



# FLI5962, FLI5962H, FLI5968H, FLI5928H

## Multi-function LCD monitor controllers up to WUXGA

Data brief

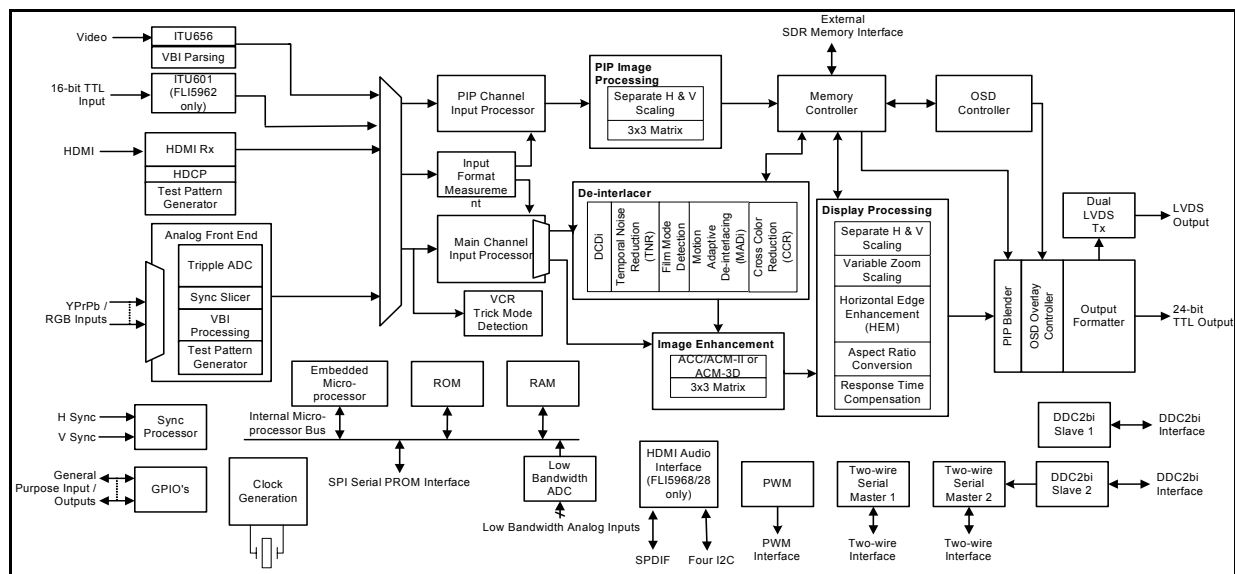
### Features

- Triple ADC and PLL up to 205 MHz
- Integrated Ultra-Reliable DVI® receiver up to 165 MHz (FLI5962 and FLI5962H)
- Integrated HDMI 1.1 receiver up to 165 MHz (FLI5968H and FLI5928H)
- HDCP supported with FLI59xxH versions
- ITU656 video input
- ITU601 (16-bit) video input
- Variable PIP window up to 640 x 480
- DCDi Edge® processing
- MADi, film mode detection, temporal noise reduction and cross color suppression for SDTV
- Response Time Compensation (RTC)
- Frame Rate Conversion (FRC)

- Panoramic scaling for wide output resolutions
- TV color controls using ACC and ACM-3D
- Faroudja® Truelife™ horizontal enhancements
- Versatile OSD controller for high quality bitmap-like TV OSD
- Embedded x86 microprocessor with external SPI Flash ROM
- Dual LVDS transmitter for direct interconnect to LCD panels up to WUXGA 60 Hz
- Package: 256 PQFP

### Applications

- Multi-function LCD monitors up to WUXGA resolutions
- Mid-range LCD TVs with PC and HDTV connectivity



# 1 Description

The FLI59xx family of controllers are highly integrated mixed signal LCD controllers for multi-function LCD monitors and LCD TV applications supporting up to WUXGA resolutions. The FLI59xx has integrated advanced video image processing from Faroudja as well as a proven ADC/PLL and Ultra-Reliable DVI or HDMI 1.1 compatible digital receiver with FRC to ensure proven PC graphics compatibility.

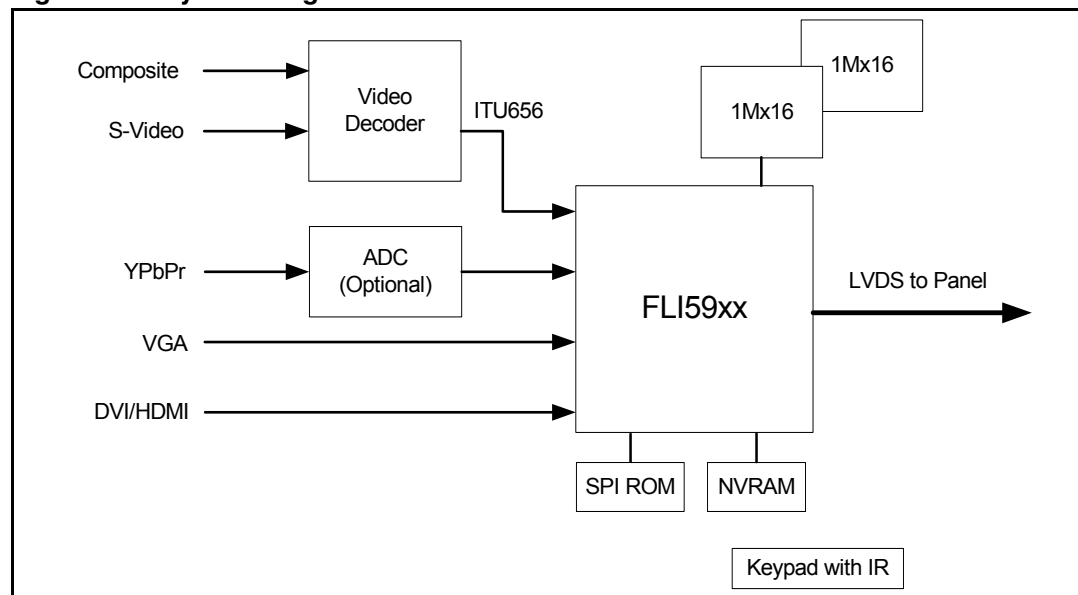
With Emmy award winning Faroudja DCDi® technology incorporating horizontal enhancement technology, advanced TV color control with Adaptive Contrast and Color (ACC) and Active Color Management-3D (ACM-3D), in addition to industry leading Motion Adaptive De-interlacing (MADi), advanced film mode detection, and response time compensation, the FLI59xx processes SDTV inputs to output images that are crisper with life-like quality.

The integrated picture-in-picture, embedded microcontroller, versatile OSD engine, low bandwidth general purpose ADC, and dual LVDS transmitters (or optional 24-bit TTL output) enables cost-effective HDTV-ready multi-function LCD monitor or LCD TV solutions.

The FLI59xx family of controllers includes the following products:

- FLI5962 supports up to 1920 x 1200 resolutions with DVI
- FLI5962H supports up to 1920 x 1200 resolutions with DVI and HDCP
- FLI5968H supports up to 1920 x 1200 resolutions with HDMI and HDCP
- FLI5928H supports up to 1366 x 768 resolutions with HDMI and HDCP

**Figure 1. System diagram**



## 2 Feature attributes

- Dual analog input
  - Operation up to 205 MHz
  - Dual RGB inputs
  - Single RGB and single YPbPr up to 1080i inputs
  - Bi-level and tri-level analog sync support and Macrovision™ support
  - Dual HSYNC, VSYNC, and SOG inputs
- Ultra-Reliable DVI/HDMI 1.1 input
  - HDMI 1.1, DVI 1.0, and HDCP 1.1—operates up to 165 MHz
  - Receives and outputs 2 to 8 channels of digital audio up to 192 KHz. Four programmable I2S and one SPDIF output
- Digital video input
  - ITU656 video input support for commercially available video decoder
  - ITU601 (16-bit) video input support for external MPEG2 decoder, DVI Rx, and ADC
- High quality advanced scaling engine
  - Independent and programmable horizontal and vertical scaling factors
  - Panoramic scaling (non-linear)
  - Variable sharpness settings
- Picture-in-Picture (PIP)
  - Variable PIP window size up to 640 x 480
  - Video PIP on Graphics or Graphics PIP on Video
  - Independent PIP window color controls
- Frame rate conversion
  - 16-bit/32-bit data path to support single or dual 1Mx16 SDR SDRAM
  - Full frame rate conversion up to SXGA 75 Hz
- Faroudja video processing and color control
  - MADi for SDTV
  - Inverse 3:2/ 2:2 pull down for film mode detection for SDTV
  - DCDi Edge processing for SDTV
  - Temporal Noise Reduction (TNR) up to 720p
  - Cross color reduction
  - Faroudja TrueLife horizontal enhancement
  - ACC, ACM-II, and ACM-3D
- Response time compensation
  - Compensates motion blur that results from slow response time of LCD panels—resulting in motion image that is clean and crisp
- OSD controller
  - Up to 4 windows
  - 1, 2, or 4-bits per pixel color
  - Blinking, transparency, blending, and proportional fonts support

- Output support up to WUXGA 60 Hz
  - Dual-channel LVDS transmitters with pin swap for flexibility in PCB layout
  - Optional 24-bit TTL output
- System-on-chip integration for lower BOM
  - On-chip reset circuit with integrated Schmitt trigger for HSYNC and VSYNC
  - Embedded x86 MCU with serial interface
  - General-purpose low-bandwidth ADC
  - Integrated gamma and 3x3 LUT for sRGB compliance
  - ESM® and boundary scan support

### 3 Ordering information

**Table 1. Order codes**

Part number	Description
FLI5962-LF-AA	256-pin PQFP
FLI5962H-LF-AA	256-pin PQFP
FLI5928H-LF-AA	256-pin PQFP
FLI5968H-LF-AA	256-pin PQFP

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

## 4 Revision history

**Table 2. Document revision history**

Date	Revision	Changes
25-Sep-2008	1	Initial release.
22-Apr-2010	2	Updated template and ECOPACK statement. Updated Figure 1. System diagram. Added all RPNs to title. Added Doc ID. Removed references to FLI5922H. Minor wording corrections to Description and Feature attributes sections.

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