

DALSA Machine Vision

The world's most innovative and advanced digital imaging technology

Product Overview



Innovation where you need it

Since 1980 DALSA has delivered the world's most innovative and advanced digital imaging technology—from sensors for the Mars Rovers and cameras for the International Space Station to imagers and support chips for the highest quality medium format professional cameras. Our advances in high-speed industrial imaging make our products critical components in semiconductor wafer and flat-panel inspection around the world.

Constant innovation is what makes us a global leader. For some customers, our innovation means the highest performance. For others, it means greater cost effectiveness. But for all, it means competitive advantages as they seek to lower production costs, improve product quality and yield, or reduce time to market.

We offer the broadest range of CCD and CMOS image sensors and cameras—including multi-megapixel area scan, line scan and high sensitivity (TDI) line scan technology. In addition to our standard products, our Custom Solutions group pushes the boundaries of imaging technology to offer unique solutions whatever your application.

With our own foundry, dozens of patents, and 1000 employees worldwide, we have the size, resources, and broad, deep experience to offer superior solutions for the long term. Our goal is to see you succeed by providing **innovation where you need it.**



Spyder GigE

NEW

Preliminary

40/80 MHz



Line Scan

Spyder GigE takes camera performance to the next level. New state-of-the-art sensor technology achieves unprecedented line scan responsiveness. With its GigE interface, this camera eliminates the frame grabber and allows ubiquitous CAT 5e cabling up to 100m. A user-friendly GUI allows for quick setup and imaging in minutes.

Applications

- Flat Panel Display Inspection
- Postal And Parcel Sorting
- Pick And Place
- Wood/Steel/Tile/ Inspection
- Web Inspection
- General Machine Vision

Features

- 14 μm square pixels
- New sensor technology triples responsiveness

- Up to 68 kHz line rate
- GigE interface saves frame grabber costs
- Up to 100 m cable length
- CPU usage < 1%, no packet drop, low latency
- Programmable gain/offset/integration time
- Programmable flat field correction (FFC)
- Can save 4 sets of FFC coefficients
- New DALSA GUI enables camera setup in minutes
- Tall Pixel Mode (14 μm x 28 μm) feature

4M30/60 SA

NEW

Coming June 2006

160/320 MHz



Area Scan

DALSA's 4M30 and 4M60 "Stop Action" cameras set new standards in resolution and speed. Powered by DALSA's DCM2417 CMOS image sensor, these cameras deliver 4 megapixels at up to 62 fps. The 4M cameras combine low power, high resolution and high speed with high performance global electronic shuttering that eliminates image artifacts associated with other CMOS based cameras.

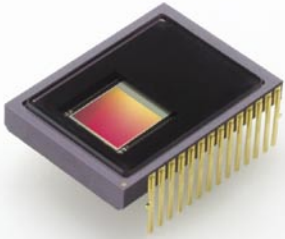
Applications

- Electronics Manufacturing Inspection
 - AOI (Automated Optical Inspection)
 - PCB Inspection
 - Solder Past Inspection
- Semiconductor Wafer Inspection
- Flat Panel Display Inspection
- Traffic Management
- General Machine Vision

Features

- Resolution: 2352H x 1728V
- Pixel Pitch: 7.4 μm x 7.4 μm
- 1000X Antiblooming
- 8/10 bit selectable digitization
- Camera Link®
- Vertical windowing
- Programmable
- Single 11 V to 25 V power supply

High Frame Rate Image Sensors



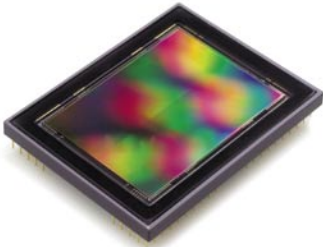
Our TrueFrame architecture, with its low noise, high dynamic range, and superb image quality, allows us to build high frame rate sensors that excel in imaging for industrial and medical imaging applications.

Our new FT50 offers 1 megapixel resolution at 100 frames per second in a cost-effective 1/2" optical format, meeting the needs of medical X-ray imaging, digital microscopy and industrial inspection applications.

Our new FTF2020 delivers 4 megapixels at 21 fps, ideal for industrial X-ray inspection, microscopy, radiography and fluoroscopy imaging systems.

—See the chart on the back page of this brochure for more products and specifications.

Ultra High Resolution Image Sensors



DALSA's TrueFrame image sensor technology delivers the world's best overall image capture. Inherently higher charge capacity with lower noise gives the high dynamic range that is vital for obtaining optimal imaging performance. TrueFrame sensors deliver uniform, linear response from dark to saturation, with vertical antiblooming to eliminate localized overexposure. This superb image quality comes with low power dissipation for less heat and lower noise.

For professional digital photography, our new 33 megapixel FTF5066 sets a new benchmark in image resolution. Our innovative new 28 megapixel FTF6146 brings unprecedented features such as on-chip Bayer color mosaic binning (for higher sensitivity and frame rates), and multiple selectable output amplifiers for increased speed of operation. For large-format imaging such as aerial photography and a variety of scientific applications, the large pixels of our 28 megapixel FTF7040 provide remarkable sensitivity and dynamic range performance.

—See the chart on the back page of this brochure for more products and specifications.

Image Sensor Support



All of our TrueFrame CCDs are basically compatible, enabling a camera design platform for a range of products that address the specific needs of different applications and users. To simplify camera design even more, we offer peripheral chipsets to optimize camera performance with the lowest costs and highest flexibility. Our application engineers can assist you with reference designs and experienced advice in system design and optimization.

DALSA offers an extensive custom image sensor program in all technologies—area scan, line scan, and TDI line scan CCDs as well as high-performance CMOS sensor designs. Our back side thinning and advanced sensor cooling solutions serve a wide range of specialized applications including spectroscopy, astronomy, and microscopy. We work closely with our customers to provide sensors to fit their specific application.

—Contact us, and discover how we can help you meet your demanding imaging needs.

Custom Solutions



From minor modifications of existing products to full “from the ground up” designs, DALSA is uniquely positioned to offer innovative solutions to exceed your next generation requirements and deliver competitive advantage. Custom Solutions offer design, manufacturing expertise and engineering services for the most challenging applications, including sensors, cameras, vision modules, specialized illumination, optics, data acquisition, and image processing.

DALSA has the tools in place to fast track challenging product developments and a highly trained technical support team to assist with product test and integration.

Imaging Modules • Custom illumination and optics • Image processing and classification

Sensor Capabilities • CCD, CMOS • backside thinned, radiation tolerant, extended environmental testing

Digital Cameras • Ultra high speed and ultra sensitive line scan, TDI and area scan
• Unique application specific architectures and options

Spyder2

40 MHz



Line Scan

Spyder2 is a small, fast and cost effective camera with a full feature set and a Camera Link® interface. Surpassing its predecessor in responsiveness, programmability and sensitivity with 14 μm pixel size, Spyder2 requires reduced light and provides more precise control.

Applications

- Flat Panel Display Inspection
- Web Inspection
- Pick And Place
- Document Scanning
- General Machine Vision

- High responsiveness
- Camera Link®
- 8/10 bit selectable output
- Single 12 V to 15 V power supply
- Programmable flat field correction
- Adjustable analog and digital gain
- Up to 65 kHz line rate

Features

- Resolutions: 512 to 2k (14 μm square pixel)
- New 4k resolution with a 10 μm square pixel
- Compact and robust

Piranha2

80/160 MHz



Line Scan

The Piranha2 is available in resolutions from 1k to 8k and a variety of pixel sizes. Choose from 80 MHz or 160 MHz throughput. Uses single power supply. Slim model also available in various gain ranges.

Applications

- Flat Panel Display Inspection
- Electronics Manufacturing
- Postal And Parcel Sorting
- Web Inspection
- General Machine Vision

- Up to 65 kHz line rate
- Camera Link®
- High responsiveness
- Programmable flat field correction
- Single 12 V to 15 V power supply
- Adjustable analog and digital offset and gain
- Adjustable integration time and line rate
- Economical 60 MHz model available
- Slim model measures 76 mm in width (shown)

Features

- Resolutions: 1k to 8k
- Up to 160 MHz throughput
- New 10 μm models: 2k/4k (160 Mhz.), 4k (80 Mhz.)

Piranha3

Preliminary

320 MHz



Line Scan

Boasting 8k and 12k resolutions, with line rates of up to 33 kHz and 23.5 kHz, the Piranha3 cameras target the throughput demands of next generation flat panel display and high speed inspection.

Applications

- Flat Panel Display Inspection
- Electronics Manufacturing
- Semiconductor Inspection
- High Speed Web Inspection

- Programmable flat field correction (FFC)
- Can save 4 sets of FFC coefficients
- Adjustable analog and digital offset and gain
- Adjustable integration time and line rate
- Antiblooming
- High responsiveness
- 8 or 12 bit

Features

- Resolutions: 8k and 12k
- Pixel size: 7 μm (8k); 5 μm (12k)
- 320 MHz throughput
- Up to 33 kHz line rate
- Camera Link®

Piranha HS

(High Sensitivity)

320/640 MHz



Line Scan

All Piranha HS line scan cameras use TDI technology to marry high speed and responsiveness for heightened sensitivity and decreased lighting requirements. DALSA offers the power of TDI and Camera Link® with antiblooming and stage selection.

Applications

- Flat Panel Display Inspection
- Electronics Manufacturing
- Postal (Letter And Flats) Sorting
- High Performance Web Inspection
- Low Light Applications

- 50X more responsiveness than line scan
- Bidirectional (4k & 8k)
- Camera Link®
- > 100X antiblooming
- Programmable stage selection
- Programmable flat field correction

Features

- Resolutions: 2k, 4k and 8k (shown)
- Up to 640 MHz throughput
- Up to 68 kHz line rate

Pantera SA 2M30/4M15

80 MHz



 Area Scan

The Pantera “Stop Action” 2M30 and 4M15 cameras use interline transfer CCD sensors to deliver high-speed images with electronic shuttering to eliminate blur associated with fast moving objects. These compact cameras are robust and easy to use, and feature a Camera Link interface, single power supply, and programmable operation.

Applications

- **Electronics Manufacturing Inspection**
- **Flat Panel Display Inspection**
- **Industrial Metrology**
- **Traffic Management**
- **General Machine Vision**

- Frame Rate: 2M – 34fps, 4M – 16 fps
- “Stop Action” imaging
- Monochrome or color products available
- Excellent tap matching
- 8/10 bit selectable digitization
- Camera Link®
- Robust and compact
- Vertical scanning
- Programmable gain and offset
- Single 11 V to 25 V power supply

Features

- Resolutions – 2M30: 1.6k x 1.2k and 2k x 1k
- Resolutions – 4M15: 2k x 2k

Pantera TF 1M30/1M60

40/80 MHz



 Area Scan

DALSA’s Pantera TF 1M30 and 1M60 are built on DALSA’s TrueFrame™ image sensor technology, providing both speed and elevated responsivity. Large pixels with very low noise provides the dynamic range required for true 12 bit data output, and vertical antiblooming contains localized overexposure without compromising fill factor. The result is superior image quality. A Camera Link interface makes setup simple and quick.

Applications

- **Automated X-ray Inspection**
- **Non-destructive Test**
- **Medical Imaging**
- **Microscopy**

- Pixel size: 12 μm x 12 μm
- Exposure control
- Camera Link®
- Resolution: 1k x 1k
- High responsivity
- 12 bit digitization
- Antiblooming

Features

- 66 dB dynamic range
- 30 fps and 60 fps at 1M resolution

Pantera TF 6M8/11M4

72 MHz



 Area Scan

The Pantera TF 6M8 and 11M4 cameras offer superior image fidelity and performance by combining multi-megapixel resolution with high precision and fast frame rates. Large pixels and extremely low noise levels allow huge dynamic range for digitization up to 14 bits. Vertical antiblooming contains localized overexposure without compromising fill factor.

Applications

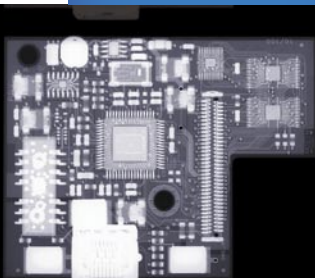
- **Film Scanning And Archiving**
- **Medical X-ray: Angiography And Fluoroscopy**
- **Industrial X-ray: Non-destructive Test (PCB Inspection)**
- **Microscopy**
- **Large Field Of View Applications**

- Up to 14 bit digitization
- Large Pixel size: 6M – 12 μm, 11M – 9 μm
- Frame Rate: 6M – 7.5 fps, 11M – 4.4 fps
- Excellent tap matching
- High dynamic range
- Exposure control and antiblooming
- Camera Link®
- Mechanical shutter interface available

Features

- Resolution: 6M (3072 x 2048)
- Resolution: 11M (4008 x 2672)

X-ray Imaging



 X-ray

DALSA has extensive experience in X-ray imaging with over 1,000 field deployments in applications such as industrial X-ray inspection and medical X-ray imaging, including mammography and micro computed tomography. These applications require exceptional performance with ultra low noise, high dynamic range, high resolution, and high sensitivity.

DALSA has core competencies in a range of technologies vital to success in X-ray applications, such as cooling sensors and electronics for low noise, fiber optic bonding for high transmission efficiency, high-precision digitization for preservation of fine details, and sophisticated in-house characterization and test facilities. Our designs are effective, efficient, and robust, ultimately delivering outstanding image quality.

Applications

- **Industrial Non-Destructive Test With Ionizing Radiation**
- **Security Imaging**

- **Industrial and Medical Small Field Computed Tomography**
- **Materials Science and Nanotechnology**
- **Agricultural and Container Inspection**

DALSA Machine Vision | Product Overview

Product	Resolution	Line/Frame Rate	Pixel Size	Output	Strengths
Area Scan Cameras					
Stop Action					
Pantera SA 2M30	1600 x 1200 / 1920 x 1080	34 fps	7.4 μm	Base Camera Link	Hi Res, Stop Action, Color
Pantera SA 4M15	2048 x 2048	16 fps	7.4 μm	Base Camera Link	Hi Res, Stop Action, Color
4M30 SA*	2352 x 1728	31 fps	7.4 μm	Base Camera Link	CMOS, Hi Res, Stop Action
4M60 SA*	2352 x 1728	62 fps	7.4 μm	Medium Camera Link	CMOS, Hi Res, Stop Action
1M28/75/150-SA	1024 x 1024	27 / 75 / 150 fps	10.6 μm	Base, Med. Camera Link	CMOS, Stop Action
TrueFrame					
Pantera TF 1M30	1024 x 1024	30 fps	12 μm	Base Camera Link	Low Noise, 12 Bits
Pantera TF 1M60	1024 x 1024	60 fps	12 μm	Base Camera Link	Low Noise, 12 Bits
Pantera TF 6M8	3072 x 2048	7.5 fps	12 μm	Base Camera Link	Low Noise, 14 Bits
Pantera TF 11M4	4008 x 2672	4.4 fps	9 μm	Base Camera Link	Low Noise, 14 Bits
Line Scan Cameras					
Piranha2					
P2-2x-xxx30	1024 / 2048 / 4096	49.6 / 27 / 14 kHz	10 / 10 / 7 μm	Base Camera Link	Cost Effective, Compact
P2-2x-xxx40 (10 μm)	1024 / 2048 / 4096*	65 / 35 / 18 kHz	10 μm	Base Camera Link	Fast, Hi Res, Compact
P2-4x-xxx40* (10 μm)	2048 / 4096	68 / 36 kHz	10 μm	Medium Camera Link	Fast, Hi Res, Compact
P2-2x-xxx40 (7 μm)	4096 / 6144 / 8192	18 / 12 / 9 kHz	7 μm	Base Camera Link	Fast, Hi Res, Compact
P2-4x-xxx40 (7 μm)	4096 / 6144 / 8192	36 / 24 / 18 kHz	7 μm	Medium Camera Link	Fast, Hi Res, Compact
Piranha3					
P3-80-xxx40*	8192 / 12288	33.7 / 23.5 kHz	7 / 5 μm	Med., Full Camera Link	Next Generation Piranha
Spyder					
GigE* (Prelim)	1024 / 2048	68.5 / 36 kHz	14 μm	Gigabit Ethernet	Gigabit Ethernet, High Responsivity
S2-1x-xxx40	512 / 1024 / 2048	65 / 35 / 18 kHz	14 μm	Base Camera Link	Cost Effective, Compact
S2-2x-04K40*	4096	9 kHz	10 μm	Base Camera Link	4k Resolution, Cost Effective
Trillium					
TR-37	1024 / 2048	21 / 11 kHz	14 μm	3 x 8 Bit LVDS @ 25 MHz	Color Fidelity, Autocalibration
High Sensitivity Line Scan Cameras					
Eclipse					
EC-11	512 / 1024 / 2048 x 96 TDI	64.1 / 34.8 / 17.4 kHz	13 μm	8 Bit LVDS @ 40 MHz	Low Light, High Speed
Piranha HS					
HS-4x-02K30	2048 x 64 TDI	52 kHz	13 μm	Base, Med. Camera Link	Low Light, Antiblooming
HS-40-04K40	4096 x 96 TDI	36 kHz	7 μm	Base, Med. Camera Link	Low Light, Antiblooming
HS-80-08Kx0	8192 x 96 TDI	34 / 68 kHz	7 μm	Med., Full Camera Link	Low Light, Antiblooming
X-Ray Cameras					
FPX-2 (Preliminary)	2084 x 2084	n/a	24 μm	14 Bits	High Resolution Filmless X-Ray
Pantera XR 6M3	3072 x 2048	2.75 fps	12 μm	12 Bit LVDS @ 20 MHz	Large Field of View, Fiberoptic Taper
Asteroid EC-11	2048 x 96 TDI	17.4 kHz	13 μm	40 MHz	Cost Effective TDI X-Ray
Area Scan Sensors					
FT18M	1024 x 1024	30 fps	7.5 μm	40 MHz	High Speed, High Dyn. Range
FT50M*	1024 x 1024	100 fps	5.6 μm	2 x 60 MHz	High Speed, Sensitivity, Dyn. Range
FTT1010M	1024 x 1024	60 fps	12 μm	2 x 40 MHz	1M, High Speed, Dyn. Range
FTF2020M*	2048 x 2048	21 fps	12 μm	4 x 36 MHz	4M, Large Pixel Pitch
FTF2416M	2460 x 1640	9.2 fps	9 μm	25 MHz	4M, APS Format
FTF3020M / C	3072 x 2048	14 fps	12 μm	4 x 36 MHz	6M, 35 mm Sensor
FTF4027M / C	4008 x 2672	7.2 fps	9 μm	4 x 25 MHz	11M, 35 mm Sensor
FTF4052M / C	4008 x 5344	3.7 fps	9 μm	4 x 25 MHz	22M, High Dynamic Range
FTF5066M / C*	4992 x 6668	2.7 fps	7.2 μm	4 x 25 MHz	33M, High Resolution
FTF6146M / C*	6096 x 4560	3.3 fps	7.2 μm	4 x 25 MHz	28M, On-Chip Binning
FTF7040M*	7168 x 4096	1 fps	12 μm	4 x 10 MHz	28M, Large Format
DCI0605C	640 x 480	30 fps	5.6 μm	9 bit digital @ 13 MHz	Low Power CMOS, Integrated Lens
Line Scan Sensors					
IT-P1	1024 / 2048 / 4096	87.3 / 46.1 / 23.7 kHz	10 μm	4 x 25 MHz	4 O/P, 5 V Clocks, Low Lag Pixels
IL-P1	512 / 1024 / 2048 / 4096	87.3 / 46.1 / 23.7 / 12.0 kHz	10 μm	2 x 25 MHz	2 O/P, 5 V Clocks, Low Lag Pixels
IL-P3	512 / 1024 / 2048	73 / 37.8 / 19.2 kHz	14 μm	40 MHz	Single O/P, PPD, 5 V Clocks
High Sensitivity Line Scan Sensors					
IL-C6	2048	12 kHz	13 μm x 500 μm	25 MHz	Tall Pixels, High Dynamic Range
IT-F6	2048 x 96 TDI	50 kHz	13 μm	8 x 20 MHz	Low Light, High Blue Response

(*) New Product

DALSA is registered to ISO 13485—2000 and 14001 for design, manufacturing and environmental control.

North America: +1 519-886-6000 | Email: sales.americas@dalsa.com
 Europe: +49 8142-46770 | Email: sales.europe@dalsa.com
 Asia/Pacific: +81 3-5960-6353 | Email: sales.asia@dalsa.com

www.dalsa.com

