



STDP6026, STDP6028, STDP6038

Triple input LCD controller for WSXGA+ and WUXGA applications

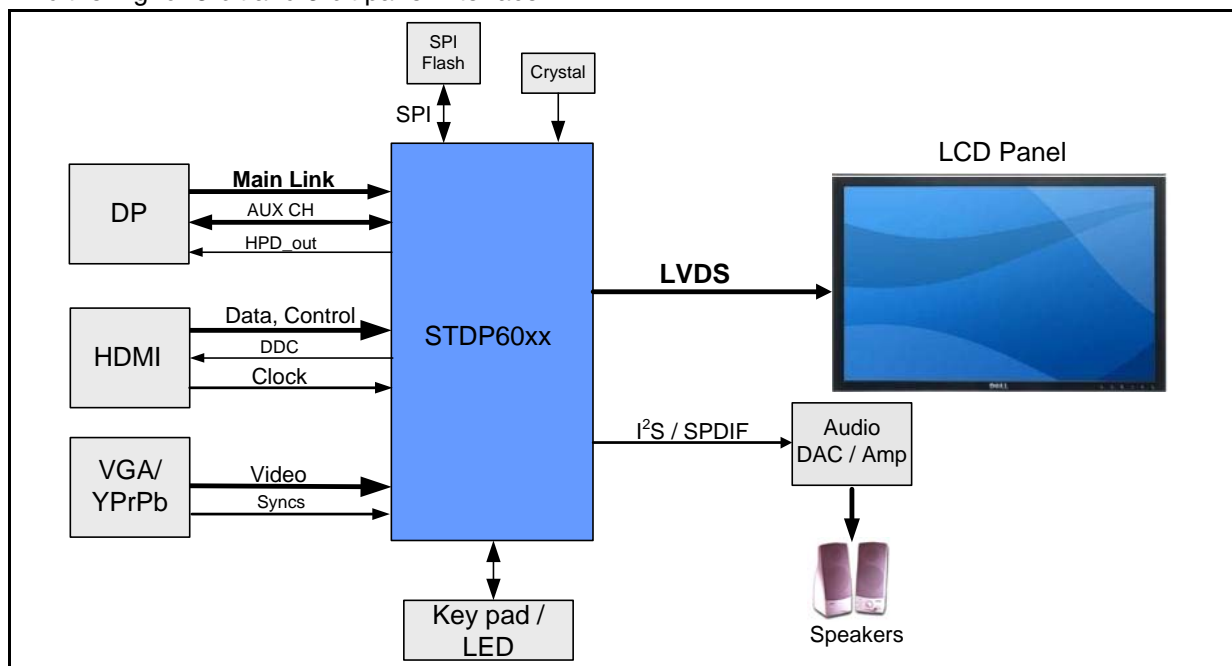
Data brief

Features

- Programmable zoom and shrink scaling
- DisplayPort 1.1a compliant receiver - 4-lane DisplayPort input
- Ultra-Reliable DVI® receiver (165 MHz)
- Triple-channel (10-bit) ADC (205 MHz) and PLL
- Faroudja RealColor® color processing:
 - Image enhancement
 - 12-bit processing
 - Deep color support
 - xvYCC color space support
- Dual channel 8-bit LVDS output
- HDMI 1.3 RX integrated with I2S (L/R channel) or SPDIF audio output ports
- Intel x86-compatible microcontroller with external SPI ROM interface
- 12-bit panel gamma correction and high-quality dithering for 8-bit and 6-bit panel interface
- DDC controller for host interface purposes
- PWM signals for backlight, audio volume control, etc.
- Energy Spectrum Management® (ESM®)
- Package: 128-pin PQFP

Applications

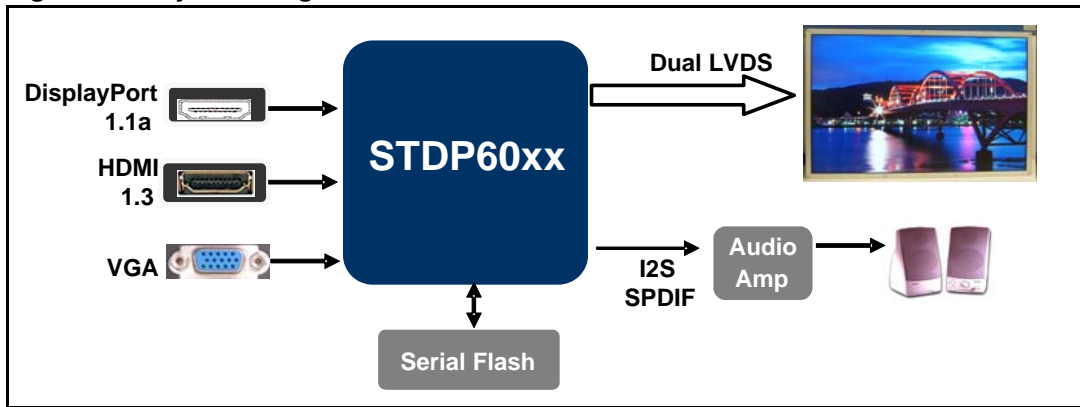
- WSXGA+/FHD/WUXGA LCD monitors with VGA, DP, HDMI 1.3 or DVI inputs (supports wide-gamut panels and high color fidelity applications)



1 Description

STDP60xx is an all-in-one LCD monitor controller with analog (RGB), DVI, DisplayPort 1.1a inputs and supporting resolutions up to WUXGA in a 128 PQFP package. The STDP60xx leverages Genesis Microchip's patented advanced image-processing technology, as well as a proven integrated ADC/PLL and an Ultra-Reliable DVI compliant digital receiver to deliver a high-quality solution for mainstream dual input monitors. The output section contains a dual channel 8-bit LVDS transmitter for direct interfacing of commercially available LVDS LCD panel module. In addition, STDP60xx includes an integrated x86 OCM with SPI compatible interface, advanced color control features, a multicolor proportional font OSD engine, and a number of system I/O components. Along with the high quality and reliability, STDP60xx also provides a very low cost system design by reducing the number of system components by deploying on a small 2-layer PCB.

Figure 1. System diagram



2 Feature attributes

- Advanced color controls
 - TV style color controls including hue and saturation
 - Faroudja RealColor provides six axis color controls, flesh-tone adjustment, gray guarding and image enhancement
 - Multiple-bin ACC extends the dynamic range of the display
- Analog RGB input
 - 205 MHz 10-bit ADC supports analog input up to UXGA @ 75
 - Composite-sync and Sync-on-Green (SOG) support
 - Instant Auto™ for automatic phase and clock adjustment
- Ultra-reliable DVI input
 - Operating speed 165 MHz (up to UXGA 60 Hz)
 - Direct connect to all DVI-compliant digital transmitters
 - High-bandwidth Digital Content Protection (HDCP)
- DisplayPort input
 - 4-lane DisplayPort 1.1a compliant RX
 - One auxiliary channel
 - I2S (up to 8 channels) or SPDIF audio output ports
- HDMI 1.3 compliant RX
 - Supports resolutions up to 1080p/WUXGA
 - Deep color and wide gamut support: 12-bit HDMI input at YCC 4:4:4
 - Backwards compatible with DVI
 - Supports integrated HDCP
 - Supports audio
- Intelligent image processing™
 - Programmable coefficients for user sharpness control
 - Real Recovery™ function provides full color recovery image for refresh rates higher than those supported by the LCD panel
- x86 on-chip microcontroller
 - High-performance x86 MCU with on-chip RAM and ROM
 - Unified memory architecture simplifies chip programming
 - Three DDC2Bi ports on VGA, HDMI/DVI and DP/HDMI/DVI inputs with DMA buffer to internal RAM. DDC buses can function as GPIO
 - Slow clock mode for 50mW sleep mode power consumption
- On-chip OSD controller
 - 1, 2 and 4-bit per pixel character cells
 - Blinking, transparency and blending
 - Supports two independent OSD menu rectangles
- LVDS transmitters
 - Double pixel up to UXGA @ 60 output
 - Support for 8 or 6-bit LVDS (with high-quality dithering)

- Programmable signal amplitude and driving strength
- Highly integrated system-on-a-chip
 - On-chip reset circuit to eliminate external reset IC
 - Broader PWM range from 50 Hz ~ 1 kHz with 256 steps adjustable duty cycle
 - LED direct drive pins
 - Programmable dithering block
 - Store HDCP key in embedded OTP ROM

3 Ordering information

Table 1. Order codes

| Part number | Description |
|-------------|--------------|
| STDP6026-AC | 128-pin PQFP |
| STDP6028-AC | 128-pin PQFP |
| STDP6038-AC | 128-pin PQFP |

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

4 Revision history

Table 2. Document revision history

| Date | Revision | Changes |
|-------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 05-Jan-2009 | 1 | Initial release. |
| 01-Dec-2009 | 2 | Removed: HDMI 1.3 compliant receiver backward compatible with DVI; embedded virtual EDID; DPTx from block diagram. Changed: True 10-bit processing to 12-bit. Added: Supports wide-gamut panels and high color fidelity applications; HDMI 1.3 compliant RX |

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