

# VISION & IMAGING

CUSTOMER DATASHEET **CD5500-6500s-A**: September 1999

## VV5500-VV6500 Multi Format Digital Output Sensor

The VV5500-VV6500 are multi format digital output VGA resolution imaging devices based on the unique CMOS sensor technology from STMicroelectronics. Both sensors require minimal support circuitry.

VV5500 (monochrome) and VV6500 (colourised) sensors produce VGA resolution digital video output. The video streams from both devices contain embedded control data that can be used to enable frame grabbing applications as well as providing input data for the external exposure controller.

The pixel array in VV6500 is coated with a Bayer colour pattern. This sensor requires a coprocessor to perform colour processing and create a YUV or RGB signal from this raw input. The processor is also required to initialise the sensor. STMicroelectronics offer a range of processors to support the VV5500-VV6500 sensor. The STV0657-001(VP4) and STV0671 (CPIA2) are both compatible with the VV5500 and VV6500.

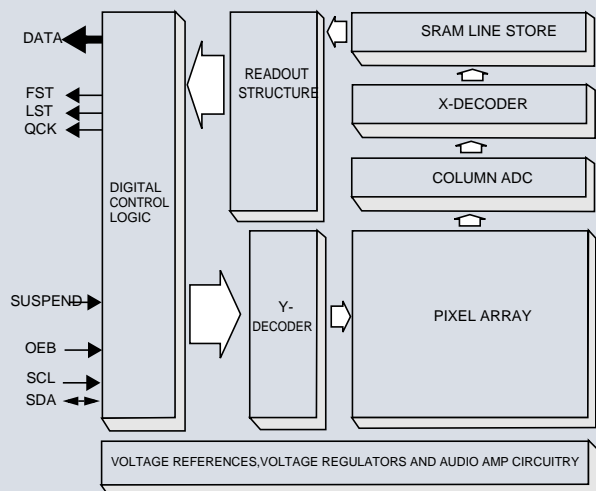
Both the monochrome and colour variants are initialised in a power saving mode and must be enabled via serial bus control before they can produce video. USB systems are catered for with an ultra low power mode.

The on board regulator can supply sufficient current drive to power external components, (e.g. the master coprocessor).

The sensor can perform automatic black and dark calibration to remove any offsets present within the monitored black and/or dark pixels. The calculated offset cancellation factor is then applied to the video stream. The black and dark offset cancellation features are independently configured via the serial interface.

A 2 wire serial interface allows the master coprocessor to reconfigure the device. Communications are necessary to control exposure and gain.

### DEVICE FUNCTIONALITY



### KEY FEATURES

- VGA resolution sensor
- 3.3V operation
- Multiple video format outputs available
- Pan tilt image feature
- 2 wire serial communications
- Suspend for USB systems
- On board 10bit ADC
- On board voltage regulator
- Automatic Black and Dark Calibration
- LVDS clock input
- On board audio amplifier

### APPLICATIONS

- PC Camera
- Digital stills cameras
- Personal digital assistant
- Biometric security
- Automotive systems
- Medical

### SPECIFICATIONS

<b>Pixel resolution</b>	648 x 484 (VGA) 356 x 292 (CIF) 324 x 244 (QVGA)
<b>Pixel size</b>	7.5µm x 7.5µm
<b>Array size</b>	4.89mm x 3.66mm
<b>Exposure control</b>	External (to 1000000:1)
<b>Analogue gain</b>	+18dB
<b>Signal/Noise ratio</b>	57dB
<b>Supply voltage</b>	3.3V-6.0V DC +/- 5%
<b>Supply current</b>	<25mA (active) <100µA (suspend clock disabled)
<b>Operating temperature (ambient)</b>	0°C - 40°C (for extended temp. information please contact STMicroelectronics)
<b>Package type</b>	48LCC

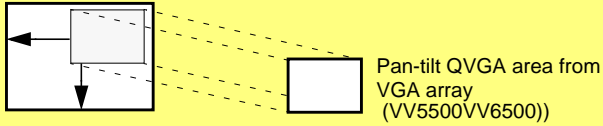


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### IMAGE READOUT

#### Pan Tilt QVGA Readout

VGA (VV5500/VV6500)

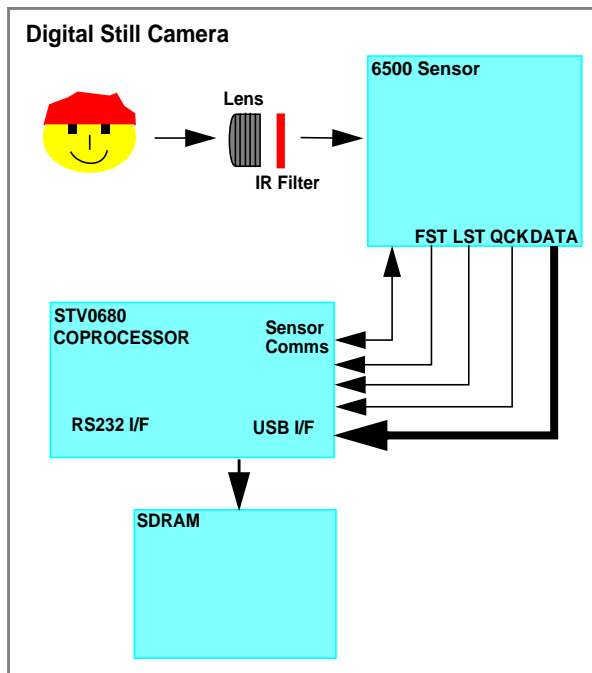


#### Subsampled QVGA Readout

VGA (VV5500/VV6500)



### EXAMPLE APPLICATIONS



### EVALUATION KITS

STMicroelectronics recommend using their Evaluation Kits for initial evaluation and design-in of sensors. For the VV5500 and VV6500 there are two Kits, a Mono one and a colour one, which also contain the VV5410 and VV6410 CIF resolution sensors respectively. The kit comprises a lensed board camera, a compact PCI card and required cabling. Software is provided to control the sensor operation from a PC.

### ABOUT VISION & IMAGING TECHNOLOGY

Our unique CMOS technology enables integration of the sensor array and associated support circuitry on a single VLSI microchip. CMOS sensors are compact, highly integrated devices that require reduced power consumption over traditional CCD devices while offering equivalent image quality.

The VV5500-VV6500 is part of a comprehensive range of image sensing products from STMicroelectronics for applications including videoconferencing, digital stills cameras, toys, security and biometrics. Visit the VISION & IMAGING web site at [www.vvl.co.uk](http://www.vvl.co.uk) for more information.

### ORDERING DETAILS

Part Number	Description	Number of defects
VV5500C001	48LCC packaged, Micro-lensed CIF Monochrome	0
VV6500C001	LCC packaged, Micro-lensed CIF ColourMOS	0
VV6500C001-B2	LCC packaged, Micro-lensed CIF ColourMOS	<37
STV0657-001	VP4 Coprocessor	N/A
STV0672-001	CPiA2 USB Coprocessor	N/A
STV0680-001	DSC Coprocessor	N/A
STV5410/5500-E1	Evaluation Kit for VV5410 & VV6500	N/A
STV6410/6500-E1	Evaluation Kit for VV6410 & VV6500	N/A

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