Remove

```
root@utu:/tmp/sysbas _mpdrv.v21.0# ls
Install  Remove  async_multiport  ioctl  multidrop_test
root@utu:/tmp/sysbas_mpdrv.v21.0# ./Remove
```

3. After using **Remove** command, the installed all files are removed automatically.

```
Remove Multiports PCI/PCIe Driver..!!
remove device(/dev).....done
modify rc.local.....done
root@utu:/tmp/sysbas _mpdrv.v21.0#
```


5. HOW TO TEST

After you installed the driver for your serial card, you can test your serial card with following method.

1. Move the 'async_multiport' directory

If you installed the driver at "~/tmp",

please go to "~/tmp/ sysbas _mpdrv.v**(version)/ async_multiport" directory.

```
cd ~tmp/sysbas_mpdrv.v**(version)/ async_multiport
```

2. Execute test utility using 'sb_test' command.

```
./sb_test [Port Name] [Baudrate] [TestMode]
```

If you want to know how to use 'sb_test' command, you just type 'sb_test' command only as below.

```
root@utu:/tmp/ sysbas _mpdrv.v21.0/async_multiport# ./sb_test
Usage: ./sb_test [Port Name] [Baudrate] [TestMode]
Port Name : /dev/ttyMP0 ~ /dev/ttyMP32
Baudrate  : 9600, 19200, ...
TestMode  : 0(Loopback) 1(Send) 2(Recv)
root@utu:/tmp/sysbas_mpdrv.v21.0/async_multiport#
```

Usage: ./sb_test [Port Name] [Baudrate] [TestMode]

```
Port Name      : /dev/ttyMP0 ~ /dev/ttyMP32
Baudrate       : 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600
TestMode       : 0 (Loopback)
                  1 (Send)
                  2 (Receive)
```

Usage example: (you need to input a space between './sb_test' and '/dev/~~~'.)

```
#./sb_test /dev/ttyMP0 9600 0
#./sb_test /dev/ttyMP5 921600 0
#./sb_test /dev/ttyMP3 115200 1
```

- Our linux driver do not support RS485 echo mode in case of 32-port serial card.

3. If you connect a loopback connector on your testing port, you can test the serial port easily.

Test pattern is "abcdefghijklmnopqrstuvwxyz". Test program start to send a byte with from 'a'

character to 'z' character periodically as below.

```
root@utu:/tmp/sysbas_mpdv.v21.0/async_multiport# ./sb_test /dev/ttyMP0 9600 0
Loopback Test Mode  !
a
ab
abc
abcd
abcde
abcdef
abcdefg
abcdefgh
abcdefghi
abcdefghij
abcdefghijk
abcdefghijkl
abcdefghijklm
abcdefghijklmn
abcdefghijklmno
abcdefghijklmnop
```

6. OTHER SETTINGS

1. Set the driver permissions

You need to adjust permissions to use the drive as a regular account.

1. Check the current permissions.

ls -al [Port Name]

Port Name : /dev/ttyMP0 ~ /dev/ttyMP32

```
sysbas@sysbas:~$ ls -al /dev/ttyMP0
crw-rw---- 1 root dialout 54, 0 Mar 31 16:37 /dev/ttyMP0
sysbas@sysbas:~$
```

2. Login with root account

```
sysbas@sysbas:~$ su
Password:
root@sysbas:/home/sysbas#
```

3. Set permissions

chmod 766 [Port Name]

```
root@sysbas:/home/sysbas/Desktop/sysbas_mpdrv.v21.0/sysbas_mpdrv.v21.0/async_mu
ltiport# chmod 766 /dev/ttyMP0
```

4. Check changed permissions

ls -al [Port Name]

```
sysbas@sysbas:~/Desktop/sysbas_mpdrv.v21.0/sysbas_mpdrv.v21.0/async_multiports$
ls -al /dev/ttyMP0
crwxrw-rw- 1 root dialout 54, 0 Apr 11 14:06 /dev/ttyMP0
```

5. Switch to regular account and test # exit

./sb_test [Port Name] [Baudrate] [TestMode]

```
root@sysbas:/home/sysbas/Desktop/sysbas_mpdrv.v21.0/sysbas_mpdrv.v21.0/async_mu
ltiport# exit
exit
sysbas@sysbas:~/Desktop/sysbas_mpdrv.v21.0/sysbas_mpdrv.v21.0/async_multiport$
./sb_test /dev/ttyMP0 9600 0
Loopback Test Mode !
abcde
abcdef
abcdefg
abcdefgh
abcdefghi
abcdefghij
abcdefghijk
abcdefghijkl
abcdefghijklm
abcdefghijklmn
abcdefghijklmno
abcdefghijklmno
```