



Piranha4 CMOS Mono/Color Dual/Trilinear Line Scan Family

Piranha4 CMOS 黑白/彩色
双线/三线线阵相机系列

Fastest
Line scan
Camera !



Michelle Ye 叶敏
Key Account Manager
March 2013

TDALSA Digital Imaging Strategy

- Image sensor design (CCD+CMOS) and own wafer foundry
图像芯片设计(CCD+CMOS), 拥有自己的晶圆加工工厂
- From sensors, cameras, Frame Grabber, imaging processing software to smart camera
从芯片--相机--图像采集卡--图像处理软件--智能相机
- Unique custom products
独一无二的定制产品服务
- Technology and product offering
提供图像产品与技术



We are the digital imaging industry's only completely vertically integrated supplier, offering "Silicon to Smart Cameras".

Teledyne Dalsa 是数字图像领域, 唯一一家拥有完整产业技术链的公司



CMOS Line Scan Technology

CMOS vs. CCD Linescan

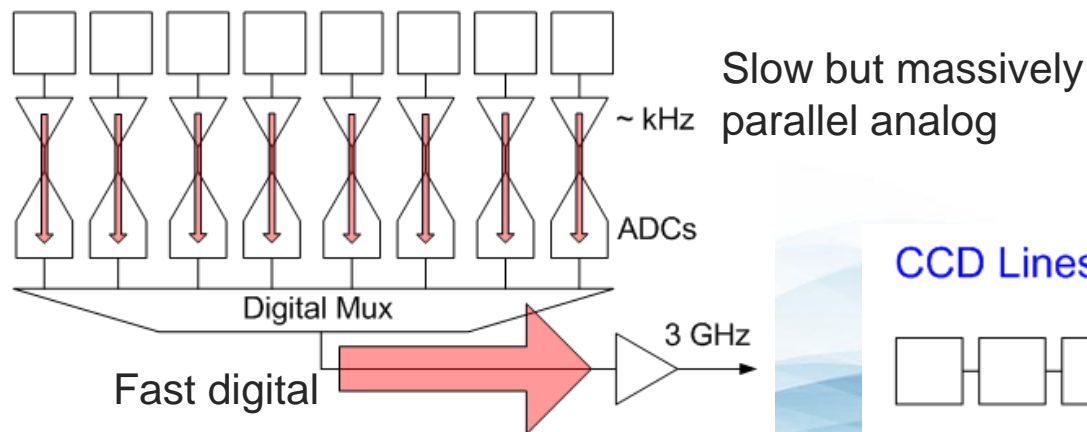
CMOS advantages:

Higher throughput with parallel analog readouts

Lower noise with slow analog speed

Lower power due to low voltage and analog speed

CMOS Linescan



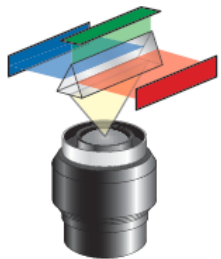
CCD Linescan





Line Scan Imaging

Line Scan Imaging: Color



- 3CCD: Prism based beamsplitter, excellent colour registration, higher costs



- Trilinear: Absorption filter; high colour fidelity, need spatial correction



- Bilinear: Absorption filter, low cost, ease of use

Color Technology

	3CCD	Trilinear	Bilinear
Colour separation	Interference beamsplitter	Absorption filter	Absorption filter
Optical lens	Special lens	Standard lens	Standard lens
Spatial correction	No	Yes	Yes, Minimum
Native colour/ interpolation	RGB/No	RGB/No	RG or BG/ 1 colour
Image quality	Best	Best	Good
Cost	High	Medium	Low

P4 Color Line Scan Specs *Prelim*

- Bi, tri and quadlinear architecture
- 100% fill factor
- High speed 70kHz max linerate, 2x-4x Speedup
- Dynamic range: 62dB
- CameraLink



PIRANHATM 4 CMOS Line Scan Cameras

GEN*i*CAM 

COLOR LINE SCAN	RESOLUTION	MAX. LINE RATES	PIXEL SIZE
Piranha4 trilinear 2k	2048 x 3 pixels	70 kHz	14 x 14 μ m
Piranha4 trilinear 4k	4096 x 3 pixels	70 kHz	10 x 10 μ m
Piranha4 bilinear 8k	8192 x 2 pixels	50 kHz	7 x 7 μ m*

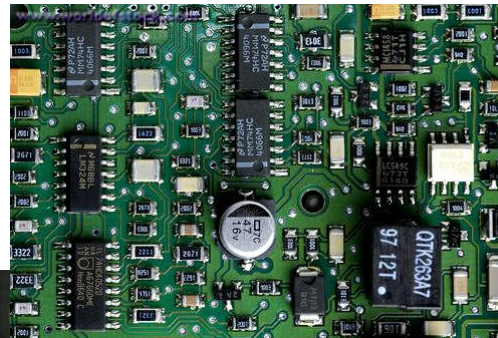
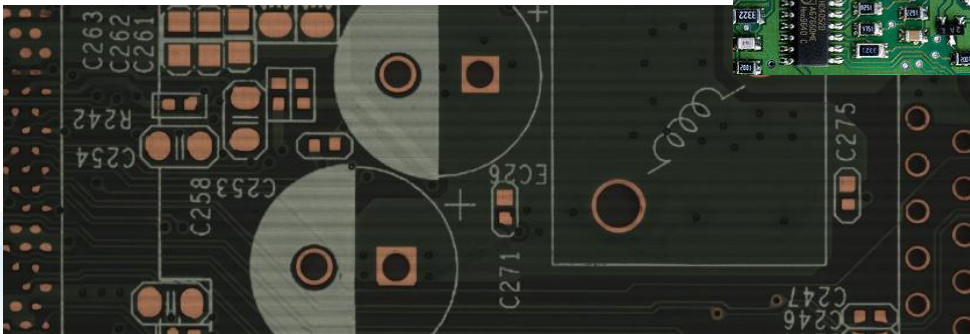
Key application: Print Inspection

- Ensure 100% quality for prints and banknotes
- Requires best color quality and speed
- PC-30 and P4-2K/4K Tri/Quad Linear



Key application: PCB AOI

- Check quality of bare and final PCBs
- Requires high resolution and speed
- P4-8K dual line color

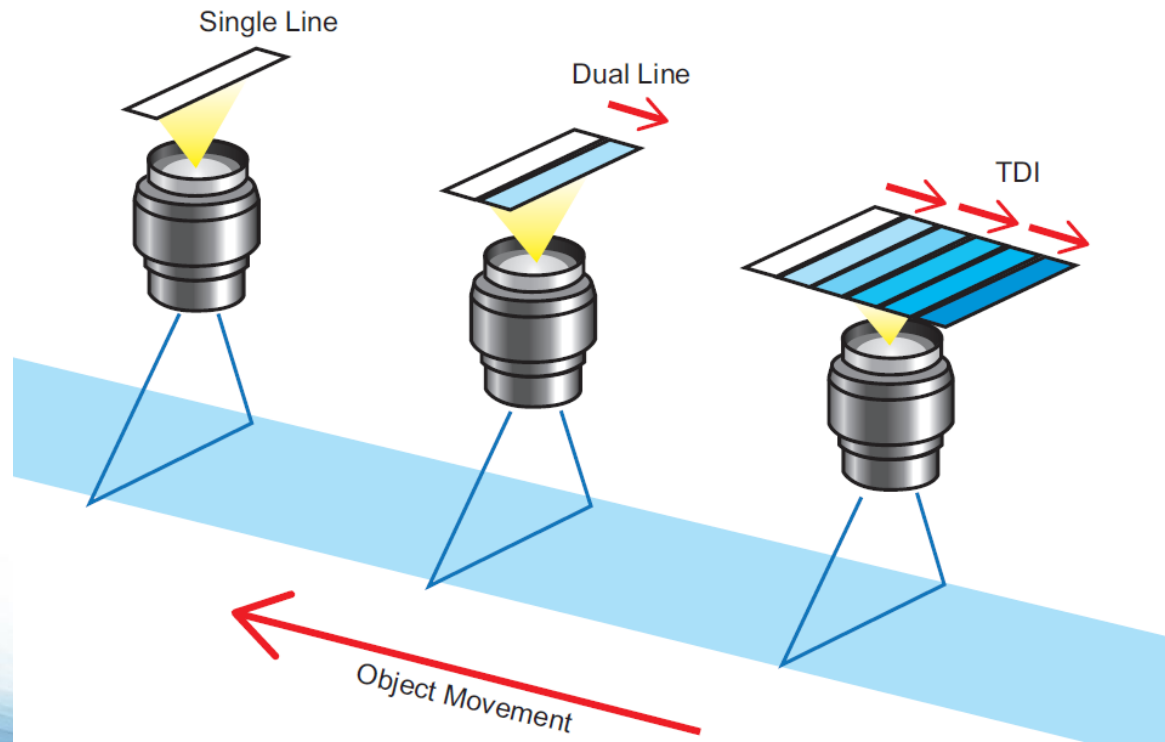


Line Scan Imaging: Mono

Single line: simple, all features

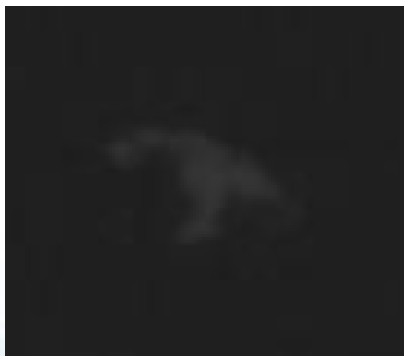
Dual line: better SNR, exposure control

TDI: best SNR for light starved applications



Mono Technology

	Single line	Dual line	TDI
Pro	Better QE, exposure control	2x better SNR, exposure control	Best SNR, nx of single line
Con	Limited responsivity	Off chip summing for CMOS	Limited DOF, sensitive to speed variation



P4 Mono Line Scan Specs *Prelim*

- Dual line architecture, 100% fill factor
- Max linerate up to 140kHz in TDI/summing mode
- Vertical and horizontal binning
- Dynamic range: 68dB
- >100x antiblooming



PIRANHATM 4
CMOS Line Scan Cameras

GEN*<i>CAM* **CAMERA Link**

MONOCHROME LINE SCAN	RESOLUTION	MAX. LINE RATES SUMMING MODE (AREA MODE)	PIXEL SIZE
Piranha4 dual line 1k	1024 x 2 pixels	140 kHz (280 kHz)	14 x 14 μ m
Piranha4 dual line 2k	2048 x 2 pixels	100 kHz (200 kHz)	10 x 10 μ m
Piranha4 dual line 2k	2048 x 2 pixels	140 kHz (280 kHz)	14 x 14 μ m
Piranha4 dual line 4k	4096 x 2 pixels	70 kHz (140 kHz)	7 x 7 μ m
Piranha4 dual line 4k	4096 x 2 pixels	100 kHz (200 kHz)	10 x 10 μ m
Piranha4 dual line 8k	8192 x 2 pixels	70 kHz	7 x 7 μ m*

Key application: Railway and Vehicle Safety

- Check railway and vehicle bottom.
- High speed train car safety
- Need high speed and long transmission length
- SG-1K, P4-2K/4K Dual line





Welcome to visit Teledyne DALSA in Hall W1 at booth 1322

***更多产品信息, 请莅临参观 Teledyne DALSA 展位
W1厅, 展位号1322***