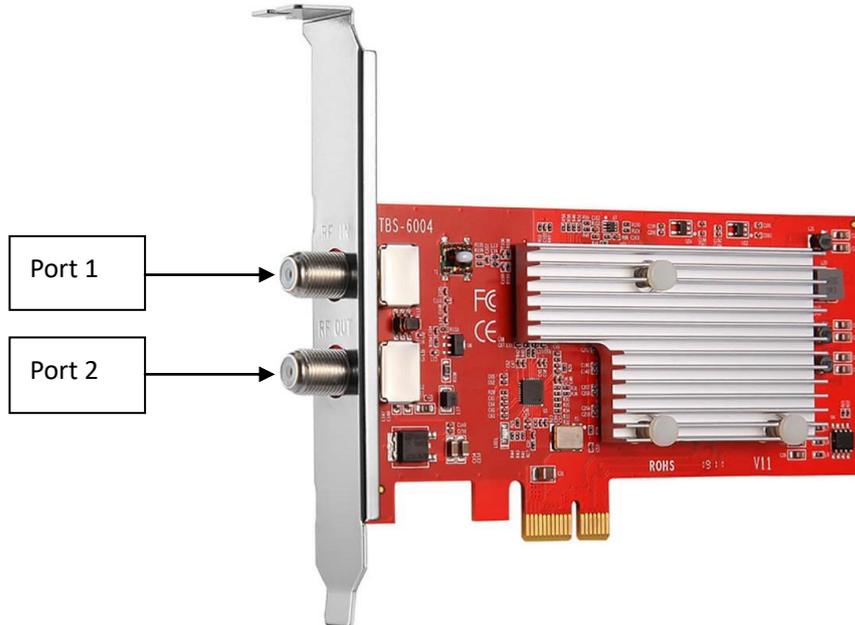## How to configure TBS6004 DVBC Modulator card

TBS6004 is a 4-frequency DVBC Modulator card, it supports modulate 4 different frequencies out. The following will explain you how to configure and make the DVBC Modulate card work.

Port 1: signal loop in; Port 2: Signal out/RF out.

Signal "series connection":
If you have multiple Modulator cards in a same Server, you can try "signal series connection". For example, there're 2 Modulator cards inside:
Card 1 "RF OUT" (signal out) connects to the card 2 "Loop IN" (signal in) by Coaxial cable, and last all signals can be output from a same port.

Linux platform
System: Ubuntu, centOS, Debain and ect.

1.Install the Modulate card
TBS6004 is based on PCIe x1 interface, please make sure card is correctly installed to Mother board PCIe slot.

2.Make sure Modulate card is detected by your Server(Mother board)
lspci –vvv | grep 6004

3.Install Linux driver

https://github.com/tbsdtv/linux_media/wiki

Downloading and building:
git clone https://github.com/tbsdtv/media_build.git
git clone --depth=1 https://github.com/tbsdtv/linux_media.git -b latest ./media
cd media_build
make dir DIR=../media
make distclean
make -j4
sudo make install

Firmware(TBS6004 DVBC modulator card no need firmware, but for some DVB tuner cars it's needed. So it's better to install it):
wget http://www.tbsdtv.com/download/document/linux/tbs-tuner-firmwares_v1.0.tar.bz2
sudo tar jxvf tbs-tuner-firmwares_v1.0.tar.bz2 -C /lib/firmware/
reboot

If any errors happen during the compiling step "make –j4" please check and fix error first, do not go to operate "make install". You can find the solution from the part "FAQ":

https://github.com/tbsdtv/linux_media/wiki

The following we have listed some command errors and the corresponding solutions:
1>/bin/sh: 1: lsdiff: not found
sudo apt-get install patchutils
2>you may need to install the Proc::ProcessTable module
sudo apt-get install libproc-processtable-perl

3>fatal error: drx39xyj/drx39xxj.h: No such file or directory
mkdir -p v4l/drx39xyj
cp v4l/drx39xxj.h v4l/drx39xyj/

4>Can not find the 6909 firmware
wget http://www.tbsdtv.com/download/document/linux/dvb-fe-mxl5xx.fw
cp dvb-fe-mxl5xx.fw   /lib/firmware/

5>If you find module load errors like "module has wrong symbol version", this means that there still are old modules from your previous Media Tree installation (usually duplicated modules in two different places).
sudo rm -rf /lib/modules/``uname -r``/kernel/drivers/media/*

6>Cannot use CONFIG_CC_STACKPROTECTOR_STRONG: -fstack-protector-strong not supported by compiler
sudo add-apt-repository ppa:ubuntu-toolchain-r/test

sudo apt-get update

sudo apt-get install gcc-4.9 g++-4.9

sudo rm /usr/bin/gcc

sudo ln -s /usr/bin/gcc-4.9 /usr/bin/gcc

7>make[2]: gcc: Command not found

sudo apt-get install gcc

Or you can write to us, we can help you with the driver install:

support@tbsdtv.com

Driver installed, need to reboot Server. If it's successfully installed, Modulate devices"tbsmodxx" will be loaded, under directory "/dev". Like this:

tbsmod0, tbsmod1

Each card has 4-modulate devices:

Device"tbsmod0" means the 1st modulator card; and e "tbsmod1" means the 2nd modulator card; "tbsmod2" means the 3rd, and so on.

/dev/tbsmod0/mod0 means the 1st modulate device of the TBS6004;

/dev/tbsmod0/mod1 means the 2st modulate device of the TBS6004;

/dev/tbsmod0/mod2 means the 3st modulate device of the TBS6004;

/dev/tbsmod0/mod3 means the 4st modulate device of the TBS6004;

Actually, we also provide the software which based on Linux for TBS6004 DVBC modulator card. The control is webUI, and driver will be contained in our software package, no need to install separately:

http://www.tbsdtv.com/download/document/modulator/rootfs-6004_6014_6104_690b-centos-1.0.0.1.tar.bz2

http://www.tbsdtv.com/download/document/modulator/rootfs-6004_6014_6104_690b-ubuntu-1.0.0.1.tar.bz2
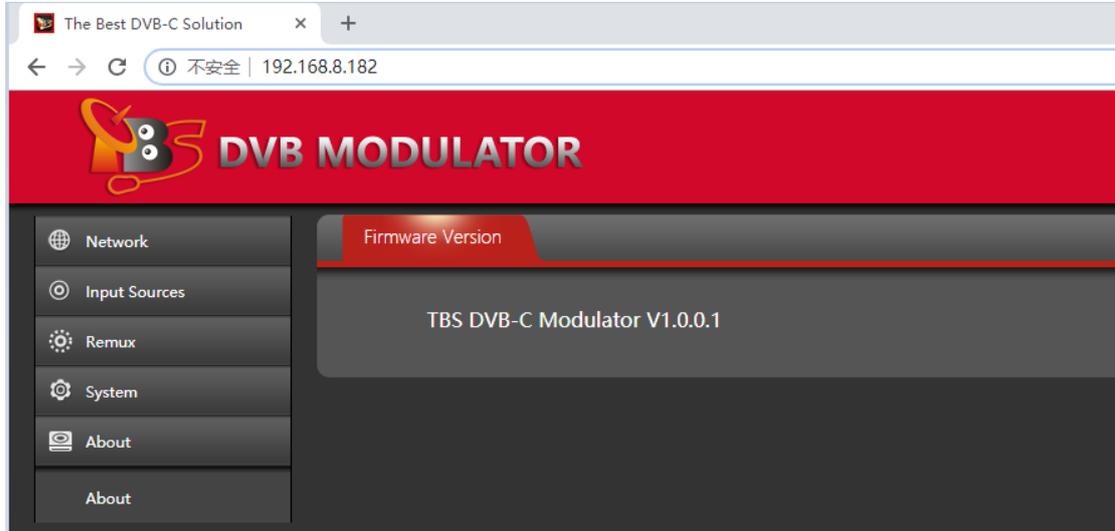
The Following will explain you how to configure TBS6004.

The source can be from DVB tuner card, Network stream or local TS file.

1.Login:

The default username/password is "root/root":

2.webpage:

1>Network: network setting

2>Input Sources: the source can be from DVB tuner card, Network stream, and local TS file

3>Remux: some settings which related to "channel-Mux" and DVBC modulate.
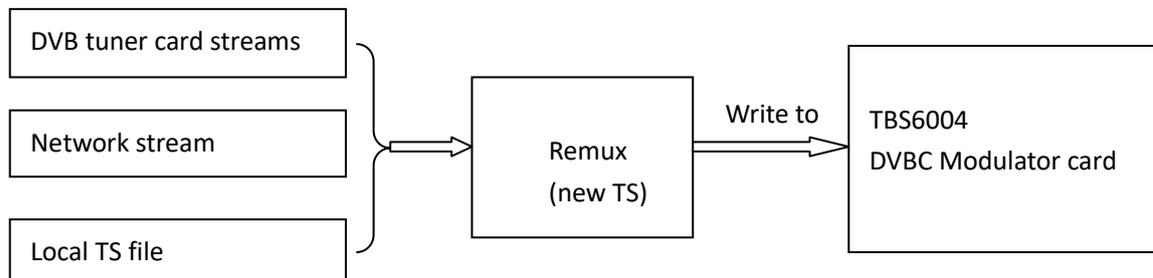
4>System: reset the login username & password

5>About: firmware version

Source from DVB tuner card

We have kinds of DVB tuner cards for different signals. For example, DVBS/S2, DVBC/C2, DVBT/T2, ATSC, ISDBT and etc. You can receive channels by these tuner cards and then send to our Modulator card.

Here we'll take a satellite tuner card as an example:

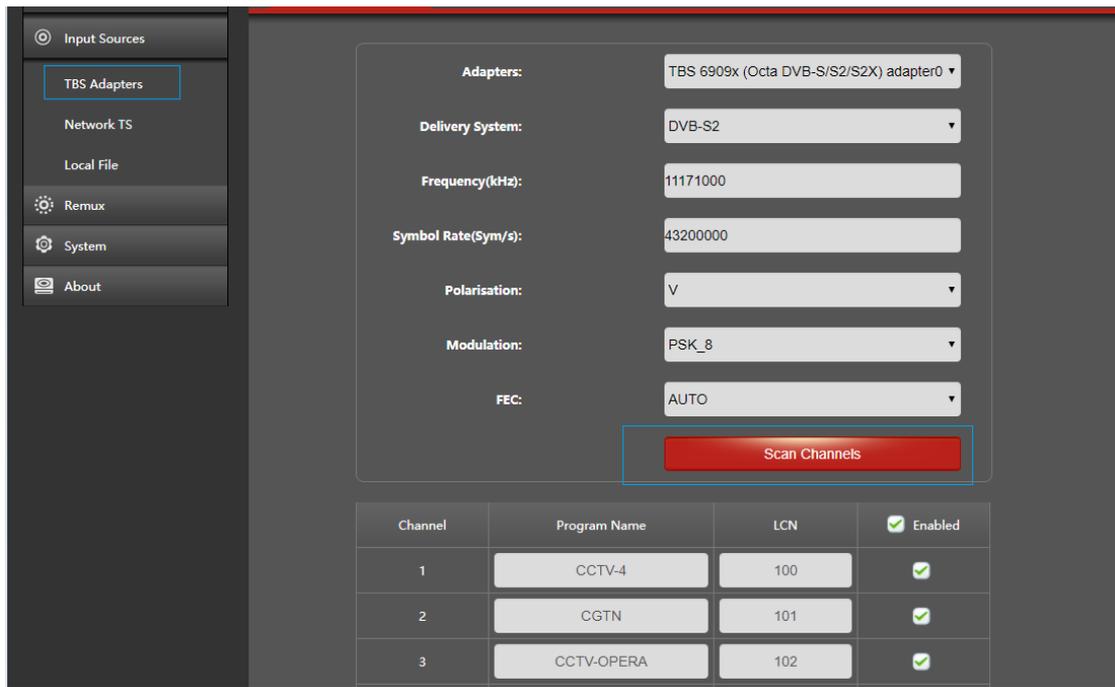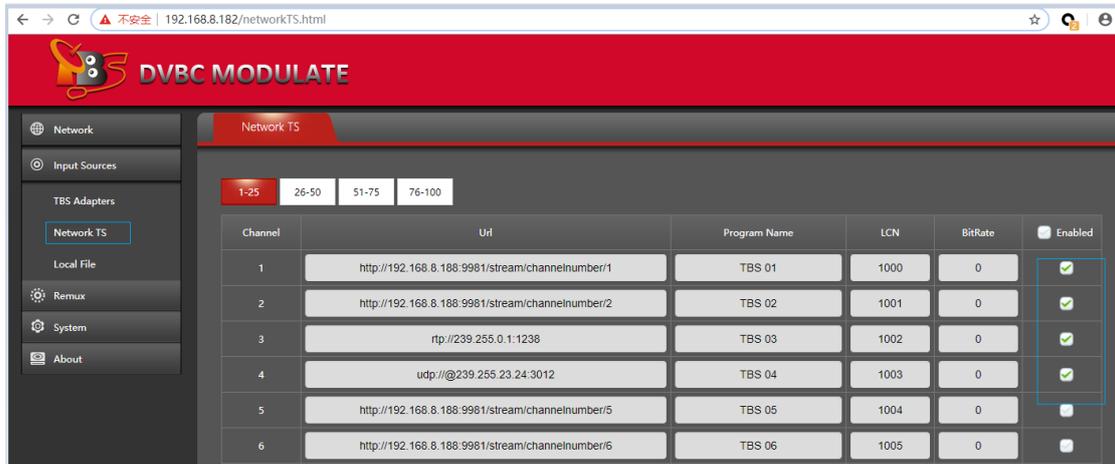Configure "fre.", "pol." "sr", "modulator", and click "Scan Channels". When it's locked, you'll see some channels. Please choose which you'll take it as the source of the DVBC modulator and "Apply".

Network stream

We also support network stream input for DVBC modulator. http, rtp or udp stream is supported.

Local File

We support modulate local ts file. The TS file must put to this directory:

/usr/local/tbs/video/

For example,
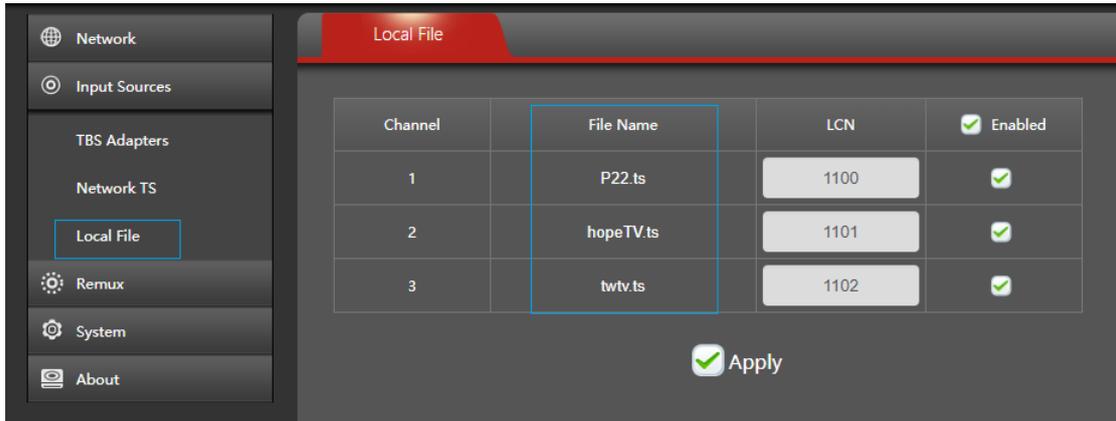
Remux

1.Channel-Mux:

If DVBC modulator card driver is correctly installed, you'll see some modulate device. Like this:
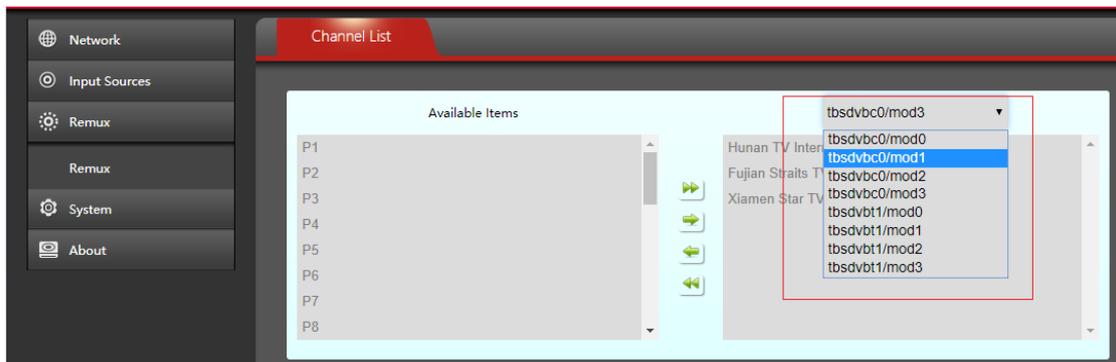
And these sources which from DVB tuner card, Network streams, Local TS file all will be list here.

Just choose some of them to "Mux" to new TS(MPTS) for DVBC modulator card

2. DVBC parameters setting:

Frequency: this DVBC modulator card is a little special in frequency setting. For a same card, once the 1st RF device frequency is setting the rest 3 RF device will be set. This depends on Modulate chipset characteristic. For example,

"tbsdvbc0" set to "474Mhz"; the 2nd "tbsdvbc1" will be "482Mhz"; the 3rd "490Mhz"; and the 4th "498Mhz". Step is 8Mhz.

Fre(tbsdvbc0)=474Mhz;

Fre(tbsdvbc1)=Fre(tbsdvbc0) + 8Mhz=482Mhz;

Fre(tbsdvbc2)=Fre(tbsdvbc1) + 8Mhz=490Mhz;

Fre(tbsdvbc3)=Fre(tbsdvbc2) + 8Mhz=498Mhz;

Symbol rate & Modulation: Symbol rate and Modulation decide how many data can be modulated. So, in some case, if you're not sure or no idea what should be set, you can set the symbol rate and Modulation to the Maximum "Symbol rate: 7200" and "Modulation: 256QAM".

Level: signal level. Set to a higher value, signal will be more stronger.

Output Bitrate: this value should be a little higher than the real data. For example, you'll modulate a ts which the real data is around 38M. So this option "Output Bitrate" please configure to "40M" or higher.

Output Bitrate can't be set to a lower than the real data.

Last, do not forget to click "Apply" to start "Remux/Modulate". Or you can access to system to check "remux" process is running or not:

ps –aux | grep remux

```
[root@localhost ~]# ps -aux | grep remux
root      7762 15.5  0.6 493424 23616 ?        Sl   16:20   6:57 ../../bin/./remux -C -a 0 -A 1 -f 482000000 -s 7200000 -M qam_256 -Z 60 -B 40 -c ./config/remux_channelsC_0_1.conf -g ./config/remuxC_0_
1.conf -n ./config/remux_nitC_0_1.conf
root      8206 15.3  0.6 493424 22748 ?        Sl   16:20   6:49 ../../bin/./remux -C -a 0 -A 2 -f 490000000 -s 7200000 -M qam_256 -Z 60 -B 40 -c ./config/remux_channelsC_0_2.conf -g ./config/remuxC_0_
2.conf -n ./config/remux_nitC_0_2.conf
root      8367 19.8  1.3 737640 47100 ?        Sl   17:04   0:04 ../../bin/./remux -C -a 0 -A 0 -f 474000000 -s 6900000 -M qam_256 -Z 60 -B 40 -c ./config/remux_channelsC_0_0.conf -g ./config/remuxC_0_
0.conf -n ./config/remux_nitC_0_0.conf
root      9156  0.0  0.0 112720  2228 pts/0    S+   17:04   0:00 grep --color=auto remux
root     10566 14.3  0.6 493128 23008 ?        Sl   16:24   5:48 ../../bin/./remux -T -a 1 -A 0 -f 574000000 -w 8 -x qam_64 -X 8 -G 32 -E 78 -N 60 -B 28 -c ./config/remux_channelsT_1_0.conf -g ./config
/remuxT_1_0.conf -n ./config/remux_nitT_1_0.conf
root     11154 13.9  0.5 407528 19304 ?        Sl   16:24   5:36 ../../bin/./remux -T -a 1 -A 1 -f 582000000 -w 8 -x qam_64 -X 8 -G 32 -E 78 -N 60 -B 28 -c ./config/remux_channelsT_1_1.conf -g ./config
/remuxT_1_1.conf -n ./config/remux_nitT_1_1.conf
root     11809 14.2  0.6 493128 23740 ?        Sl   16:24   5:43 ../../bin/./remux -T -a 1 -A 2 -f 590000000 -w 8 -x qam_64 -X 8 -G 32 -E 78 -N 60 -B 28 -c ./config/remux_channelsT_1_2.conf -g ./config
/remuxT_1_2.conf -n ./config/remux_nitT_1_2.conf
root     12508 13.8  0.4 481260 15628 ?        Sl   16:24   5:32 ../../bin/./remux -T -a 1 -A 3 -f 598000000 -w 8 -x qam_64 -X 8 -G 32 -E 78 -N 60 -B 28 -c ./config/remux_channelsT_1_3.conf -g ./config
/remuxT_1_3.conf -n ./config/remux_nitT_1_3.conf
[root@localhost ~]#
```

Any question about the DVBC Modulate card TBS6004 configure, please write to us:

support@tbsdtv.com