



STDP6018, STDP6026, STDP6036, STDP6028, STDP6038

Triple input LCD controller for WSXGA+ and WUXGA applications

Data brief

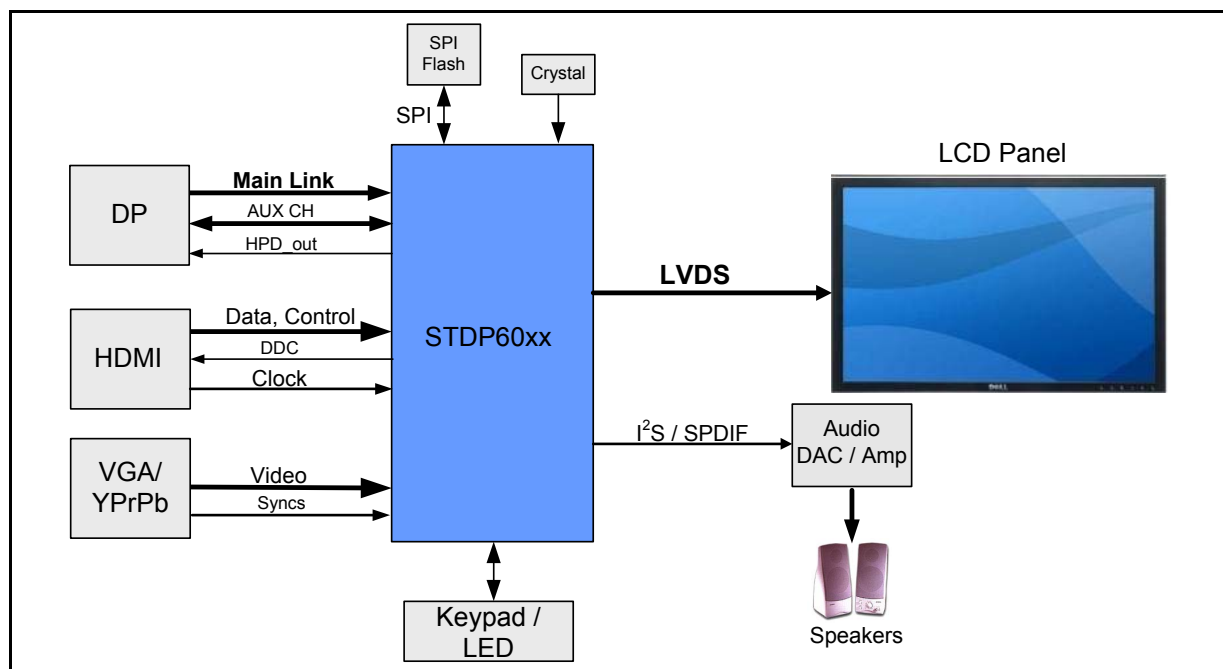
Features

- Programmable zoom and shrink scaling
- DisplayPort 1.1a compliant receiver – four-lane DisplayPort input
- Ultra-Reliable DVI[®] receiver (165 MHz) (STDP6026/STDP6036)
- 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 receiver integrated with I2S (L/R channel) or SPDIF audio output ports (STDP6028/STDP6038)

- 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)



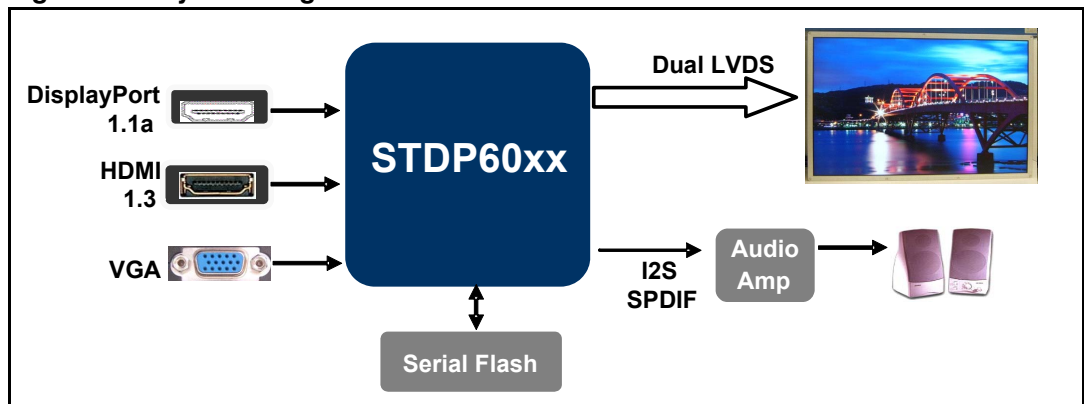
1 Description

STDP60xx is an all-in-one LCD monitor controller with analog (RGB), 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

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
04-Jan-2011	3	Added STDP6018 and STDP6036 part numbers. Specified part numbers that utilize either DVI or HDMI where applicable.

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2011 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com

