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# SDI/DVI/CVBS USB Video Capture Device

Models 2271, 2273

## Hardware Manual

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SENSORAY | embedded electronics



Designed and manufactured in the U.S.A

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## Limited warranty

Sensoray Company, Incorporated (Sensoray) warrants the hardware to be free from defects in material and workmanship and perform to applicable published Sensoray specifications for two years from the date of shipment to purchaser. Sensoray will, at its option, repair or replace equipment that proves to be defective during the warranty period. This warranty includes parts and labor.

The warranty provided herein does not cover equipment subjected to abuse, misuse, accident, alteration, neglect, or unauthorized repair or installation. Sensoray shall have the right of final determination as to the existence and cause of defect.

As for items repaired or replaced under warranty, the warranty shall continue in effect for the remainder of the original warranty period, or for ninety days following date of shipment by Sensoray of the repaired or replaced part, whichever period is longer.

A Return Material Authorization (RMA) number must be obtained from the factory and clearly marked on the outside of the package before any equipment will be accepted for warranty work. Sensoray will pay the shipping costs for returning to the owner parts that are covered by warranty. A restocking charge of 25% of the product purchase price will be charged for returning a product to stock.

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# Introduction

Model 2271 captures video from SDI (SD-SDI, HD-SDI), DVI and composite (NTSC/PAL) video sources at resolutions and frame rates up to 1920x1080p30. It has a USB 2.0 interface.

Model 2273 captures video from SDI (SD-SDI, HD-SDI, 3G-SDI), DVI and composite (NTSC/PAL) video sources at resolutions and frame rates up to 1920x1080p60. It has a USB 3.0 interface.

Both products support text overlays and compression of captured video. They can simultaneously send both compressed and uncompressed video to the host computer. Model 2271 scales down the uncompressed video in case of HD resolutions, model 2273 captures uncompressed video at full resolution.

Both 2271 and 2273 are UVC (USB Video Class) devices, which means they do not require a device-specific driver and can be easily controlled using popular video APIs such as DirectShow and Video4Linux. Sensoray provides Software Development Kits (SDKs) for several operating systems to accelerate application development. Our fully functional demo programs illustrate the capabilities and serve as excellent starting points for custom designs.

The video processors implement efficient video compression (H.264 for 2271, H.264 or H.265 for 2273), producing output data formatted as either MPEG transport stream (MPEG-TS) or in MP4 or AVI file formats. Both models support JPEG snapshot capture.

Both models are available in PCB format (2271, 2273), and in metal enclosure (2271S, 2273S).

# System requirements

Supported operating systems:

Windows 7, 8, 10, 11;

Linux 2.6 and newer.

IMPORTANT (model 2273 only):

When capturing 3G-SDI (1080p60 video) it is crucial to use a 75 Ohm coaxial cable rated for 3G-SDI or higher.

# Block diagrams

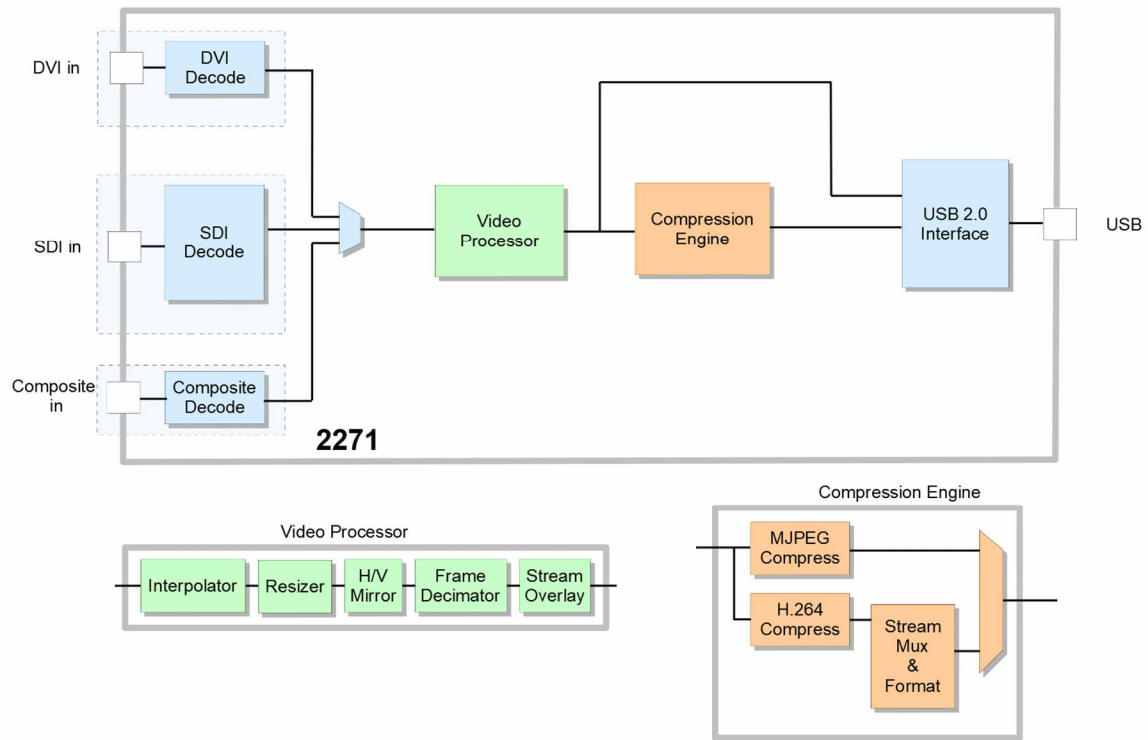


Fig.1. Model 2271 block diagram.

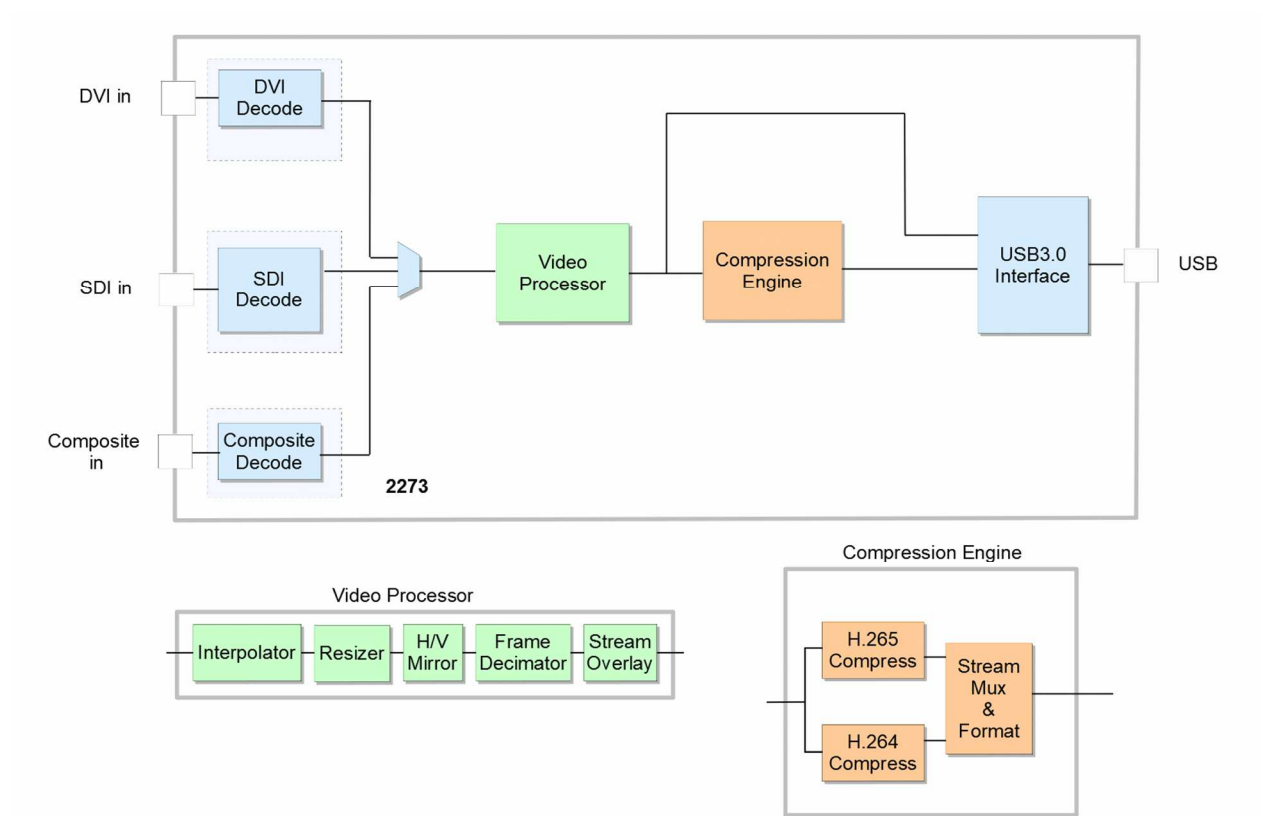
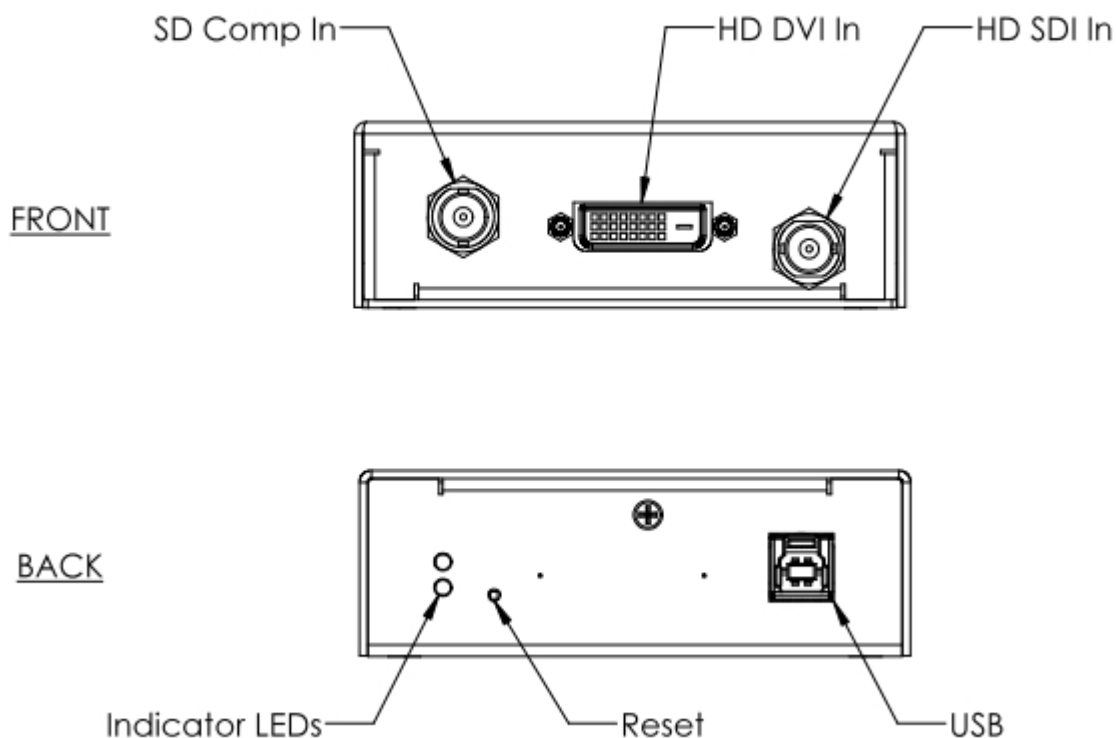


Fig.2. Model 2273 block diagram.

# Connectors



Front panels of both 2271S and 2273S are identical. Rear panels differ only with respect to the USB connector type: the 2271S has a USB 2.0 type B connector, while the 2273S has a USB 3.0 type B connector.

Both units have 2 LEDs on the rear panel: green (top) and red (bottom). The green LED turns on half brightness when the power is applied, and full brightness when the unit has booted and ready for operation. The red LED turns on momentarily during the boot process, and during special situations described below.

# Specifications

| SDI Video Input                           |                                                                                                               |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Data rates                                | 270 Mbps, 1.483 Gbps, 1.485 Gbps, 2.97 Gbps (2273 only)                                                       |
| Standards                                 | SMPTE 259M(C), SMPTE 292M, SMPTE 424M (2273 only)                                                             |
| Maximum resolution/frame rate             | 2271: 1920x1080p30 (compressed), 720x480 (uncompressed)<br>2273: 1920x1080p60 (compressed and uncompressed)   |
| Connector                                 | BNC, 75 Ohm                                                                                                   |
| DVI Video input                           |                                                                                                               |
| Maximum resolution/frame rate             | 2271: 1920x1080p30<br>2273: 1920x1080p60                                                                      |
| Composite Video input                     |                                                                                                               |
| Standards                                 | NTSC, PAL                                                                                                     |
| Resolutions                               | 720x480 (NTSC), 720x576 (PAL)                                                                                 |
| Output video streams                      |                                                                                                               |
| H.264                                     | 2271: High Profile @ Level 3 (MP4, AVI, transport stream)<br>2273: Baseline, Main, High profiles; Levels 1-5. |
| JPEG                                      | Single snapshots, AVI (2271 only)                                                                             |
| H.265 (2273 only)                         | Profile: main; tiers: main/high; levels 1-5.                                                                  |
| Raw (uncompressed)                        | UYVY                                                                                                          |
| Interface                                 |                                                                                                               |
| 2271                                      | USB 2.0                                                                                                       |
| 2273                                      | USB 3.0                                                                                                       |
| Electrical, mechanical, and environmental |                                                                                                               |
| Dimensions (not including connectors)     | PCB outline - 4"x3"<br>Enclosure - 4.17"x3.18"x1.39"                                                          |
| Operating temperature                     | 0° to 50° C                                                                                                   |
| Power                                     | USB bus powered                                                                                               |

# Software

| Software (Windows and Linux) |                                                                       |
|------------------------------|-----------------------------------------------------------------------|
| Driver                       | UVC video                                                             |
| SDK                          | Library wrappers around the DirectShow (Windows) or V4L2 (Linux) APIs |

# Firmware updates

Firmware update can be initiated by one of the following methods:

- selecting an “Update firmware” option in the demo application (Menu/Tools/Update firmware);
- calling the corresponding SDK function;
- pressing the reset button while the unit is powered up.

Upon those actions the device reconnects as a USB mass storage device with the name Update2263, and the red LED turns on. (If the AutoPlay menu appears, choose the “Open folder to view files” option). In this mode, a new firmware file can be copied to the Update2263 folder. If the update is initiated from the application, the application will close. While the firmware file is being written to the flash memory, the red LED blinks. Do not unplug the device until the red LED stops blinking and the Update2263 folder has closed.

In case a firmware update was interrupted in a way that prevented the device from operating, the device boots from the backup copy. Please repeat the update procedure to install the required version. Once successfully installed, the latest firmware is booted at power up.

## Safe boot

In case the firmware gets corrupt during the failed update or for any other reason, the unit could be forced to boot the backup copy of the firmware. It is achieved by powering the unit up (plugging in the USB connector) while pressing the reset button. The red LED will turn on after the boot is complete, indicating the reserve firmware is running. It is highly recommended to update the firmware to the latest version immediately. The latest firmware is available on the corresponding product's web page (<https://www.sensoray.com/products/2271.htm> or <https://www.sensoray.com/products/2273.htm>) under Downloads tab.

## Revision history

| Version             | Notes            |
|---------------------|------------------|
| 1.0.0, January 2026 | Initial release. |