TELEDYNE DALSA
Everywhere**you**look

ADVANCED IMAGE CAPTURE,
ACQUISITION, AND PROCESSING

MACHINE VISION

SENSORS
CAMERAS
FRAME GRABBERS
SOFTWARE
VISION SYSTEMS

IMAGINE THE
POSSIBILITIES

We are dedicated to helping our customers to both imagine new automated inspection applications and engineer practical solutions for them. Check out stories from vision innovators that showcase the amazing possibilities to push vision to new heights.

www.possibility.teledynedalsa.com

1. Accelerating Lumber Production with Machine Vision

2. Infrared-Based Imaging in Forensics

3. OSIRIS-REx: Asteroid Acquisition

4. A Close Look at Vision Guided Robotics (VGR)

5. Human and Machine Pattern Recognition

6. Space Archaeology

OUR NEWEST INNOVATION IS LOW COST

Welcome to our product overview. This year's publication showcases our newest and best-in-class image sensors, cameras, frame grabbers and software.

Check out the Piranha™ XL 16k camera, with our new CMOS TDI sensor. Also featured are the newest versions of our Linea™ line scan camera, designed for low cost deployment and now available in both monochrome and color. Don't miss our new high resolution Genie Nano area cameras, now available from VGA to 25 megapixels. Fast and easy-to-use, they are our lowest cost cameras ever. And finally, learn more about our new smart vision sensor, the BOA™ Spot.

With such an immense portfolio of imaging solutions we can't possibly cover everything here so we invite you to learn about the products showcased inside, and to explore all of our innovations at **www.teledynedalsa.com/imaging**

CONTENTS

LINE
SCAN
IMAGING

Our vision is sharp. Teledyne DALSA offers powerful, innovative cameras combining industry-leading performance with cutting-edge feature sets and value. With standard resolutions from 2k to 16k pixels, monochrome, color, or multispectral models, industry-leading line rates and responsivity, and unique image capture and processing, we can offer the perfect solution for your vision system.

www.teledynedalsa.com/linescan

MAXIMUM THROUGHPUT WITH CMOS

Our wide selection of multi-featured line scan cameras offer high speed, high responsivity, ease of use and a choice of interface options to deliver high throughput inspections.
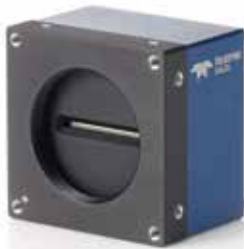
LINEA™

A new standard for value, with high performance and excellent image quality at a surprisingly low price.
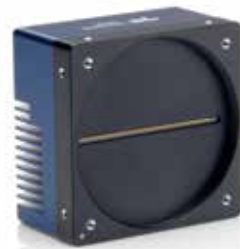
» Resolutions from 2k to 16k

» Line rates up to 80 kHz

» Mono / Color

» Camera Link®, Camera Link HS, and GigE Vision®
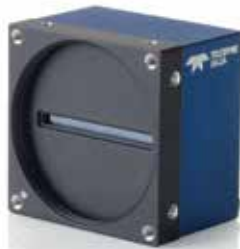
PIRANHA™ 4

A versatile multi-line camera family built on advanced features and an incredible legacy of performance.

» Resolutions from 2k to 8k

» Line rates up to 200 kHz

» Mono / Color / Multispectral

» Camera Link

PIRANHA™ XL/HS

Advanced line scan imaging using CMOS and CCD Time Delay Integration (TDI) for the highest responsivity in the industry.

» Resolutions from 4k to 16k

» Line rates up to 200 kHz

» Mono / Color

» Camera Link / Camera Link HS

LINEA™

POWERFUL ENOUGH TO USE ANYWHERE
AFFORDABLE ENOUGH TO USE EVERYWHERE

Linea can help you improve your imaging and lower your costs. Linea starts with an advanced CMOS sensor that delivers high quantum efficiency and low noise combined with advanced features to make your machine vision job almost effortless. Available in resolutions from 2k to 16k for both monochrome and color versions.

KEY FEATURES

» TurboDrive™ for line rates that break through the GigE limit

» GigE Vision, Camera Link, and Camera Link HS interfaces supported by Sapera LT

» Data transmission up to 100 meters with GigE Vision

» GenICam compliant, GUI, or three letter commands

» Programmable camera triggering, signalling and synchronization

» Full-fledged smart flat field and lens shading correction

» Multiple user coefficient sets and multiple FFC calibration sets

» AOI and ROI — Multiple Area and Regions of Interest

ASK ABOUT OUR
3 YEAR
WARRANTY

FAST, FLEXIBLE AND FEATURE RICH

Linea GigE cameras offer breakthrough data transfer technology, unparalleled image quality, unprecedented features and flexibility, all at an extremely affordable price point.

» **TurboDrive** accelerates data transfer rates beyond standard GigE Vision speeds with no loss of image quality.

» **Cycling Mode** allows you to preset camera parameters, gain, exposure time, I/O outputs and FFC coefficients for each line.

» **GPIO** offers programmable signalling, synchronization, and I/O ports.

» **Burst Mode** maximizes your system data throughput, acquiring images at full speed and transferring them during idle times.

IMAGE QUALITY

Linea's next-generation CMOS line scan sensor offers High QE, enhanced NIR sensitivity.

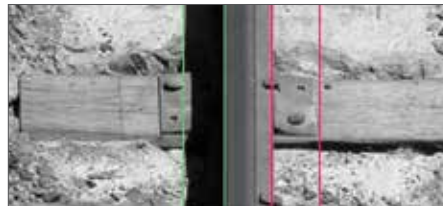NOISE AND ARTIFACTS   BETTER IMAGE QUALITY
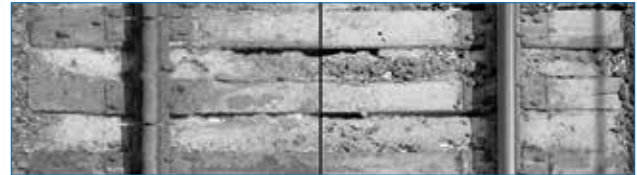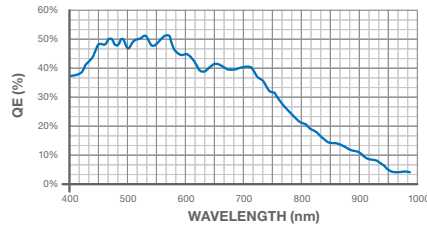
MULTIPLE AOI

Windowing with up to four areas of interest allows you to output only the part of the image you need. This can reduce costs, as less data needs to be transferred, processed and stored.
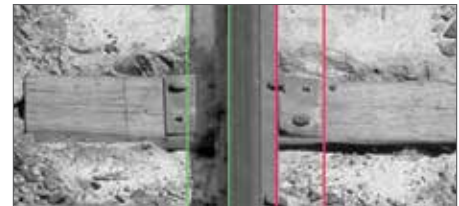

MULTIPLE REGION CALIBRATION ROI

Linea allows independent calibration for any number of separate regions of interest.

WITHOUT INDEPENDENT CALIBRATION   WITH INDEPENDENT CALIBRATION

LINEA MONOCHROME

PART NO.	RESOLUTION (pixel)	PIXEL SIZE (µm)	LINE RATE (kHz)	RESPONSIVITY DN/(nJ/cm^2)	INTERFACE	LENS MOUNT	WxHxD (mm)	FOR ALL	
LA-CM-02K08A	2048 x 1	7.04 x 7.04	80	20	CL	M42 x 1	62 x 62 x 37	GAIN RANGE	1x to 10x
LA-CM-04K08A	4096 x 1	7.04 x 7.04	80	20	CL	M42 x 1	62 x 62 x 37	BIT DEPTH	8/12
LA-CM-08K08A	8192 x 1	7.04 x 7.04	80	20	CL	M72 x .75	76 x 76 x 37	OUTPUT	Mono
LA-CM-16K05A	16384 x 1	3.52 x 3.52	48	5	CL	M72 x .75	76 x 76 x 37		
LA-HM-16K07A	16384 x 1	3.53 x 3.52	71	5	CLHS	M72 x .75	76 x 76 x 53 NEW		
LA-GM-02K08A	2048 x 1	7.04 x 7.04	52*	20	GEV	M42 x 1	62 x 62 x 47 NEW		
LA-GM-04K08A	4096 x 1	7.04 x 7.04	26*	20	GEV	M42 x 1	62 x 62 x 47 NEW		
LA-GM-08K08A	8192 x 1	7.04 x 7.04	13*	20	GEV	M72 x .75	76 x 76 x 47 NEW		

LINEA COLOR

PART NO.	RESOLUTION (pixel)	PIXEL SIZE (µm)	LINE RATE (kHz)	RESPONSIVITY DN/(nJ/cm^2)	INTERFACE	LENS MOUNT	WxHxD (mm)	FOR ALL	
LA-CC-04K05B	4096 x 2	7.05 x 7.04	48	22/18/18	CL	M42 x 1	62 x 62 x 47 NEW	GAIN RANGE	1x to10x
LA-CC-08K05B	8192 x 2	7.04 x 7.04	48	22/18/18	CL	M72 x .75	76 x 76 x 37 NEW	BIT DEPTH	8/12
LA-GC-02K05B	2048 x 2	7.04 x 7.04	26**	22/18/18	GEV	M42 x 1	62 x 62 x 47 NEW	OUTPUT	RGB
LA-GC-04K05B	4096 x 2	7.04 x 7.04	13**	22/18/18	GEV	M42 x 1	62 x 62 x 47 NEW		

*Up to 80 kHz with TurboDrive
**Up to 45 kHz with TurboDrive

PIRANHA™ 4

VERY FAST, VERY RESPONSIVE CMOS CAMERAS

Powered by our latest high performance CMOS line scan imagers, the Piranha4 offers resolutions from 2k to 8k pixels in a variety of pixel sizes to let you inspect and detect with unrivalled precision, speed, and responsivity.

KEY FEATURES

» Small form factor
» Multiple AOI/ROIs for output and calibration
» Subpixel spatial correction for precise color registration in any sampling scenario
» Horizontal parallax correction
» Programmable exposure control, flat field correction, and gain settings.
» Multi-line sensors with minimal line spacing for better synchronization and no prism artifacts
» GenICam™ compliant interface for easier setup, control, and integration.
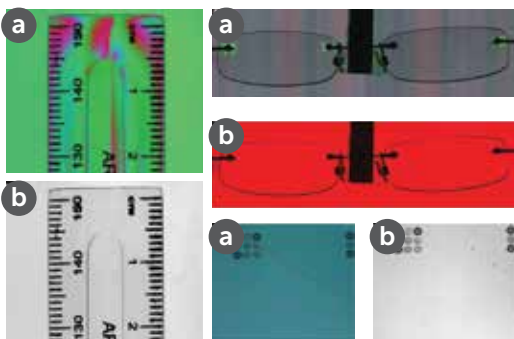
POLARIZATION: MAKES INVISIBLE VISIBLE

The Piranha4 Polarization camera (the industry's first), provides multiple native polarization state data without any interpolation. The breakthrough technology enhances contrast for objects that are difficult to distinguish otherwise. It also enables effective detection of birefringence, stress, surface roughness, and other physical properties that cannot be detected with conventional imaging. Learn more about Teledyne DALSA's new Piranha™4 Polarization Camera.

Learn more at **www.teledynedalsa.com/polarization**

LEFT Polarization images (a) compared with conventional, unfiltered images (b). Stress shows up in the polarization images while it cannot be seen in the conventional ones.

PIRANHA 4 QUADLINEAR: MULTISPECTRAL RGB+NIR

The Piranha4 2k quadlinear line scan camera features red, green, and blue (RGB) outputs plus a Near Infrared (NIR) channel for multispectral imaging. Built around our advanced CMOS image sensor design, its wafer-level dichroic filters enable spectrally independent RGB and NIR outputs. This makes it ideal for enhanced detection capability across a wide range of machine vision applications, including 100% print, bank note inspection, electronics manufacturing, food and material sorting.

LINE SCAN COLOR IMAGING TECHNOLOGY

BILINEAR COLOR

TRILINEAR COLOR

QUADLINEAR MULTISPECTRAL

EASY TO USE

EXCELLENT COLOR FIDELITY

INDEPENDENT RGB/NIR OUTPUT

PART NO.	RESOLUTION (pixel)	MAX LINE RATE (kHz)	PIXEL SIZE (µm)	BIT DEPTH (bit)
BILINEAR MONOCHROME				
P4-CM-08k070	8k x 2	100/70	7.04	8/10/12
P4-CM-04k10D	4k x 2	200/100	10.56	8/10/12
P4-CM-04k05D	4k x 2	100/50	10.56	8/10/12
P4-CM-02k10D	2k x 2	200/100	10.56	8/10/12
P4-CM-02k05D	2k x 2	100/50	10.56	8/10/12
BI/TRILINEAR COLOR				
P4-CC-08k050	8k x 2	50z	7.04	8
P4-CC-04k07T	4k x 3	70	10.56	8/10/12
P4-CC-04k04T	4k x 3	40	10.56	8/10/12
P4-CC-02k07T	2k x 3	70	14.08	8/10/12
P4-CC-02k04T	2k x 3	40	14.08	8/10/12
QUADLINEAR COLOR + NIR				
P4-CC-02k07N	2k x 4	70	14.08	8/10/12
QUADLINEAR MONO + POLARIZATION				
P4-CP-02K07Q	2k x 4	70	14.08	8/10/12 **NEW**

FOR ALL

INTERFACE	Camera Link
MEASUREMENT	80 x 80 x 57 mm (8k)
	62 x 62 x 48 mm (2k/4k)
COMPLIANCE	CE, FCC, and RoHS
DYNAMIC RANGE	60 dB
OPERATING TEMP	0 to 65° C

PIRANHA™ XL

NEW CMOS TDI LINE SCAN FOR UNMATCHED SPEED, RESOLUTION AND SENSITIVITY

The award-winning Piranha XL camera offers the latest breakthrough in multi-line CMOS technology, delivering unprecedented speed and responsivity in a compact form factor. Employing Teledyne DALSA's advanced CMOS sensor architecture, the camera delivers high responsivity in both monochrome and color models.

KEY FEATURES

» High responsivity CMOS TDI

» 16k at 200 kHz max line rate

» True exposure control for seamless operation down to stop

» High Dynamic Range mode

» Field-proven solution with CLHS interface to Xtium frame grabbers

CAMERA LINK HS® (CLHS)

The Piranha XL combined with the Xtium CLHS frame grabber offers a complete solution for next generation inspection systems. This AIA standard offers reliable data delivery and scalable bandwidth up to 3.4 GB/s with low latency and low jitter. It delivers real-time signals of both image and configuration data.

Learn more about CLHS
www.visiononline.org/vision-standards.cfm
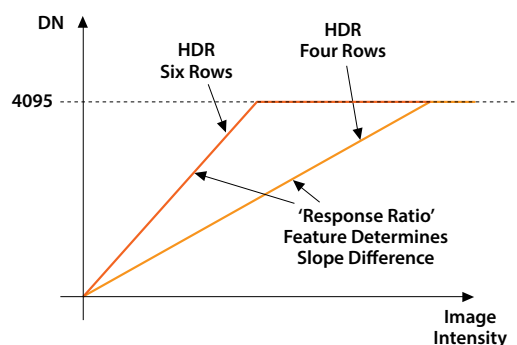
PIRANHA XL DUAL CHANNEL HDR: TRUE HIGH DYNAMIC RANGE IMAGING

Using dual channels with different rows, exposure times, and gains, Piranha XL Dual Channel camera captures dark and bright scenes separately with optimized settings. The high responsive channel captures dark scenes while the low responsive channel captures the bright scenes. A fusion algorithm then combines the two channel outputs to form a high dynamic range images where detectability is optimized.

PIRANHA™ HS

Teledyne DALSA's Piranha HS products use CCD TDI (time delay and integration) technology. TDI permits much greater scanning speeds in low light, or allows reduced lighting levels (and costs) at conventional speeds. From wafer, PCB, and flat panel display inspection to high-end document scanning, our advanced, high sensitivity line scan delivers an unmatched mix of sensitivity and speed.

KEY FEATURES

» Up to 100x more responsivity than traditional line scan cameras

» Forward and reverse scanning

» Individual gain and offset control for each color channel

» FPN and PRNU correction

TDI LINE SCAN PRODUCTS

	PART NO.	RESOLUTION (pixel)	PIXEL SIZE (µm)	LINE RATE (kHz)	RESPONSIVITY DN/(nJ/cm²)	GAIN RANGE (dB)	BIT DEPTH (bit)	OUTPUT	INTERFACE	LENS MOUNT	WxHxD (mm)	
XL	PX-HM-16k12X	16352 x 12	5 x 5	125	75	1x to 10x	8/12	Mono	CLHS	M90 x 1	97 x 97 x 61	
	PX-HM-16k06X	16352 x 12	5 x 5	60	75	0.67x to 2.5x	8/12	Mono	CLHS	M90 x 1	97 x 97 x 61	
XL HDR	PX-HM-16K10H	16352 X 10	5 x 5	100/200	38.25	1x to 10x	8/12	Mono	CLHS	M90 x 1	97 x 140 x 79	NEW
XL	PX-HC-16k04T	16352 x 12	5 x 5	40	25, 22, 21	1x to 5x	8/10	RGB	CLHS	M90 x 1	97 x 97 x 84	NEW
COLOR	PX-HC-16k07T	16352 x 12	5 x 5	70	22, 22, 21	1x to 5x	8/10	RGB	CLHS	M90 x 1	97 x 104 x 79	NEW
	PX-HC-08k07T	8192 x 12	5 x 5	70	21, 22, 21	1x to 5x	8/10	RGB	CLHS	M90 x 1	97 x 97 x 61	NEW
HS	HS-40-04K40	4096 x 96	7 x 7	36	160	-10 to +10	8/12	Mono	CL	Ø62	85 x 85 x 55	
	HS-80-04K40	4096 x 96	7 x 7	68	160	-10 to +10	8/12	Mono	CL	M72 x .75	80 x 150 x 65	
	HS-80-08K40	8192 x 96	7 x 7	34	160	-10 to +10	8/12	Mono	CL	M72 x .75	80 x 150 x 65	
	HS-80-08K80	8192 x 96	7 x 7	68	160	-10 to +10	8/12	Mono	CL	M72 x .75	80 x 150 x 65	
	HS-82-04k40	4096 x 48	14 x 14	55	320	-10 to +10	8/12	Mono	CL	M72 x .75	80 x 150 x 65	
	HS-82-04k80	4096 x 48	14 x 14	110	320	-10 to +10	8/12	Mono	CL	M72 x .75	80 x 150 x 65	
	HS-S0-06k80	6000 x 256	10.4 x 10.4	142	1200	0 to 20	8/10/12	Mono	HSLink	M72 x .75	90 x 180 x 92	
	HS-S0-12k40	12000 x 256	5.2 x 5.2	90	300	0 to 20	8/10/12	Mono	HSLink	M72 x .75	90 x 180 x 92	
	HN-80-08k40	8192 x 256	7 x 7	34	1700	0 to 20	8/12	Mono	CL	M72 x .75	80 x 150 x 65	

AREA
IMAGING

The versatility, breadth and depth of our area imaging portfolio ensures that you can solve any vision challenge. From cost-efficient, lower resolution cameras to feature-rich, high performance models, we offer an area camera for every inspection need.

www.teledynedalsa.com/areaimaging

MULTI-PIXEL, HIGH SPEED IMAGING

Our cameras are built around the industry's most innovative image sensor technology—our own proprietary CMOS architectures as well as other recognized and proven advanced technologies.

FALCON

Large resolutions and faster frame rates enable high speed image capture with superb spatial resolution.

» Resolutions from 4M to 12M

» Frame rates up to 168 fps

» Global Shutter

GENIE NANO

Versatile, low cost cameras provide remarkable dynamic range to ensure optimized image capture.

» Resolutions from VGA up to 25M

» Frame rates up to 862 fps

» Trigger-to-Image Reliability

FALCON™ 2

## HIGH SPEED GLOBAL SHUTTER CMOS CAMERAS

Falcon2 models feature our own CMOS image sensor technology for high speed and high-resolution imaging. Wrapped in a compact, rugged, thermally efficient body optimized for industrial applications, Falcon2 cameras deliver outstanding performance and value.
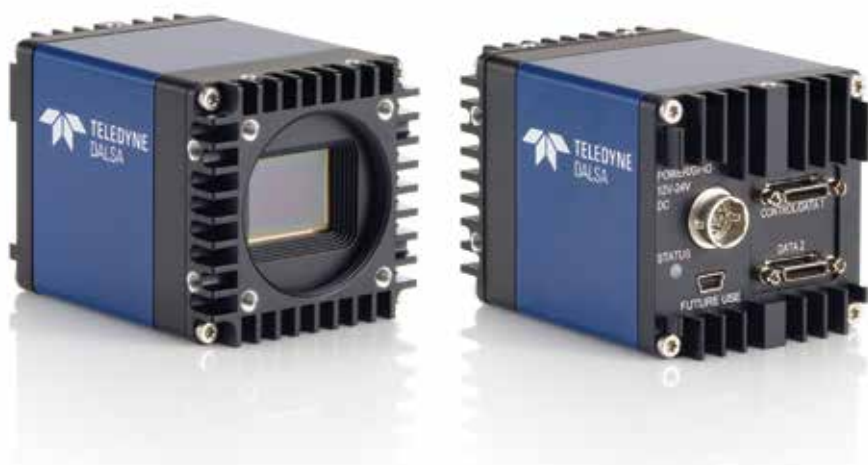
KEY FEATURES

» Reduced dark noise levels and improved dark offset

» Improved sensitivity

» In-camera image pre-processing (flat field, pixel correction)

» Customizable user settings

» Programmable exposure time

» Selectable aspect ratios (4:3 and 1:1)

HIGH PERFORMANCE CMOS SENSORS
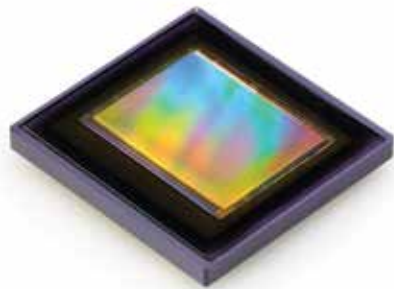
Inside the Falcon2 12M, 8M and 4M cameras are our own color and monochrome CMOS sensors. They deliver high resolutions and faster frame rates, enabling high speed image capture with superb spatial resolution and improved image quality. A global shutter removes unwanted smear and time displacement artifacts related to rolling shutter CMOS devices. The advanced sensor offers high SNR, reduced dark noise levels and improved dark offset, FPN (fixed pattern noise), and PRNU (Pixel Response Non-Uniformity) levels.

Together, these features make the Falcon2 cameras the best choice for applications where throughput, resolution and high pixel capacity matter most.

» Monochrome and color versions

» Global shutter CMOS

» 12M, 58 fps

» 8M, 90 fps

» 4M, 168 fps

MONOCHROME 8M SPECTRAL RESPONSIVITY
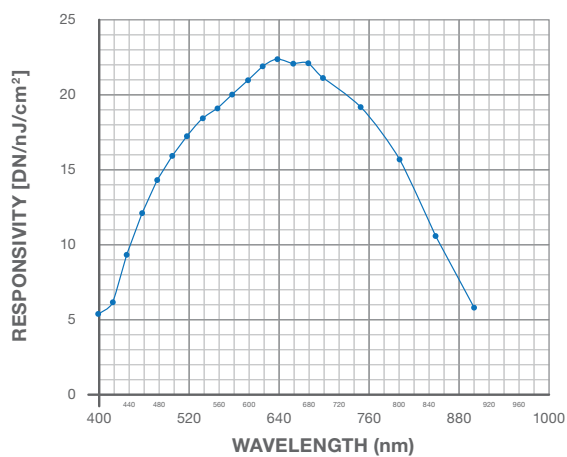
NOTE: 8 Taps, 10 bits Camera Link FCC on, 24 fps (except 400 nm, measured at 10 fps), ND 0.3 filtered light

COLOR 12M SPECTRAL RESPONSIVITY

- ◆ RED
- ■ GREENRED
- ▲ GREENBLUE
- ✖ BLUE
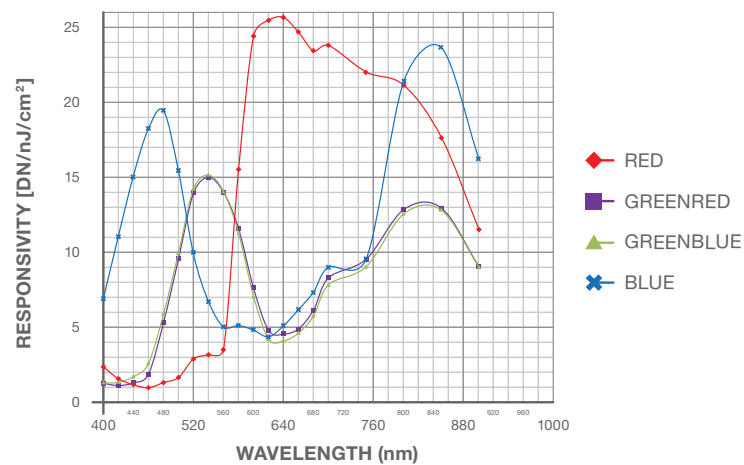
NOTE: 8 taps / 10-bit / Camera Link / FFC on / color-corrected / 4 fps, BG 38 filtered light

PART NO.	ASPECT RATIO	RESOLUTION (pixel)	MAX LINE/FRAME RATE (fps)		FOR ALL	
FA-80-4M180	1:1	2048 x 2048	168		PIXEL SIZE	6 µm
	4:3	2432 x 1728			BIT DEPTH	8, 10 bit
FA-80-8M100	1:1	2816 x 2816	90		INTERFACE	Camera Link
	4:3	3328 x 2502			DIMENSIONS	60 x 60 x 80.5 mm
FA-80-12M1H	4:3	4096 x 3072	58		COMPLIANCE	RoHS, CE
					DYNAMIC RANGE	58 dB
FA-81-4M180	1:1	2048 x 2048	168		OPERATING TEMP	0 to 50° C
	4:3	2432 x 1728				
FA-81-8M100	1:1	2816 x 2816	90			
	4:3	3328 x 2502				
FA-81-12M1H	4:3	4096 x 3072	58			

GENIE™ NANO

COMPACT CAMERAS WITH UNPRECEDENTED SPEED AND UNCOMPROMISED IMAGE QUALITY.

Genie Nano redefines low cost performance. Genie Nano starts with industry leading CMOS image sensors and adds proprietary camera technology for breakthrough speed, a robust build quality for wide operating temperature, and an unmatched feature set—all at an incredible price.

GIGE VISION AND CAMERA LINK

Available in both GigE Vision and Camera Link versions the Genie Nano is designed to use a range of leading CMOS image sensors, including models from Sony's Pregius and ON Semiconductor's Python lines. With resolutions from VGA to 25 megapixels, the Nano delivers high speed, low noise, and global shutters.

KEY FEATURES

» GigE Vision and now available in Camera Link

» Uses standard PC Ethernet port & hardware (GigE)

» Simplified set-up with field proven Sapera LT software featuring CamExpert

» Engineered to accommodate industrial environment with a ruggedize, screw mount, RJ-45 connector

PROGRAMMABILITY

» Higher frame rates achievable in partial scan mode

» Global electronic shutter

» Multi-exposure feature

» Multi-ROI feature

» Metadata support

» IEEE1588 (Precise Time Protocol) support

ASK ABOUT OUR
3 YEAR
WARRANTY

BREAK THE GigE LIMIT

TurboDrive is a mode of operation used to push past the Gigabit Ethernet speed ceiling, allowing a GigE Vision camera to send pixel information at a rate in excess of 150% of GigE bandwidth and speeding up line and frame rates beyond the nominal link capacity. How much more speed does TurboDrive deliver?

TURBODRIVE
BY TELEDYNE DALSA

The degree of improvement is dependent on the image itself, but is often double the standard throughput. Moreover, TurboDrive does not require any hardware or software changes to your network or application.

Learn more at **www.teledynedalsa.com/turbodrive**

RESPONSIVITY GRAPHS
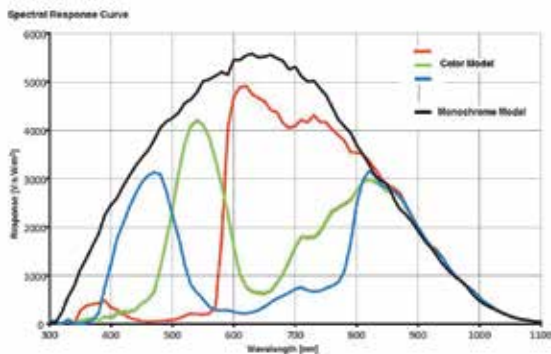
C640   C800   C1280   C1930   C2590

M640/NIR   M800/NIR   M1280/NIR   M2590/NIR   M1930/NIR
M4096   M5100

NEW CAMERA LINK INTERFACE

We now offer all the performance, flexibility and low cost of Genie Nano in a Camera Link version. The new Genie Nano CL includes 2 SDR Camera Link connectors (Deca Mode), and Power-Over–Camera Link (PoCL).

To learn more about the Genie Nano CL
www.teledynedalsa.com/genienano

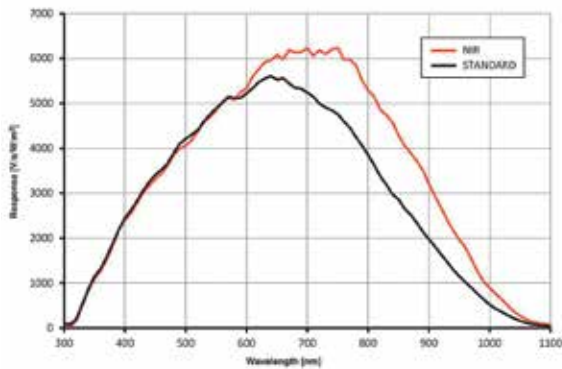|		ACTIVE RESOLUTION (pixel)	PIXEL SIZE (µm)	FRAME RATE (Maximum, 8-bit)	
				STANDARD fps	TURBODRIVE fps
	M640-NIR	640 x 480	4.8	392	862
	C640	640 x 480	4.8	392	392
	M800-NIR	800 x 600	4.8	255	566
	C800	800 x 600	4.8	255	566
	M1280-NIR	1280 x 1024	4.8	93	213
	C1280	1280 x 1024	4.8	93	213
	M1930-NIR	1920 x 1200	4.8	51	116
	C1930	1920 x 1200	4.8	51	116
	C1920	1920 x 1200	5.86	39	39
	M1940	1920 x 1200	5.86	52	84
	C1940	1920 x 1200	5.86	52	84
	M2020	2048 x 1536	3.45	35	55
	C2020	2048 x 1536	3.45	35	55
	M2050	2048 x 1536	3.45	35	83
	C2050	2048 x 1536	3.45	36	78
	M2420	2448 x 2048	3.45	22	35
	C2420	2448 x 2048	3.45	22	35
	M2450	2448 x 2048	3.45	22	53
	C2450	2448 x 2048	3.45	22	50
	M2590-NIR	2592 x 2048	4.8	22.5	51
	C2590	2592 x 2048	4.8	22.5	51
	M4020	4112 x 3008	3.45	9.5	20
	C4020	4112 x 3008	3.45	9.5	20
	M4030	4112 x 2176	3.45	12.7	27
	C4030	4112 x 2176	3.45	12.7	27
	M4060	4112 x 2176	3.45	14.3	31
	C4060	4112 x 2176	3.45	14.3	31
	M4040	4112 x 3012	3.45	9.7	21
	C4040	4112 x 3012	3.45	9.7	21
	XL M4090	4096 x 4096	4.5	7	30
	XL C4090	4096 x 4096	4.5	7.1	15.6
	C4900	4912 x 3684	1.25	3	13
	XL M5100	5120 x 5120	4.5	4.5	20
	XL C5100	5120 x 5120	4.5	4.5	10

CALIBIR™ GX SERIES

UNCOOLED LWIR CAMERAS AND CORES FOR INDUSTRIAL APPLICATIONS

The Calibir GX series of uncooled infrared cameras is designed for demanding thermal imaging applications. Compact size and low power dissipation, make Calibir ideal for system integrators in the fields of security, surveillance, thermography and machine vision. Calibir features a thermally stable core with an impressive image processing capability.

Calibir cameras feature a sophisticated Non-Uniformity Correction (NUC) algorithm for adaptive contrast enhancement and pixel correction that does not require a shutter for calibration. Calibir delivers images almost instantly on power-up, requiring no maintenance and delivering stable performance and no dark images during operation. With a wide selection of lenses and output video formats, Calibir offers a powerful IR imaging platform for the original machine and device builders.

KEY FEATURES

» VGA and QVGA resolutions
» Thermally stable NUC
» Fast start-up one image output
» Adaptive contrast enhancement
» Shutterless operation (Mechanical Shutter Option)
» Selectable 8/14-bit digital video output formats
» Built-in pseudo-color for enhanced visualization
» Broad lens selection
» Made in Canada

EXPORT CONTROLS

The Calibir camera is a multipurpose, standard product that is designed and built in Canada. It ships from Canada under group 1 (Dual Use) of the Wassenaar arrangement.

CALIBIR™ GX SERIES

CALIBIR GXL		CALIBIR GXM		CALIBIR GXT	
VALUE MODEL		**STANDARD MODEL**		**PERFORMANCE MODEL**	
» 320 x 240	» 640 x 480	» 320 x 240	» 640 x 480	» 320 x 240	» 640 x 480
» NETD < 65 mK	» NETD < 65 mK	» NETD < 65 mK	» NETD < 65 mK	» NETD < 50 mK	» NETD < 65 mK
» Up to 60 fps	» 30 fps	» Up to 60 fps	» 30 fps	» Up to 60 fps	» 30 fps
» Size: 29 x 29 x 29 mm		» Size: 36 x 29 x 29 mm		» Size: 36 x 29 x 29 mm	
» 17 µm pixels		» 17 µm pixels		» 17 µm pixels	
» **Shutterless operation**		» **Shutterless operation**		» **Shutterless operation**	
» Wide lens selection		» Mechanical shutter		» Mechanical shutter	
» GigE interface*		» Wide lens selection		» Radiometric 25° C to +125° C	
		» GigE interface		» Accuracy 3%	
				» Wide lens selection	
				» GigE interface	

NOTE: *Core, Analog, GigE M12, SDI and additional lenses options also available in DX series

ADAPTIVE CONTRAST ENHANCEMENT

Calibir's advanced image processing algorithms adapt to the image content, optimizing contrast to show the finest details regardless of conditions or intra-scene variations. With no manual intervention required, Calibir delivers high quality images reliably, wherever and whenever you deploy it.
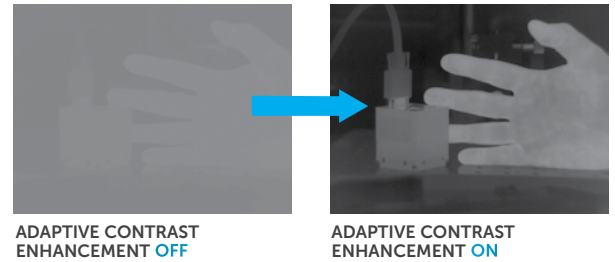
ADVANCED FEATURES, ADVANCED PERFORMANCE

Calibir sets new benchmarks in uncooled LWIR imaging with its shutterless operation and Adaptive Contrast Enhancement, both of which contribute not only to excellent imaging performance but also to the ease of integration and use.

ADAPTIVE CONTRAST ENHANCEMENT OFF

ADAPTIVE CONTRAST ENHANCEMENT ON

SHUTTERLESS OPERATION

The Calibir camera requires no mechanical shutter for calibration, meaning near-instant image output and no interruption for recalibration. Calibir's image output remains stable across its entire operating temperature range, freeing your application from unintended interruption and loss of images.

3 SECONDS, 21° C

10 MINUTES, 21° C

**60 MINUTES, 34° C**

24 HOURS, 37° C
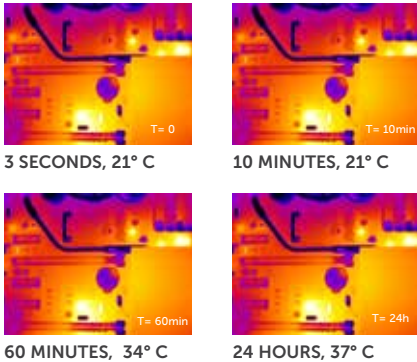
MECHANICAL SHUTTER OPTION

Calibir does not require a shutter for calibration or operation, but an integrated mechanical shutter option is available to protect the camera and help you adapt to changing environmental situations (such as extended direct views of the sun). The shutter's remote triggering capability gives you complete control of the camera's calibration options—calibrate how you want, when you want.

RADIOMETRIC PERFORMANCE

Calibir is available in both radiometric and non-radiometric models. **Radiometric** functionality can report absolute temperatures in degrees C or F or K. **Non-radiometric** operation only shows relative temperature (warmer, cooler). Both are useful; your application determines your requirements.

36.2° C   50.1° C

RADIOMETRIC

COOLER   WARMER

NON-RADIOMETRIC
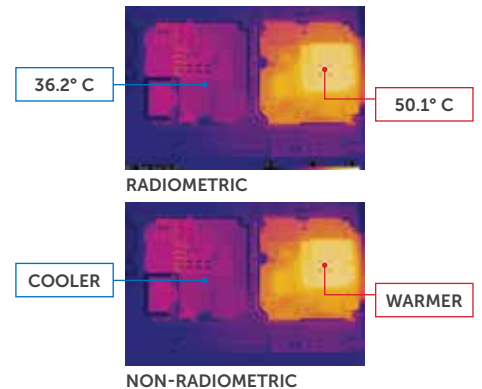
CALIBIR™ GXL **320** GigE KEY FEATURES

LENS SELECTION						
HFOV	89.9°	36.3°	24.1°	16.4°	12.4°	8.8°
EFL	3.7 mm	8.1 mm	13 mm	19 mm	25 mm	35 mm
F/#	F/1.33	F/1.1	F/1.14	F/1	F/1	F/1.14
LENS MOUNT	M12	M25	M25	M25	M25	M25
LENS WEIGHT	16 g	TBD	23 g	31 g	40 g	45.9 g
MOD (meter)	0.2	TBD	0.4	2.4	2.0	5.0

CALIBIR™ GXL **640** GigE KEY FEATURES

LENS SELECTION						
HFOV	90.8°	73.2°	42.1°	32.4°	24.2°	16.9°
EFL	7.5 mm	8.52 mm	14.2 mm	19 mm	25 mm	35 mm
F/#	F/1.2	F/1.2	F/1.2	F/1	F/1.2	F/1.1
LENS MOUNT	M25	M25	M25	M25	M25	M25
LENS WEIGHT	35 g	34 g	25 g	31.2 g	40 g	45.9 g
MOD (meter)	1.0	0.4	1.3	2.4	2.0	5.0

IMAGE ACQUISITION PROCESSING

The workhorses of our high performance imaging systems, Teledyne DALSA image processors and frame grabbers are designed to optimize the camera interface, accelerate host bus transfers, and operate in diverse development environments.

www.teledynedalsa.com/framegrabbers

FRAME GRABBERS

Frame grabbers have evolved from relatively simple analog-to-digital converters to very sophisticated platforms for both acquisition and processing. Today they offer performance and versatility, combining reliable acquisition at nanosecond intervals with powerful on-board processing and programmability.

Xtium™-CL

The Xtium series is engineered to meet the ever-increasing image resolution and faster frame rates of today's camera technology.

» Acquires images from one Full, 80-bit (Deca), Medium, or Base Camera Link® camera

» Supports Camera Link operations up to 85MHz

» Extended cable distance at max data rate

Xtium™-CLHS

The Xtium-CLHS features high-performance on-board, Data Transfer Engine (DTE) to deliver maximum bandwidth without the need for specialized motherboards or chipsets.

» Supports acquisition rates up to 3.5 GB/sec

» Host transfers up to 3.4 GB/sec

» User programmable 3x3 filter

Xtium™-CXP

By enabling maximum sustained throughput and ready-to-use image data, the Xtium-CXP series minimizes CPU usage and improves processing times for the host applications.

» Supports 4 input channels of up to 6.25 Gb/s

» Image acquisition input bandwidth up to 2.4 GB/s

» Host bandwidth up to 3.4 GB/s

XTIUM™

IMAGE ACQUISITION AND PROCESSING BOARDS
FOR PCIE GEN 2 AND GEN 1 PLATFORMS

We deliver the industry's most reliable and versatile family of frame grabbers, combining unparalleled performance with innovative feature sets, great value and extensive camera support.

XTIUM-CL Series

Based on the PCI Express (PCIe) Gen2 host interface, the Xtium-CL frame grabbers are field configurable to acquire images from either two Camera Link Base cameras or one Camera Link Medium, Full and 80-bit camera. First of its kind, the Xtium-CL offers universal Camera Link compatibility and Power- Over-Camera Link (PoCL) and delivers images at 1.7 GB/s in the host memory. Backwards compatible with PCIe Gen 1 slots, the Xtium-CL series is fully supported by Teledyne DALSA's Sapera LT SDK and complies with Trigger-to-Image Reliability framework.

XTIUM-CLHS Series

Xtium™ CLHS frame grabbers are based on the AIA's Camera Link HS standard and use PCI Express™ Gen 2.0 expansion bus to deliver high speed image acquisition and transfer to the host memory. Xtium-CLHS uses industry standard CX4 cable to delivery up to 3.5 GB/s of image acquisition over a single cable to go beyond 15m and host transfer speeds of up to 3.4 GB/s — when deploying the compact, half-length, single slot PCIe x8 solution. The Xtium-CLHS series is fully supported by Teledyne DALSA's Sapera LT SDK and complies with Trigger-to-Image Reliability framework and is also available on PCIe x4 platform.

XTIUM-CXP High-Performance CoaXPress™ PCIe Gen2

The Xtium™-CXP is based on the industry standard PCI Express™ Gen 2.0 expansion bus to deliver high speed access to host memory and supports image acquisition rates of up to 6.25 GB/s from four input channels. In addition, the Xtium-CXP supports Sapera LT's Trigger-to-Image (T2IR) framework for maximum reliability of the image acquisition system. The T2IR functions provide critical, real-time details of system events that help track and monitor acquisition, transfer, and control processes to ensure reliability of the imaging application.
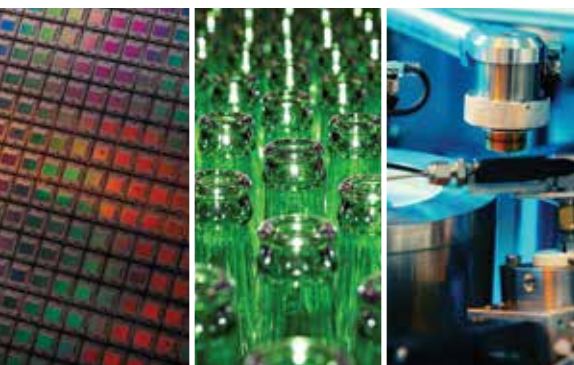
	PRODUCT	CAMERA INTERFACE	CAMERA INPUT	PIXEL CLOCK	BITS/PIXEL	HOST INTERFACE	IMAGE PROCESSING	OS SUPPORT	GPIO
PCIe Gen2	Xtium-CL MX4	Camera Link	2 Base CL or 1 Medium, Full or 80-bit camera. PoCL	Up to 85 MHz	8, 10, 12, 14, 16 Mono 8, 10, 12 RGB	PCIe x4 Gen2	14-bit FFC/ FLC with dead pixel cluster replacement	32/64-bit: Windows 7, 8.0/8.1, and 10 Linux Kernel 4.1	A/B Quadrature Encoder Input, on-board 4-input (shared) TTL, LVDS or RS422; 8 general purpose outputs
	Xtium-CLHS PX4/PX8	Camera Link HS	1 x CX4 1 thru 7-lanes	3.125/5.0 Gb/s	8, 10, 12, 14, 16 Mono	Gen2 PCIe x4/x8	User Programmable 3 x 3 filter	32/64-bit: Windows 7, 8.0/8.1, 10	1xCX4 7-lane Data-Forwarding; A/B Quadrature Encoder Input, on-board 4-input (shared) TTL, LVDS or RS422; 8 general purpose outputs
	Xtium-CXP PX8 Quad	CoaXpress	4 x DIN 1.0/2.3, POCXP	1 - 6 Gb/s	8, 10, 12, 14 and 16-Mono, 8, 10 and 12-bit Bayer Available Q2, 2017.	Gen2 PCIe x8	LUT, Onboard color decoding	32/64-bit Windows 7, 8.1 and 10	A/B Quadrature Encoder Input, On-board 4-inputs (shared 4xTrigger Input TTL, LVDS, or RS422; 8 general purpose outputs (shared as 4x Strobe outputs and 4 GPI) or RS422; 8 general purpose outputs
PCIe	Xcelera-CL LX1 Base	Camera Link	MDR26: One Base - PoCL	Up to 85 MHz	8, 10, 12, 14, 16 Mono 8-bit RGB	PCIe x1 Gen1	Image Flip	32/64-bit: Windows XP, Windows 7, 8.0/8.1, 10	N/A
	Xcelera-HS PX8	HSLink	1 CX4	N/A; packet based protocol	8, 10 & 12 Mono	PCIe x8 Gen1	ILUTs	32/64-bit: Windows XP, Windows 7, 8.0/8.1, 10, Linux[1]	On-board 4-in/4-out
	Xcelera-CL PX4 Series	Camera Link	Dual: 2 Base PoCL or 1 Med. Full: 1 Base, Med. Full or 80-bit	Up to 85 MHz	8, 10, 12, 14, 16 Mono 8, 10, 12 RGB	PCIe x4	ILUTS, Flat Field, Flat Line, Dead Pixel Replacment, Bayer	32/64-bit: Windows XP, Windows 7, 8.0/8.1, 10, Linux[1]	On-board 4-in/4-out
	Xcelera-CL+ PX8 Series	Camera Link	Dual: 2 Base PoCL or 1 Med. Full: 1 Base, Med. Full or 80-bit	Up to 85 MHz	8, 10, 12, 14, 16 Mono 8, 10, 12 RGB	PCIe x8	ILUTS, Flat Field, Flat Line, Dead Pixel Replacment, Bayer	32/64-bit: Windows XP Pro, Windows 7, 8.0/8.1, 10	On-board 4-in/4-out
Vision Processors	Xcelera-CL VX4 Full	Camera Link	1 Base, Med. Full or 80-bit	up to 85 MHz	up to 16-bit	PCIe x4	FPGA hardware processing platform	32/64-bit: Windows XP Pro, Windows 7	On-board 4-in/4-out

[1] SOME CONDITIONS APPLY

XTIUM-CL MX4: HIGHER BANDWIDTH AND GREATER PRODUCT SUPPORT

Building on the field proven capability of Teledyne DALSA's image acquisition and processing expertise, the Xtium-CL MX4 is based on the industry standard PCI Express™ Gen2 expansion bus to deliver high speed access to host memory. The new Xtium series offers higher bandwidth to sustain higher bit-rate modes over longer cable distances and supports a wide variety of area and line scan color/monochrome cameras, all in a compact, half-length, single slot solution. Xtium-CL MX4 supports 14-bit flat-field correction with bad pixel cluster replacement, multi-board sync and GPIO redirection to CC lines.

» Supports PCI Express Gen2 x4

» Field configurable as CameraLink Dual Base(PoCL), or single CameraLink Medium, Full or 80-bit(PoCL)

» CameraLink Rev. 2.0 compliant

» Single slot solution with reconfigurable I/O

» Supported by Sapera Vision SDK on Windows 7, 8, 8.1, 10, 64/32-bit and WoW64 platforms, and Linux Kernel 4.1

VISION
SYSTEMS

Designed for factory floor deployment, our innovative multi-camera vision systems and smart cameras offer scalable solutions to satisfy a wide range of application needs, from positioning robotic handlers to complete assembly verification.

01. POSITIONING
Guide robotic handlers or adjust vision tools for part movement

02. IDENTIFYING
Identify product for verification or traceability

03. VERIFYING
Verify parts for correctness, assembly, or packaging

04. MEASURING
Measure parts for dimensional accuracy

05. FLAW DETECTING
Check part surfaces for scratches and other defects

www.teledynedalsa.com/visionsystems

SHERLOCK™

THE VISION SOFTWARE CHOICE AMONG INTEGRATORS

Sherlock is an advanced machine vision software that can be applied to a wide variety of automated inspection tasks. This graphical design environment provides a rich suite of proven tools and capabilities that have been deployed in thousands of installations worldwide.
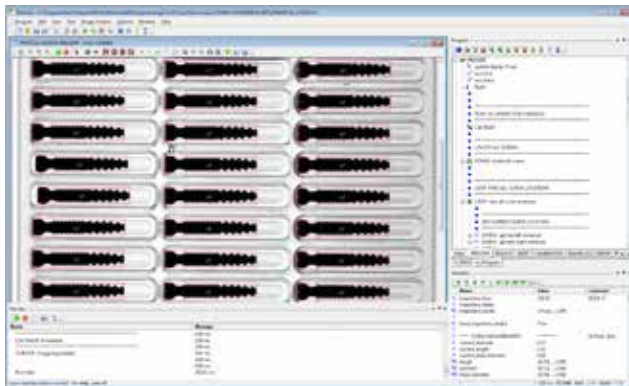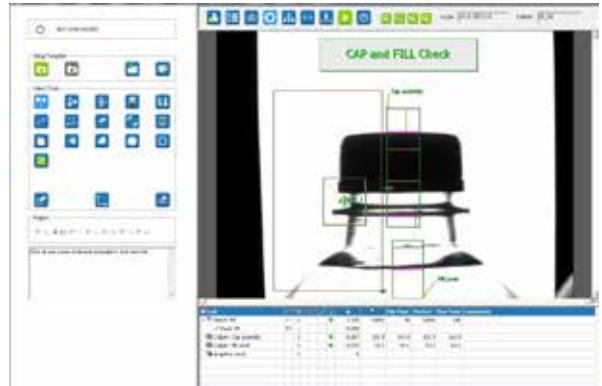

KEY FEATURES

» Program and camera flexibility

» Enhanced vision capabilities

» Suitable for most applications

» Supports mixing of cameras

» Area or line scan applications

» BOA, GEVA & PC ready

INSPECT™

MACHINE VISION SOFTWARE MADE SIMPLE

Inspect Express is a vision application specifically designed to simplify the design and deployment of automated inspection on the factory floor. Inspect Express offers both new and experienced users a practical tool for delivering uncompromised functionality that can be readily applied to a wide range of manufacturing tasks.

KEY FEATURES

» Easy to set up and maintain

» Point and click interface

» Core vision capabilities

» Suitable for many applications

» Supports multiple cameras

» Mono or color applications

» BOA, BOA Spot, GEVA and PC ready

BOA™

VISION SENSORS AND SYSTEMS FOR AUTOMATION

Easy to set up and deploy, Teledyne DALSA's BOA products are highly integrated vision systems specifically designed for industrial use. Complete with choice of embedded application software, BOA offers a robust and flexible automated inspection system that is easy to integrate and deploy on the factory floor.

ALL OF THE ELEMENTS OF AN INDUSTRIAL MACHINE VISION SOLUTION:

» Easy to set up and maintain

» 100% automatic inspection

» Unlimited use of tools

» Image transfers to FTP server

» Hardware job change

» Industrial I/O and PLC protocols

» Password protection

» Low cost of ownership

BOA SPOT

» Low cost model, slim line design

» 640 x 480 and 1280 x 960 CMOS sensors

» M12 or C-mount lens

» Integrated light on M12 version

See Page 26 and 27 for more detail.

BOA

» Original model, smallest form factor

» 640 x 480 to 1600 x 1200 CCD sensors

» C-mount lens

» Two performance models: BOA 50, BOA 200

BOA2 XA

» High resolution model, periscope form factor

» 2M, 3M and 5M CMOS global shutter

» C-mount lens

» Integrated light option (2M version only)

TYPICAL USES ACROSS THE SPECTRUM OF MANUFACTURING APPLICATIONS

GEVA™

MULTI-CAMERA VISION SYSTEMS

Teledyne DALSA's GEVA vision platform provides the performance and flexibility to meet the challenging requirements of multi-camera applications. GEVA offers a centralized processing model that supports low cost camera expansion.

		GV-300	GV-312T	GV-1000	GV-3000	GV-3000CL	GV-4000
PROCESSING SCALE	Relative	1X	1X	3-4X	6-8X	6-8X	10X
MEMORY	Program	2 GB	2 GB	2 GB	8 GB	8 GB	16 GB
	Storage	128 GB SS	32 GB CFAST	128 GB SS	128 GB SS	128 GB SS	128 GB SS
IMAGE	Sensor Type	GigE	GigE	GigE	GigE	Camera Link	GigE
	# Sensors	Expandable	Expandable	Expandable	Expandable	2	Expandable
	Sensor Format	Area	Area	Area	Area/Line	Line/Area	Area/Line
	Color Support	Yes	Yes	Yes	Yes	Yes	Yes
	Sensor Size Min.	640 x 480	640 x 480	640 x 480	640 x 480	1024 x 1	640 x 480
	Sensor Size Max.	Variable	Variable	Variable	Variable	Variable	Variable
COMMUNICATION	USB	3 (2.0)	5 (2.0)	2 (2.0)	6 (2.0)	6 (2.0)	6 (4 x 3.0, 2 x 2.0)
	Ethernet (Mbps)	6 x 1000	2 x 1000	3 x 1000	6 x 1000	2 x 1000	6 x 1000 (4 PoE)
	Serial (RS232)	1	4	1	2	2	2
	Visual (LEDs)	3	1	3	2	2	2
DISPLAY OPTIONS	Display	External	Embedded Touch	External	External	External	External
	Setup GUI	Local	Local	Local	Local	Local	Local
	Operator	Local	Local	Local	Local	Local	Local
I/O	Access	Breakout	Breakout	Local	Breakout	Breakout	Breakout
	Type	24V Opto	24V Opto	24V Opto	24V Opto	24V Opto	24V Opto
	# Inputs	8	8	8 + 2 triggers	8	4 + 2 triggers	8
	# Outputs	12	12	8 + 2 strobes	12	4 + 2 strobes	12
SOFTWARE	Application	iNspect Express Sherlock	iNspect Express Sherlock	iNspect Express Sherlock	iNspect Express Sherlock	iNspect Express Sherlock	iNspect Express Sherlock
POWER		24V @ 2.5A	24V @ 2.5A	24V @ 2.5A	24V @ 2.5A	24V @ 2.5A	24V @ 2.5A

BOA™ SPOT

VISION SYSTEM PERFORMANCE AT VISION SENSOR PRICING

Simple, affordable, and reliable performance for quality inspection. No matter what you create on your production line, BOA Spot can help you improve quality, reduce scrap, and increase throughput. It has never been so easy for you to expand your automation with vision.

KEY FEATURES

» Integrated light, lens and processing

» Standard and high resolution sensor options

» Embedded vision tools — Easy-to-use GUI

» Built-in factory communication protocols

» Remote monitoring

» Robust decoding 1D and 2D symbologies

» Offers OCR and error proofing tools

» Built-in Ethernet/IP and Profinet communications

» FTP image transfers

» Compact IP67 enclosure

FOR AUTOMATED INSPECTION AND IDENTIFICATION APPLICATIONS

	INSPECTION		IDENTIFICATION	
APPLICATIONS	SPOT SL	SPOT EL	SPOT IDS	SPOT IDE
MATCH	✅	✅+		✅
COUNT	✅	✅	✅	✅
MEASURE	✅	✅+		
DETECT	✅	✅+		✅
GUIDE		✅		✅
1D/2D			✅	✅+
OCR				✅
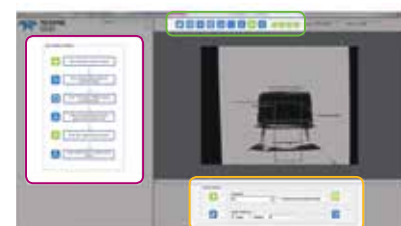
SOFTWARE USER INTERFACE

BOA SPOT SL/EL

BOA Spot vision sensors offer simplicity, affordability and reliable inspection performance for error-proofing applications.

BOA SPOT IDS/IDSE

BOA Spot ID vision sensors deliver fast and reliable code reading performance for part identification and tracking applications.

QUICK BARCODE

BOA Spot includes QuickBarcode, for fast decoding of 1D and 2D codes printed or directly marked on a variety of surfaces, including paper, plastic and metal. The decoder is robust and able to read poorly printed, worn or environmentally degraded codes in any orientation.

BOA SPOT SOFTWARE FEATURES

STANDARD (SL) AND EXPANDED (EL) MODES

MODEL FEATURES	DETAIL	SPOT SL		SPOT EL		SPOT IDS	SPOT IDE
		Mono	Color	Mono	Color	Mono	Mono
Sensor	Mono/Color	Mono	Color	Mono	Color	Mono	Mono
	Resolution	640 or 1280	640	640 or 1280	640	640 or 1280	
# Solutions	# Stored	32		32		32	
# Locators		2	2	4	4	2	4
Scale (in tool)				✓	✓		
XY Origin				✓	✓		
Preprocessing	In tool			✓	✓	✓	✓
	In ROI and tool					✓	✓
Graphics	Tool			✓	✓		✓
Match/Positioning	Match with position	✓	✓	✓	✓		✓
Measurement	Caliper	✓	✓	✓	✓		
	Angle, Arc, Circle, Concentric circle, Distance, Rake			✓	✓		
	Color		✓		✓		
Feature Detection	Edge Count	✓	✓	✓	✓		✓
	Point	✓	✓	✓	✓	✓	✓
	Contour, Tip, Pencil			✓	✓		
	Count	✓	✓	✓	✓	✓	✓
	Intensity	✓	✓	✓	✓		
	Verify						✓
Identification	1D, 2D					✓	✓
	Grading					✓	✓
	OCR						✓
Factory Protocols	EthernetIP/Profinet	✓	✓	✓	✓	✓	✓
Scripting	Fixed periodic	✓	✓	✓	✓	✓	✓
	Solution switching	✓	✓	✓	✓	✓	✓
	PLC triggering	✓	✓	✓	✓	✓	✓
Network commands		✓	✓	✓	✓	✓	✓
Image Logging	FTP	✓	✓	✓	✓	✓	✓
Password access		✓	✓	✓	✓	✓	✓

SEEING IS
BELIEVING

To satisfy your most innovative, customers' requirements, you may need a unique competitive advantage. Teledyne DALSA offers a full portfolio of the world's most advanced CCD and CMOS sensors as well as custom solutions. We can work with you to engineer a completely new device, or provide minor tweak to existing hardware or firmware that enable specialized applications, make integration easier, or simply reduce costs. If you are looking for a reliable source for off-the-shelf image sensors, or require a specialized custom or semi-custom solution visit our image sensor resource page.

www.teledynedalsa.com/sensors
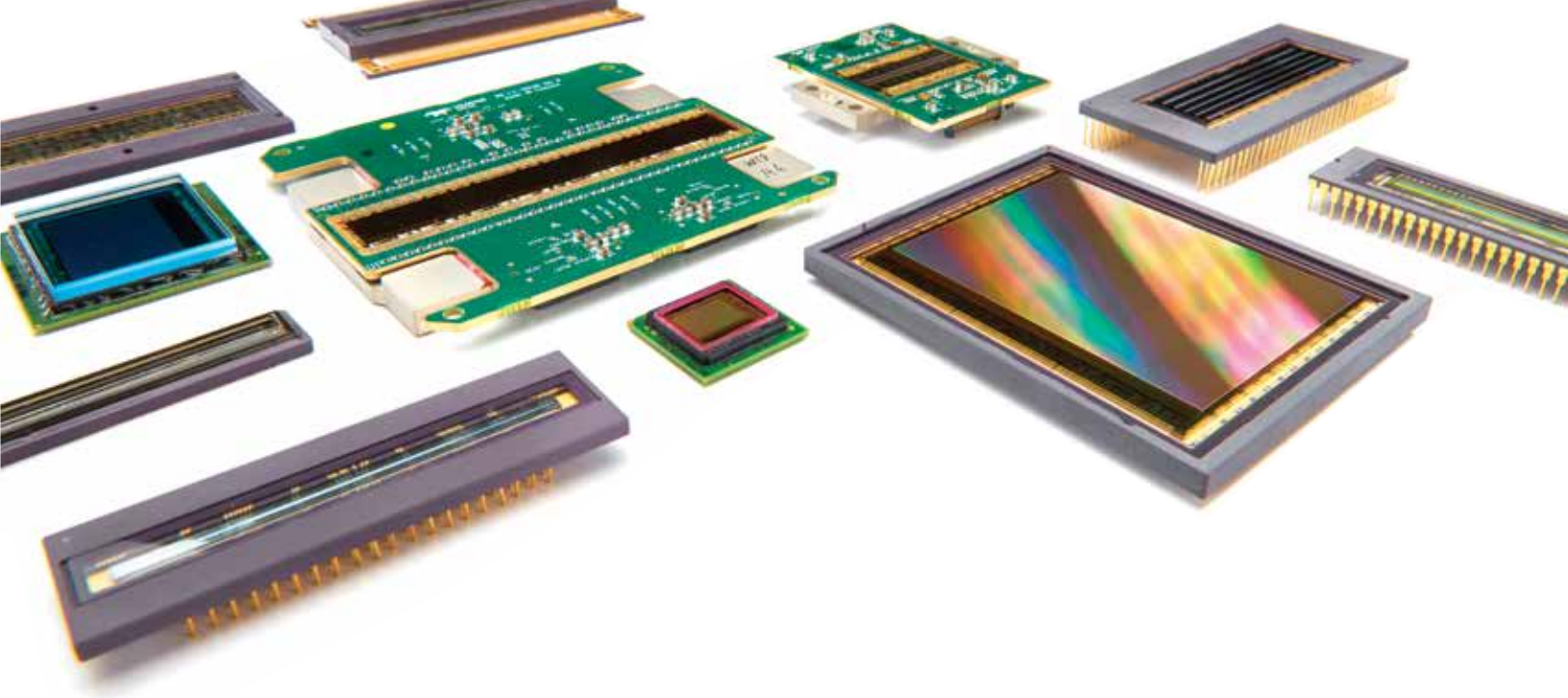
IMAGING SOLUTIONS TO MEET YOUR EXACTING REQUIREMENTS

FROM MINOR TWEAKS TO MAJOR ENGINEERING

Teledyne DALSA has been developing best-in-class image sensors for more than 35 years. Today, our imaging solutions are used in hundreds of applications including aerospace, science, healthcare, and industry. We've used that deep application knowledge to develop, produce, and qualify a comprehensive portfolio of standard sensors for both monochrome and color applications. With a focus on ultra-high speed and ultra-low noise, we offer line scan sensors with resolutions from 2k up to 16k, and Global Shutter area sensors with resolution from 1.2M up to 86M to deliver performance benchmarks that are unsurpassed.

FAST LINE AND FRAME RATES – Data throughputs up to 1.6 Gpix/s improve productivity and yield with the ability to scan more material in less time.

TRUE COLOUR LINE SCAN – 3-line Red/Green/Blue, 4-line Red/Green/Blue/NIR, as well as bilinear subsampled color

COMMON INTERFACES WITHIN PRODUCT FAMILIES – Commonality in pinouts, data interfaces, control interfaces, and mechanical connectivity make it easier to design around multiple sensor solutions.

MULTI-LINE SCAN WITH INDEPENDENT EXPOSURE CONTROL – the ability to control the amount of light hitting every line read enables dynamic white balance, and flexible lighting for advanced defect detection.

HIGH BIT DEPTH ON-CHIP ADCs – enables enhanced dynamic range and low noise by minimizing issues due to quantization. This improves the overall contrast in an image, which in turn enables you to better find the information you are looking for.

VERTICALLY INTEGRATED DESIGN, DEVELOPMENT AND MANUFACTURING We offer a vertically integrated in-house, turn-key solution including a single manufacturing flow from wafer probe to packaged part test. We are able to leverage expertise from across a world-wide family of Teledyne companies to provide full mixed-signal CMOS design, and best-in-class CMOS fabrication. Visit our Sensor product pages to find the solution that is right for you.

CMOS GLOBAL SHUTTER AREA SENSORS

RESOLUTION (pixels)	PIXEL (µm)	FRAME RATE (Hz)	COLOUR/MONO
8M	6.0	100 and 200	● / ●
11M	6.0	140	●
12M	6.0	60	● / ●
86M	6.0	16	● / ●

CMOS LINE SCAN SENSORS

RESOLUTION (pixels)	PIXEL (µm)	LINES	LINE RATE (kHz)	COLOUR/MONO
16k	3.52	1	70z	●
4k, 8k	7.04	1	70	●
8k	7.04	2	70	●
4k, 8k	7.04	2	2 x 70	●
2k, 4k	10.56	2	2 x 100	●
4k	10.56	3	3 x 70	●
2k	14.08	4	4 x 70	● / ●

PRIORITY VISION SYSTEM ENGINEERING SUPPORT

Our customers benefit from priority technical support, and are ensured of a quick response and access to an experienced technical/ applications team who understand that every machine vision application is unique.

FAST REPAIR AND COMPONENT REPLACEMENT

A downed inspection system can cost thousands of dollars in production yield and lost business. We work with you to ensure back-up components are ready and waiting when you need them. We've developed a priority delivery and order tracking program to give you 100% visibility on order fulfillment. We can also build in flexibility to modify delivery schedules, hold back or accelerate shipments to meet your needs.

TECHNOLOGY, SERVICE AND SUPPORT

With rapidly evolving technology, design engineers are rightfully concerned that components they've specified for their vision system may be discontinued or supplanted by newer technology leaving them scrambling to redesign and retrofit. We are committed to supporting legacy products and providing an efficient migration path when products are discontinued.

LOGISTICAL SUPPORT AND TRAINING

Our partners have 24/7 access to on-line, web-based tools for order tracking, account management, and technical support. These tools offer unprecedented visibility and control over the supply chain, allowing them a quick response to changing production demands. We offer comprehensive training to support your front line staff. Customers can take advantage of both hardware and software training programs that can be conducted in our training facility or easily suitcased to a location of your choice.

TELEDYNE DALSA
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