

USB H.264 720P/1080i MPEG Capture Device

Software Manual (Linux)

SENSORAY | embedded electronics



Designed and manufactured in the U.S.A

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Software

Installation

The software may be distributed on a CD or downloaded from the Sensoray's web site. If the file is downloaded, it will need to be unzipped into a folder on the local drive prior to connecting the 2250 to the USB port.

The SDK has been developed on Ubuntu LTS and support is provided for this distribution. The SDK may work on other Linux versions, but this is not guaranteed.

Setup is performed as follows.

- 1) untar the tgz file. "tar xvfz s2226_vXYZ.tgz" where XYZ is the version of the SDK.
- 2) "cd s2226_vXYZ" where XYZ is the version.
- 3) Type "make all"
- 4) Type "make modules_install".
- 5) Make sure 2226 is plugged in and turned on.
- 6) "modprobe s2226" loads the driver.

Demo program

Make sure video source is connected and turned on.

1. Make demo with command "make demo"
 2. "./2226demo" runs the demo application.
 3. Type "h" followed by enter for help menu.
 4. To change input, view menu for available inputs and select desired connection with the "vinput" command. Eg. "vinput 0".
 5. To change bitrate, use vrate command followed by bitrate in kbits/s. Eg. "vrate 2000" for 2Mbps.
 6. Other commands and settings such as brightness and contrast are shown in the help menu.
 7. To record to file, type "rec filename.mpg"
-

8. wait 20 seconds to record input
9. Type "stop" to stop record
10. Exit demo with quit command.

Video for Linux API

The driver also supports V4L2 ioctls. To build the driver with V4L2 ioctls, comment out the default EXTRA_CFLAGS line in the Makefile and uncomment the EXTRA_CFLAGS line ending in -DCONFIG_S2226_V4L.

Makefile changes:

```
#EXTRA_CFLAGS += -Wall -O2 -D_LINUX -DOSTYPE_LINUX -DDRIVER_BUILD -DOS_LINUX
```

```
# if using V4L comment out line above and uncomment line below
```

```
EXTRA_CFLAGS += -Wall -O2 -D_LINUX -DOSTYPE_LINUX -DDRIVER_BUILD -DOS_LINUX  
-DCONFIG_S2226_V4L
```

The V4L2 API is well documented at the LinuxTV website (http://www.linuxtv.org/downloads/video4linux/API/V4L2_API/). A sample V4L2 capture program for the 2226 is included in the SDK. V4L2 operation will not be supported for kernels below 2.6.25.

SDK Reference

Release Notes

V.1.0.0

- Initial version

General Notes

Please refer to the demo program for sample operation.

Device is accessed via `/dev/s2226vX` where X is the minor number.

Driver Ioctl Reference

S2226_IOC_SET_INPUT

Must be called before any other API functions to select the correct input. Input should be connected and turned on.

Parameters

input

- *0=CV0 720x480 (29.97i) ITU-R BT.656-4*
- *1=CV0 720x576 (25i) ITU-R BT.656-4*
- *2=SV0 720x480 (29.97i) ITU-R BT.656-4*
- *3=SV0 720x576 (25i) ITU-R BT.656-4*
- *4=SDI 720x480 (29.97i) ITU-R BT.656-4*
- *5=SDI 720x480 COLORBARS (29.97i) ITU-R BT.656-4*
- *6=SDI 720x576 (25i) ITU-R BT.656-4*
- *7=SDI 720x576 COLORBARS (25i) ITU-R BT.656-4*
- *8=SDI 1920x1080 (50i) SMPTE274M*
- *9=SDI 1920x1080 (59.94i) SMPTE274M*
- *10=SDI 1920x1080 (60i) SMPTE274M*
- *11=SDI 1920x1080 COLORBARS (60i) SMPTE274M*
- *12=SDI 1280x720 (50p) SMPTE296M-2001*
- *13=SDI 1280x720 (59.94p) SMPTE296M-2001*
- *14=SDI 1280x720 (60p) SMPTE296M-2001*
- *15=SDI 1280x720 COLORBARS (60p) SMPTE296M-2001*

Returns

0 on success, negative value if error.

S2226_IOC_SET_MODE

Sets the encoding parameters. Must be called when stream inactive and before recording video.

Parameters

mode *mode parameter structure(see s2226ioctl.h)*

idx

S2226_IDX_AMODE: audio mode. Use AMODE_MP1L2 only. Other values are for test only

S2226_IDX_ABITRATE: audio bitrate. Use 192, 224 or 256. 256 is recommended.

S2226_IDX_VBITRATE: video bitrate in kbps. Allowed values are 2000- 17000

S2226_IDX_STEREO: 1-stereo on(recommended default), 0-stereo off

Returns

0 on success, negative value if error.

S2226_IOC_START_ENCODE

Start video/audio h264 encoding.

start_param

idx : Reserved for future use. Use default value of 0.

S2226_IOC_STOP_ENCODE

Stops video/audio h264 encoding.

stop_param

idx : Reserved for future use. Use default value of 0.

S2226_IOC_START_DECODE

Start video/audio h264 encoding.

start_param

idx : Reserved for future use. Use default value of 0.

S2226_IOC_STOP_DECODE

Stops video/audio h264 decoding.

stop_param

idx : Reserved for future use. Use default value of 0.

S2226_IOC_GET_MODE

Returns current mode setting.

mode

mode parameter (see S2226_IOC_SET_MODE)

S2226_IOC_SET_LEVEL

Sets brightness, contrast, hue or saturation. See s2226ioctl.h file for details

S2226_IOC_GET_LEVEL

Returns current level setting.