COGNEX

PRODUCT GUIDE 2007

Low-cost, full-featured DVT vision sensors provide the best price/performance in the industry.

DVT
Vision Sensors

Vision Sensor Overview

General Purpose Vision Sensors

DVT Vision Sensors:

The DVT vision sensors provide the best vision sensor price/ performance value:

- Lowest cost Cognex vision sensors
- User-friendly Intellect software with Windows look and feel
- Full range of vision tools for inspection, measurement, code reading, and object location
- Unmatched vision sensor performance for color and line scan applications
- Built-in Ethernet connectivity for easy integration into the factory network

Shown with optionally-available integrated LED lighting.

DVT 515
Lowest cost, entry-level DVT vision sensor

DVT 535
Best price/performance DVT vision sensor

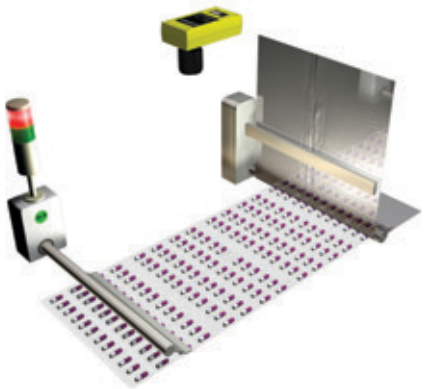
DVT 545
Real-time inspection at high speed

DVT 550
Highest speed, highest performance DVT vision sensor

DVT 554
High resolution (1280 x 1024) vision sensor detects microscopic flaws on high speed lines

Color Vision Sensors

The DVT product line offers a range of color vision sensors with both increased speed and resolution up to 1280 x 1024. Dedicated color tools in the Intellect software make applications like 24-bit color monitoring, color sorting, and identification easy for new users to deploy. Advanced users will appreciate the power of color filters, color blob processing, and the different color spaces which can be monitored.



DVT 535C

- Low-cost entry level color vision sensor
- Suited for a variety of applications including sorting, classification, monitoring, presence/absence

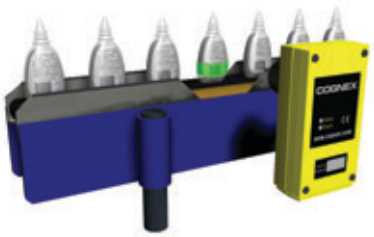
DVT 545C

- High speed color vision sensor for fast color labeling applications running at 1500ppm or faster

DVT 554C

- High resolution (1280 x 1024) and high speed vision sensor, great for precise color monitoring on high speed lines

ID Readers



DVT XS

- Only dedicated ID reader capable of reading 1D bar codes and 2D Data Matrix codes and reading and verifying OCR strings
- Easily set up mark quality assessment to ensure codes are readable to industry standards
- Built in compliance with 21 CFR Part 11
- High speed reading at 300ppm for OCR and up to 2000ppm on 1D bar codes
- Now includes a suite of position tools for tracking OCR codes

Line Scan

DVT LS

- The high resolution 2k by 8k imager creates a 17MB image perfect for general inspection, defect detection, gauging, or OCR/OCV
- Reduces the number of sensors required to check round objects
- Capable of super high resolution images for gauging and label inspection
- Continuous mode allows inspection of very long parts and spooled products
- New non-linear calibration removes lens distortion and increases accuracy for gauging applications

For more information on the DVT product family, please visit www.cognex.com/dvt

Intellect User Interface

Intellect™ is the latest software for DVT vision sensors, providing an intuitive user interface and a library of powerful vision tools. With Intellect, setting up a vision application is fast and easy, significantly lowering integration costs and speeding time to deployment.

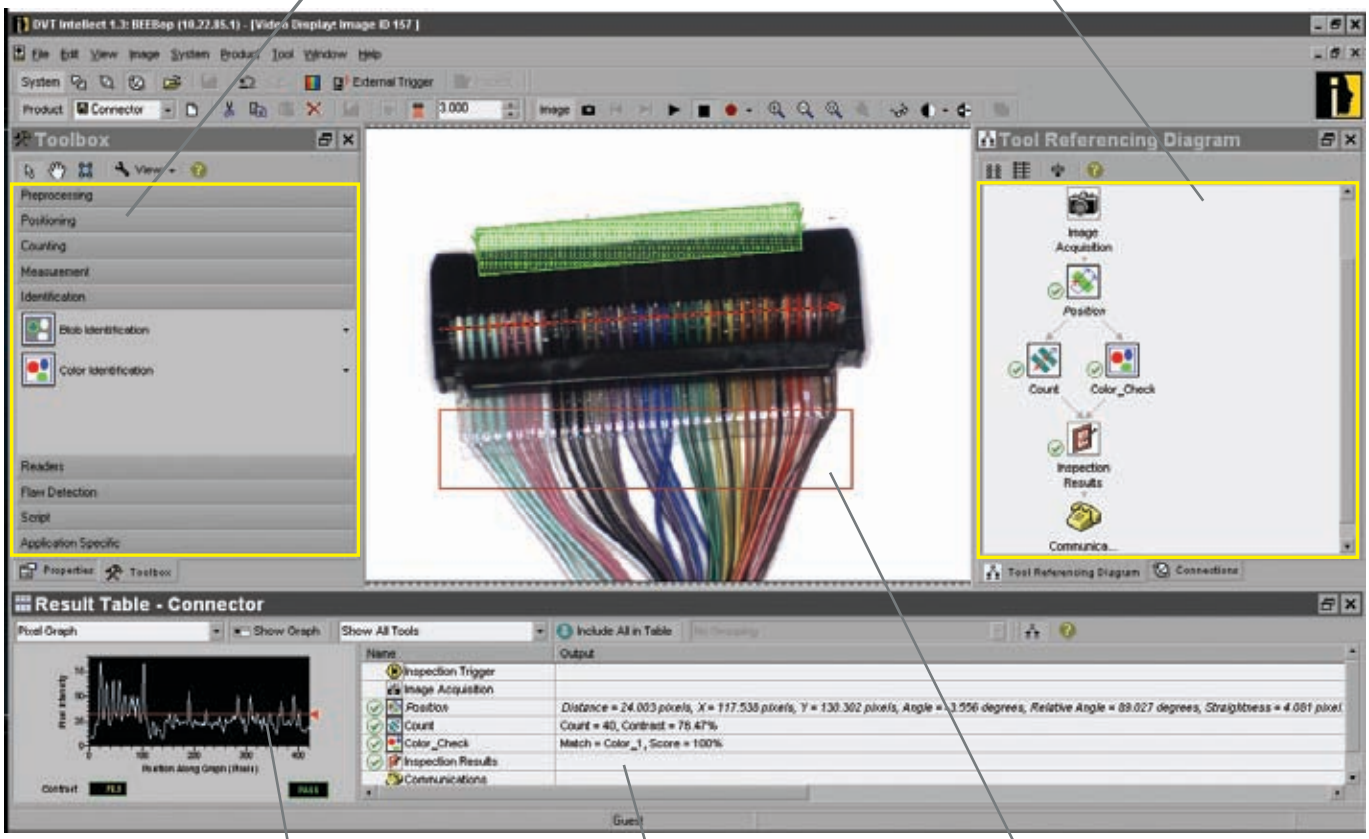
Vision Tools

Dedicated vision tools make the setup for common applications fast and easy.

- Positioning
- Counting
- Measurement
- Color
- Defect detection, including new Flexible Flaw Detection (FFD)
- Replicator tool

Tool Referencing Diagram

The diagram leads a user through the inspection setup process with a graphical display from start to finish.



Real-time Feedback

Graphically provides data for fine tuning your application.

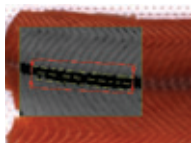
Result Table

This configurable table displays a number of tool outputs including Pass/Fail rates and execution timing.

Video Display

Descriptive tool marking on the video display window helps operators understand and diagnose bad parts.

Vision Tools

Tool Category	Advantages	Applications
POSITIONING TOOLS Position along line Area positioning Circle fit Line fit	Positioning tools quickly locate a single part using advanced algorithms like Geometric Pattern Match, Blob, or extremely fast line tools.	 • Locate automotive, electronic, pharmaceutical, and consumer parts and assemblies for inspection • Uses geometry to accurately locate parts
COUNTING TOOLS Count along line Count in area Replicator tool	Counting tools quickly locate and count multiple parts using algorithms like Geometric Pattern Match, Blob, or extremely fast line tools for edge counting.	 • Count parts in a package, electrical solder joints, balls in a bearing, holes in machined parts, and threads on screws
FLAW DETECTION TOOLS Color monitoring Defect detection Flexible flaw detection (FFD)	Flaw detection tools detect small changes in part appearance or monitor color variations in several color spaces.	 • Ensure label color • Fast and easy setup for detecting boundary and surface defects
IDENTIFICATION TOOLS Color identification Blob identification	Identification tools build a model for a part based on either shape or color data for sorting applications. Models can quickly be added as new configurations are produced.	 • Sort labels based on color • Sort and count parts by shape on processing and packaging lines, and verify components prior to assembly
FILTERING TOOLS Filters	Preprocessing filters allow manipulation of the image before inspection tool processing.	 • Commonly used to increase contrast, suppress or enhance defects, sharpen edges, or change between color processing spaces • Used on difficult applications such as glass or shiny metal
READER TOOLS 1D Codes 2D Reader OCR/OCV Reader	Reader tools are designed to decode 1D, 2D, or OCR/OCV strings. Grading is available on both 1D and 2D codes.	 • Reads lot codes, date codes, and identification marks in the packaging, medical, or pharmaceutical industries • New fiducial tool quickly finds and locates text strings
MEASUREMENT TOOLS Measure along line Measure in area Measure in circle Measure with points & lines Datum Statistics	Measurement tools precisely gauge distances, angles, find radii, and fit lines to ensure parts are within user tolerances. Statistics and datum points can be used to monitor trends in gauging.	 • Measure and verify tolerances of automotive parts, assemblies, and product labels • Measure critical tolerances of medical and surgical devices

DVT Model Comparison

General Purpose Vision Sensors

		STANDARD RESOLUTION (INCREASING ORDER OF PERFORMANCE)				HIGH RESOLUTION
		515	535	545	550	554
Performance Multiplier	Average overall performance vs. a Model 515	1X	1.5X	4X	6X	6X
Memory	Firmware & Job Storage	16MB	16MB	16MB	16MB	16MB
Camera	Resolution	640 x 480	640 x 480	640 x 480	640 x 480	1280 x 1024
	Imager Size	1/3-inch CMOS	1/3-inch CCD	1/3-inch CCD	1/3-inch CCD	1/2-inch CCD
	Color	No	No	No	No	No
	Acquisition Rate (frames per second)	60fps	60fps	60fps	75fps	8fps
	Partial Image Acquisition	Yes	Yes	Yes	Yes	Yes
	Protection Rating	IP51	IP51	IP51	IP51	IP51
Display Options	SmartLink to VGA	Yes	Yes	Yes	Yes	Yes
I/O Options	Trigger/No. of High-speed Outputs	8	8	8	8	8
	I/O Breakout/Expansion Modules	Yes	Yes	Yes	Yes	Yes
	Ethernet I/O Support (up to 512in/ 512out)	Yes	Yes	Yes	Yes	Yes
Communication Options	Ethernet & RS232 (with optional Ethernet to serial converter CON-ETS)	Yes	Yes	Yes	Yes	Yes
Lighting	Integrated LED Lighting Available	Yes	Yes	Yes	Yes	Yes
Application Development	Intellect 1.3 or higher required	Yes	Yes	Yes	No	No
	Compatible with FrameWork	Yes	Yes	Yes	Yes	Yes
Lens Mount	C or CS	Both	Both	Both	Both	Both
Vision Tool Support	Preprocessing	Yes	Yes	Yes	Yes	Yes
	Positioning	Yes	Yes	Yes	Yes	Yes
	Counting	Yes	Yes	Yes	Yes	Yes
	Measurement	Yes	Yes	Yes	Yes	Yes
	Identification (modeling)	Yes	Yes	Yes	Yes	Yes
	Readers (1D, 2D, OCR/OCV) [1]	No	Yes	Yes	Yes	Yes
	Flaw Detection	Yes	Yes	Yes	Yes	Yes
	Script	Yes	Yes	Yes	Yes	Yes
	Application Specific	Yes	Yes	Yes	Yes	Yes
Power Consumption	Voltage Requirement	24VDC+/-10%	24VDC+/-10%	24VDC+/-10%	24VDC+/-10%	24VDC+/-10%
	Maximum Current (Not including lighting)	300mA	300mA	300mA	300mA	300mA
Max Oper.Temp.	Camera	45 deg C	45 deg C	45 deg C	45 deg C	45 deg C
Approvals	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE [2]	CE [2]

Notes:

1) 2D codes include: Data Matrix, SnowFlake, Rectangular code 1D Stacked codes include: Interleaved 2 of 5, Code 39, Code 93, Codabar, PharmaCode, BC412, UPC/EAN & Composite, RSS Limited, 14, Expanded, Composites A,B,C, Code 128 Composite, Postnet and Planet Code, PDF417, Micro PDF and PDF417 truncated

2) RoHS planned availability March 2007

3) This model requires Intellect 1.4 or higher

Color Vision Sensors

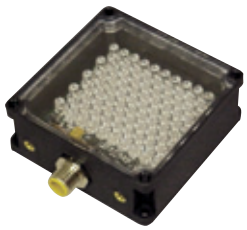
		STANDARD RESOLUTION (INCREASING ORDER OF PERFORMANCE)		HIGH RESOLUTION	ID READER	LINE SCAN
		535C	545C	554C	XS	LS
Performance Multiplier	Average overall performance vs. a Model 535C	1X	4X	4X	6X	6X
Memory	Firmware & Job Storage	16MB	16MB	16MB	16MB	16MB
Camera	Resolution	640 x 480	640 x 480	1280 x 1024	640 x 480	2048 x 1
	Imager Size	1/3-inch CCD	1/4-inch CCD	1/2-inch CCD	1/3-inch CCD	1-inch CMOS
	Color	Yes	Yes	Yes	No	No
	Acquisition Rate (frames per second)	23fps	30fps	8fps	75fps	18k line per sec
	Partial Image Acquisition	Yes	Yes	Yes	Yes	Yes
	Protection Rating	IP51	IP51	IP51	IP51	IP51
Display Options	SmartLink to VGA	Yes	Yes	Yes	Yes	Yes
I/O Options	Trigger/No. of High-speed Outputs	8	8	8	8	8
	I/O Breakout/Expansion Modules	Yes	Yes	Yes	Yes	Yes
	Ethernet I/O Support (up to 512in/ 512out)	Yes	Yes	Yes	Yes	Yes
Communication Options	Ethernet & RS232 (with optional Ethernet to serial converter CON-ETS)	Yes	Yes	Yes	Yes	Yes
Lighting	Integrated LED Lighting Available	Yes	Yes	Yes	Yes	No
Application Development	Intellect 1.3 or higher required	Yes [3]	No	No	No	Required for continuous mode operation
	Compatible with FrameWork	Yes	Yes	Yes	Yes	No
Lens Mount	C or CS	Both	Both	Both	Both	Both
Vision Tool Support	Preprocessing	Yes	Yes	Yes	Yes	Yes
	Positioning	Yes	Yes	Yes	Yes	Yes
	Counting	Yes	Yes	Yes	No	Yes
	Measurement	Yes	Yes	Yes	No	Yes
	Identification (modeling)	Yes	Yes	Yes	No	Yes
	Readers (1D, 2D, OCR/OCV) [1]	Yes	Yes	Yes	Yes	Yes
	Flaw Detection	Yes	Yes	Yes	No	Yes
	Script	Yes	Yes	Yes	Yes	Yes
	Application Specific	Yes	Yes	Yes	No	Yes
Power Consumption	Voltage Requirement	24VDC+/-10%	24VDC+/-10%	24VDC+/-10%	24VDC+/-10%	24VDC+/-10%
	Maximum Current (Not including lighting)	300mA	300mA	300mA	300mA	300mA
Max Oper.Temp.	Camera	45 deg C	45 deg C	45 deg C	45 deg C	45 deg C
Approvals	CE, RoHS	CE, RoHS	CE [2]	CE [2]	CE [2]	CE [2]

Complete Range of Accessories

To simplify and speed up the system integration process, Cognex offers a wide range of optional accessories designed specifically for use with DVT vision sensors.

Lighting

In order to achieve the highest quality images possible, Cognex offers a wide array of light modules and integrated LED lighting options.



An LED array is available for typical bar light applications. An optional diffuser allows it to be used as a backlight.

I/O Modules

I/O Breakout Module

The I/O Breakout Module provides easy connection of DVT sensors to power, acquisition triggers, and outputs and provides 8 configurable high speed I/O lines.

Expanded I/O board

The Expanded I/O board has a total of 24 I/O points. There are 8 Ethernet Input points, 8 Ethernet Output points, and 8 direct wire user definable I/O points.

Non-isolated Breakout board

The Non-isolated Breakout board provides 8 configurable high speed I/O lines.

Lenses

Cognex offers a full range of high-quality compact camera lenses designed specifically for machine vision applications.

SmartLink™ Communications Module

Many applications require the use of multiple DVT vision sensors. The DVT SmartLink™ communications module allows monitoring images and results from those vision sensors without requiring a computer.

Using standard Ethernet or serial communications, SmartLink displays a simple operator interface on touch screen displays or inexpensive VGA monitors. SmartLink transfers images from up to 16 vision sensors, which can be linked to show inspection data, pass/fail results, and can even freeze images for operator intervention.

SmartLink point-and-click setup software allows users to easily create a custom interface to display images and inspection results for each monitored application. In addition, SmartLink can be used as a gateway communications device for Profibus or DeviceNet connectivity.

Ethernet to Serial Converter

The DVT Ethernet to Serial Converter Kit includes: Serial Cable, Din Rail Mountable Bracket, Power Cable with flying leads and CD.