

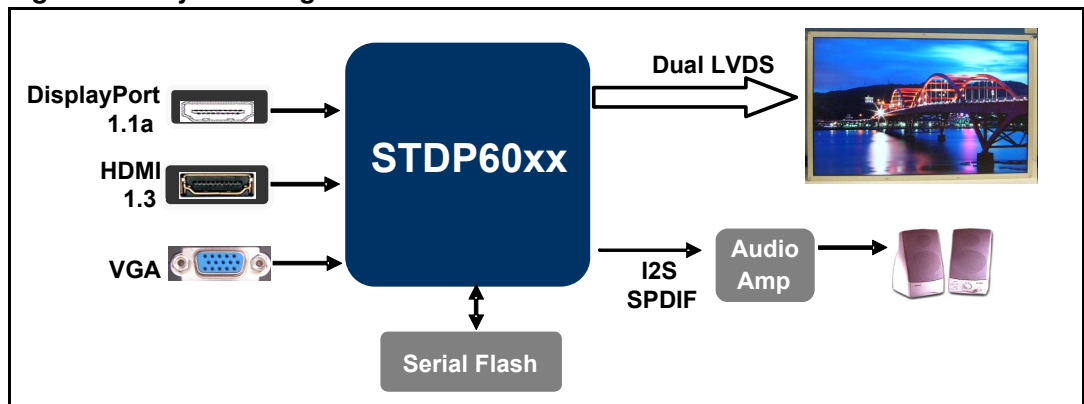
# 1 Description

STDP60xx is an all-in-one LCD monitor controller with analog (RGB), DisplayPort 1.1a, DVI (STDP6026/STDP6036), and HDMI 1.3a (STDP6028/STDP6038) inputs and supporting resolutions up to WUXGA in a 128 PQFP package. The STDP60xx leverages STMicroelectronics' patented advanced image-processing technology, as well as a proven integrated ADC/PLL and an Ultra-Reliable DVI compliant digital receiver (STDP6026/STDP6036) 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 two-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 (STDP6026/STDP6036)
  - 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 (STDP6028/STDP6038)
  - 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  |
|-------------|--------------|
| STDP6018-AC | 128-pin PQFP |
| STDP6026-AC | 128-pin PQFP |
| STDP6036-AC | 128-pin PQFP |
| STDP6028-AC | 128-pin PQFP |
| STDP6038-AC | 128-pin PQFP |

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## 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.<br>Changed: True 10-bit processing to 12-bit.<br>Added: Supports wide-gamut panels and high color fidelity applications; HDMI 1.3 compliant Rx |
| 04-Jan-2011 | 3        | Added STDP6018 and STDP6036 part numbers.<br>Specified part numbers that utilize either DVI or HDMI where applicable.   |

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