BALLUFF

sensors worldwide

SHARPSHOOTER® Sensor

...vision based error proofing
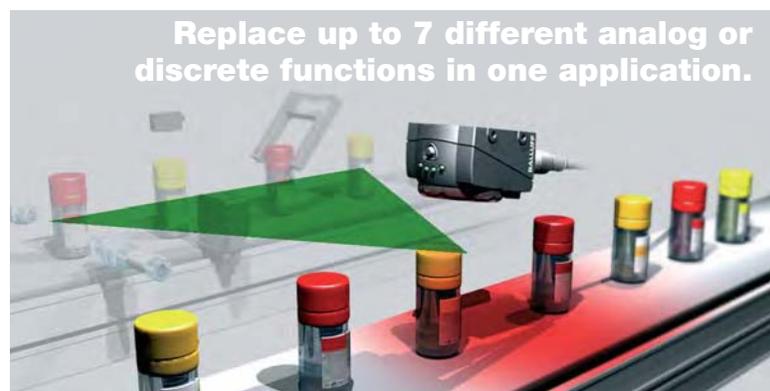
SHARP*SHOOTER*®

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A New Vision of Error Proofing

- Combines sensor simplicity with vision system performance
- Fast, simple, software-driven set up
- Provides flexible, powerful error proofing
- Small size makes for convenient operation
- One-unit operation replaces cumbersome multi-sensor arrays
- Provides faster return on investment than vision systems

Sharpshooter® is the first vision-based sensor designed to be an extension of your present sensor-based error proofing system. It provides reliable part or feature presence/absence, position detection, and dimensional verification. This product can be used like a sensor, but provides far more functionality than any discrete sensor. And it's also far easier to use than more complex vision systems.

In most production situations, vision systems can be overkill – too expensive, too much functionality, and just too complex. Instead we designed a product that's easy to set up, simple to use, and quick to return your initial investment. It has just enough functionality to be the first vision-based sensor solution you'll adopt and maybe the last vision product you'll need.
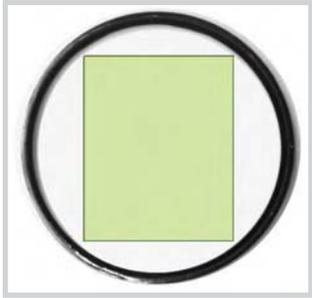
Actual size

Sharpshooter's status LEDs indicate proper operation, I/O status, and Ethernet connection.

Sharpshooter's compact size allows quick set up like a sensor for most error proofing and detection applications. It provides a built-in focus lens ring, integral red LED ring light, and four projectable LED marks to define the target area for fast, easy, and reliable image setup.

Sharpshooter uses industrial M12 connectors. One provides I/O for power, detection results, remote job changeovers, external trigger, and lighting. The other provides a fast Ethernet connection to the easy ConVis® interface software on a network or direct to a PC.

Replace up to 32 sensors in one application.

Replace up to 7 different analog or discrete functions in one application.

Sharpshooter® is a powerful error proofing sensor.

Sharpshooter can replace up to 32 sensors in a given inspection or error proofing process and can
analog sensor functions. This gives Sharpshooter powerful error proofing flexibility and performanc
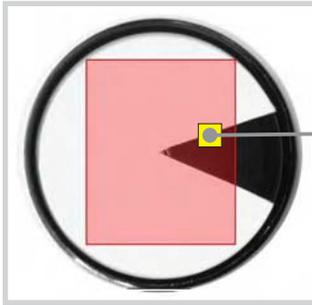
Packaging

Conformance / Presence Check
Inspect a bottle cap to determine the presence and the
integrity of the cap liner using a Brightness tool.

Pass
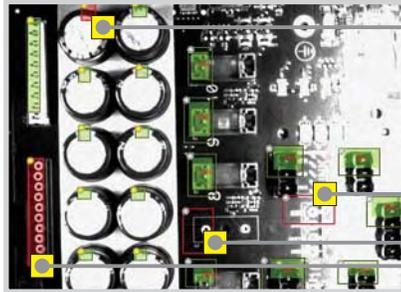
Bottle cap liner
is present and
intact

Fail

Liner damaged

Electronics

Assembly Verification
Inspect a circuit board to ensure that all connectors are present and verify
the correct orientation of all the capacitors using Pattern Match tools.

Pass

All connectors are
present and
capacitors are in
correct orientation

Fail

Bad orientation
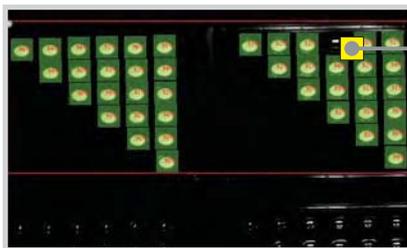
Missing connector

Missing connector

Missing connector

Pharmaceutical

Package Presence Verification
Verify the presence of all the pills packaged in a blister
pack using a single Pattern Match tool.

Pass
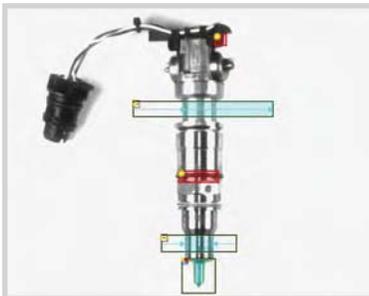
All pills are
present in
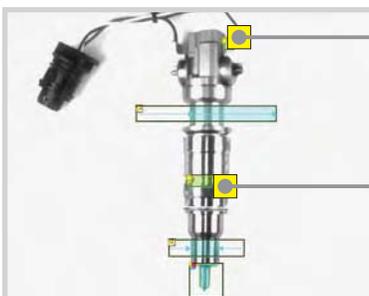package

Fail

Missing pill

Automotive

Dimensional Gauging / Component Inspection
Inspection of a fuel injector for verification and presence of an electrical cap, the
injector nozzle, o-ring presence and gauging for the proper injector width. Tools
used include Contour, Brightness, edge Width and edge Position.

Pass - Verification

Verify presence of
components and
proper injector width

Fail - Verification

Verify missing cap

Verify missing o-ring

cess and can take the place of up to seven different discrete or
performance.

Tools

Brightness
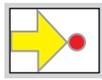Calculates the average intensity of the pixels in the Region Of Interest (ROI).

Contrast
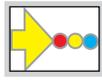Calculates the differences between the lightest to the darkest pixels in the ROI.

Contour
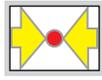Searches for the taught outline or contour image in the ROI.

Position
Locates the position of a horizontal or vertical edge in pixels within the ROI.

Edge Count
Counts the number of edges inside the ROI.

Width
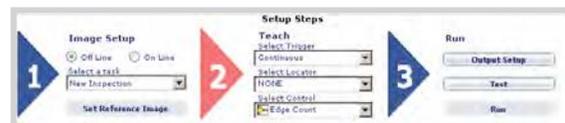Measure the distance between two edges in pixels like a caliper tool.

Pattern Match
Searches for the taught pattern inside the search area.

Powerful Features

Software:
- Intuitive and easy 3 step setup process
- Interactive help window
- 7 flexible inspection tools
- Part position compensation capability
- Use up to 32 inspection tools per job
- Save up to 8 jobs in the BVS and switch them by external input
- Built-in Sensor Finder window easily locates sensors on a network
- Software emulation allows setup without BVS online

Hardware:
- Compact size
- Standard 640x480 pixel resolution
- Built-in ring light
- Built-in lens with adjustable focus ring
- Built-in status LEDs
- Ethernet TCP/IP configuration port
- Separate output to trigger external light source
- Industrial M12 connections and IP54 rating

Easy software-driven set up is as simple as 1-2-3.

ConVis® Software from Balluff makes setting up Sharpshooter® a simple, intuitive process.

Balluff's windows-based ConVis configuration GUI software uses a step-by-step configuration process to guide you through set up, including interactive help and a multiple image viewing buffer to identify an optimum reference image for setup, and to provide selectable images for operation testing. The ConVis software also operates as an emulator to allow you to set up and test projects off-line for greater flexibility, then download them to the sensor.

Use Ethernet connectivity to connect Sharpshooter to your production PC, or network several Sharpshooters to a PC using our exclusive SensorFinder® feature. The built-in step-by-step method guides you through the configuration process in three easy steps. The screen shows you where you are throughout the entire process so adjustments and corrections are quick and easy to make.

1 Step 1
Image Set Up

In the ConVis software, each step provides a format, making set up an intuitive task. In Image Setup, the setup process is defined as on-line or off-line. A new or existing setup is defined and an off-line reference image is chosen or on-line image is configured and captured for use.

2 Step 2
Teach

In the Teach step, an external trigger type is selected, a part position Locator tool is selected and configured, and up to 32 Controls are selected and configured for detection and measurement.

3 Step 3
Run

The Run step allows set up and definition of the three outputs, image saving modes, and external teach button status. A completed project can also be tested both on-line or off-line for adjustments and refinement. And finally, the Sharpshooter can be set to run and monitored on-line for operation results.

Easy three step configuration
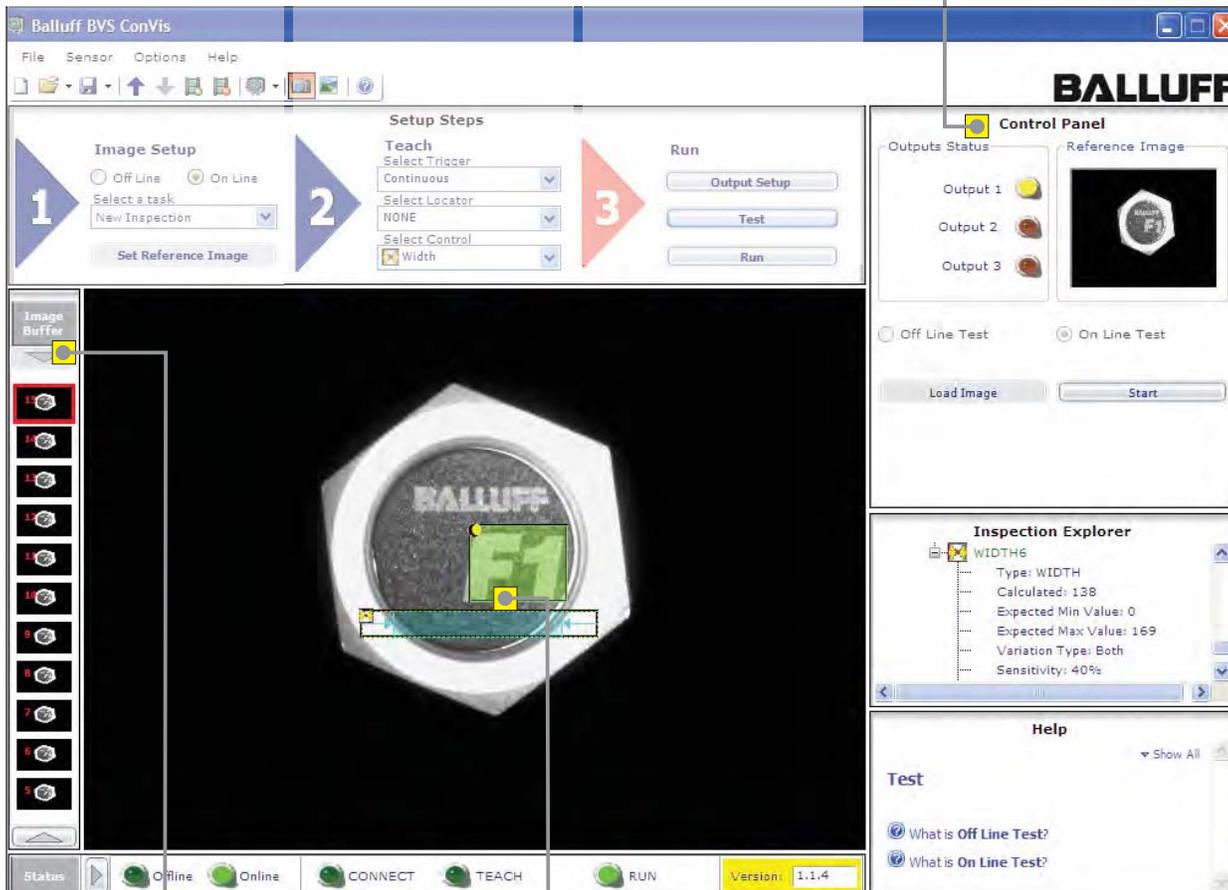
Control Panel
All characteristics at a glance

Image Buffer
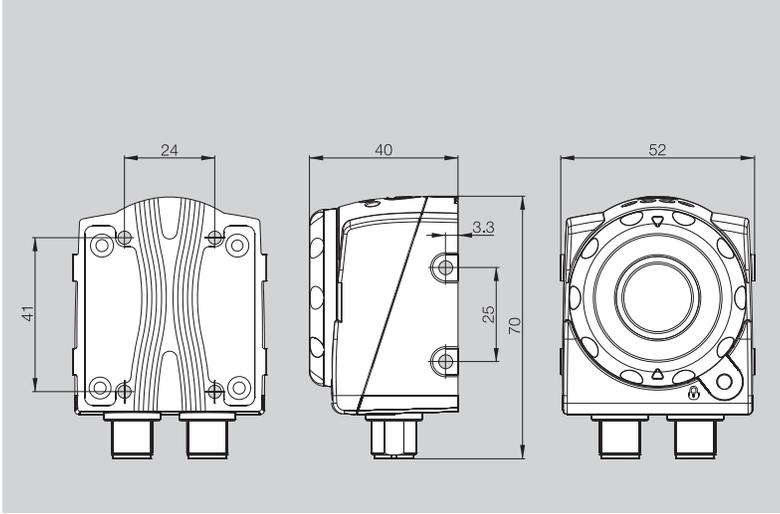**For image previewing**

Control Region
The region of interest used by the control for detection or inspection

Technical Data
Product Overview

Minimum System Requirements
Processor(s): Pentium 4
Operating system: Windows XP (Service Pack 2)
CPU frequency: ≥1 GHz
RAM: 512 MB to 1024 MB
Free hard drive space: 35 MB
Monitor resolution: 1280 x 768 pixels
CD-ROM drive
One free 10/100 Mbps Ethernet port on PC

Series	Optical Vision Sensor	Optical Vision Sensor
Working Range (mm)	50...1000 mm	50...1000 mm
Field of View, Horizontal x Vertical (mm)	25 x 20...460 x 380 mm	17 x 12...320 x 210 mm
Ordering Code	**8 mm Lens**	**12 mm Lens**
PNP	BVS OI-3-001-E	BVS OI-3-003-E
NPN	BVS OI-3-002-E	BVS OI-3-004-E
Operating Voltage U_B	24 Vdc ± 10%	
Switch Inputs	1 x trigger, 1 x select (serial)	
Switch Outputs	1 x lighting synchronization, 3 x PNP/NPN configurable	
Output Current	100 mA	
Functions and Characteristics		
Parameterization Software	ConVis® for Windows XP	
Typical Detection Rate	3...20 Hz (depending on analytical function)	
Optical Data		
Image Sensor	CMOS-SW-VGA 640x480	
Working Range	50...1000 mm	
Lights	LED, front illumination (red), can be switched off*	
Alignment Assistance	4 LED green, can be switched off	
Mechanical Data		
Dimensions	58 x 52 x 40 mm	
Connector	2x M12 plug (8- and 4-pole)	
Protection Type Per IEC 60529	IP 54	
Ambient Temperature T_a	-10...+55° C	
Ethernet Cables		
BKS-AD-05-RJ45/6S180-PU-1,5	M12 to RJ45 Ethernet cable, 1.5 meter	
BKS-AD-05-RJ45/6S180-PU-03	M12 to RJ45 Ethernet cable, 3 meter	
BKS-AD-05-RJ45/6S180-PU-05	M12 to RJ45 Ethernet cable, 5 meter	
I/O Cables		
C04 ANT-00-PB-050MS	M12 I/O cable, 5 meter	
C04 BNT-00-PB-050MS	M12 I/O cable, 5 meter 90° connector	
Mounting Bracket		
BVS Z-MB-01	BMS L - mounting bracket	

Accessories
- Plug connectors
- Mounting bracket
- BMS mounting system
- Lights

* Contact Balluff sales for additional cable lengths and external lighting products and options.

www.balluff.com/sharpshooter

USA
Balluff Inc.
8125 Holton Drive
Florence, KY 41042
Phone: (859) 727-2200
Toll-free: 1-800-543-8390
Fax: (859) 727-4823
E-Mail: balluff@balluff.com

Canada
Balluff Canada, Inc.
2840 Argentia Road, Unit #2
Mississauga, Ontario L5N 8G4
Phone: (905) 816-1494
Toll-free: 1-800-927-9654
Fax: (905) 816-1411
E-Mail: balluff.canada@balluff.ca

Mexico
Balluff de Mexico S.A. de C.V
Prol. Av. Luis M. Vega #109
Col. Ampliacion Cimatario
Queretaro, QRO 76030
Phone: (++52 442) 212-4882,
224-3583, 224-3171
Fax: (++52 442) 214-0536
E-Mail: balluff.mexico@balluff.com