

# VE Series



## Smart Camera

- Robust metal housing
- Intuitive programming software
- Powerful inspection capabilities





VE Series

# Compact, Durable, Versatile

The VE Smart Camera is built to stand up to industrial environments and can solve many vision applications.

## Durable Design



Robust, aluminum housing for harsh environments

C-mount lens for a variety of applications

## Status and Troubleshooting



Bright LED indicators to easily view camera status

Two-line, eight-character display and push buttons for troubleshooting and viewing camera status

- Perform product change or trigger
- Troubleshoot and clear errors
- Change or view IP address, MAC address, or Ethernet speed
- View firmware, focus number or status

## Connections



Ethernet connector with Gigabit Ethernet communication speed

Discrete communication to external devices using five user-configurable optically isolated I/O

Power Banner Vision lights directly from the camera

Compact size



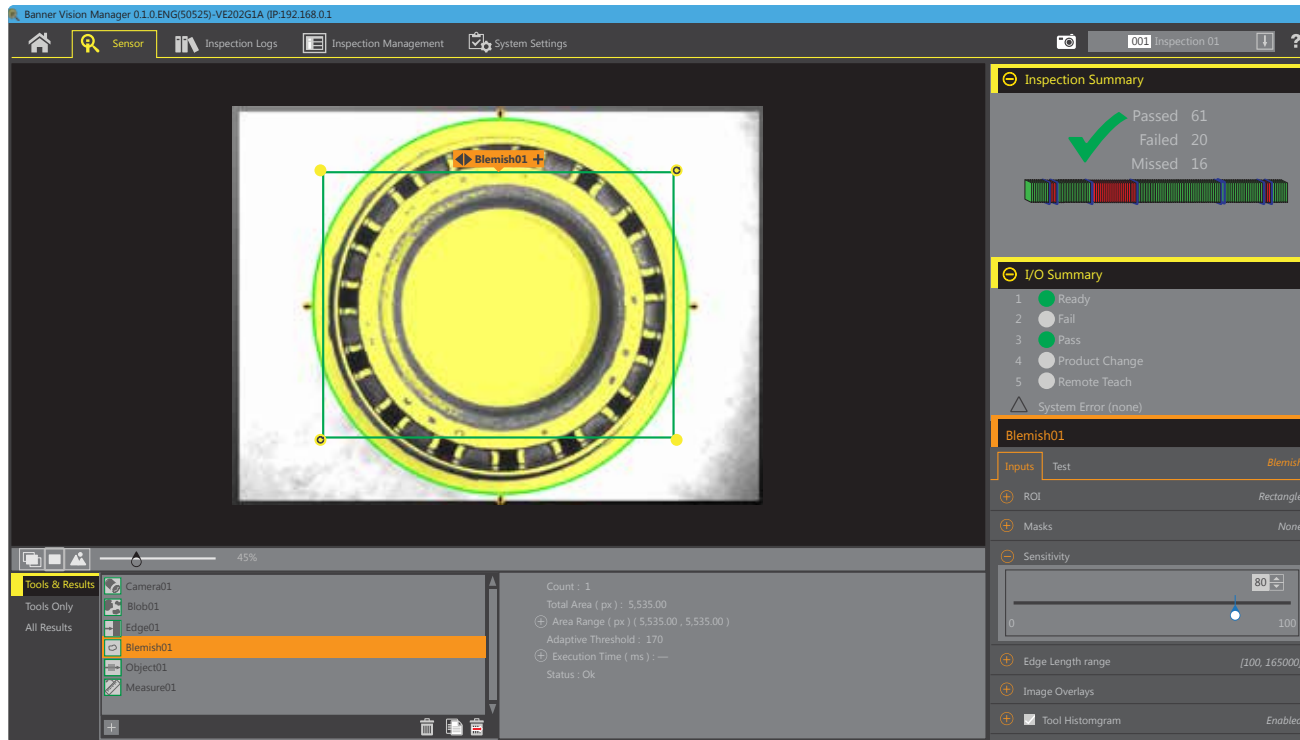
Optional IP67 lens cover for washdown environments



Variety of lights available to accommodate any application

# Intuitive Software

VE Vision Manager software: Easy configuration, powerful functions.

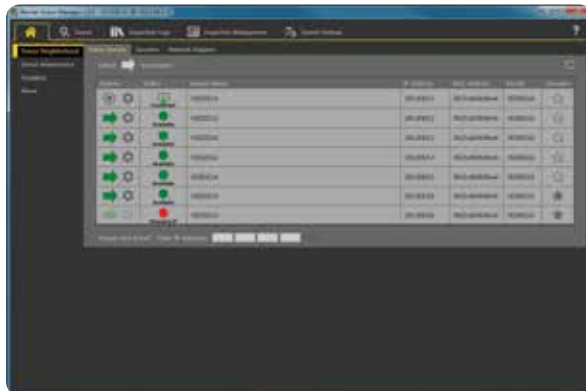


## Runtime Editing

Easy-to-use configuration software with full runtime editing allows for changes to be made quickly with no costly downtime from stopping and starting inspections. Start using today by downloading at [www.bannerengineering.com/vision-manager](http://www.bannerengineering.com/vision-manager).

## Full Software Emulator

Connect to multiple cameras or full software emulator for building inspections offline



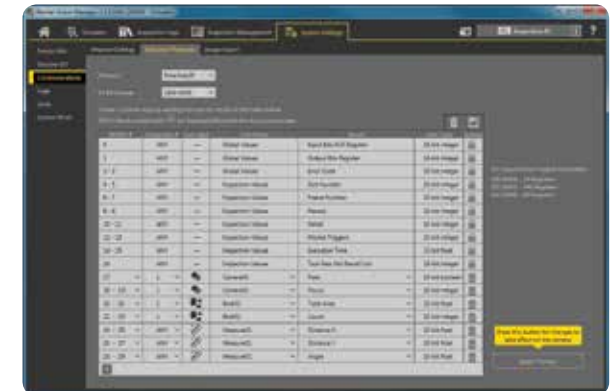
## Inspection Analysis

Review past inspection results, view system logs, and quickly configure inputs and outputs



## Factory Communications

Seamlessly interface with the factory floor using **EtherNet/IP, Modbus/TCP, PROFINET, and Serial** communications





VE Series

## Solutions for:

### Presence/Absence

- Count vials in a tray
- Verify correct labeling

### Orientation/Position

- Verify the orientation of an IC chip
- Send part location to a pick-and-place robot

### Flaw Detection

- Calculate the eccentricity of pizza crust
- Identify burn marks on a nonwoven web

### Measuring

- Measure critical dimensions of a stamped part
- Measure bottle cap height

## Door Panel Adhesive Inspection

### Challenge

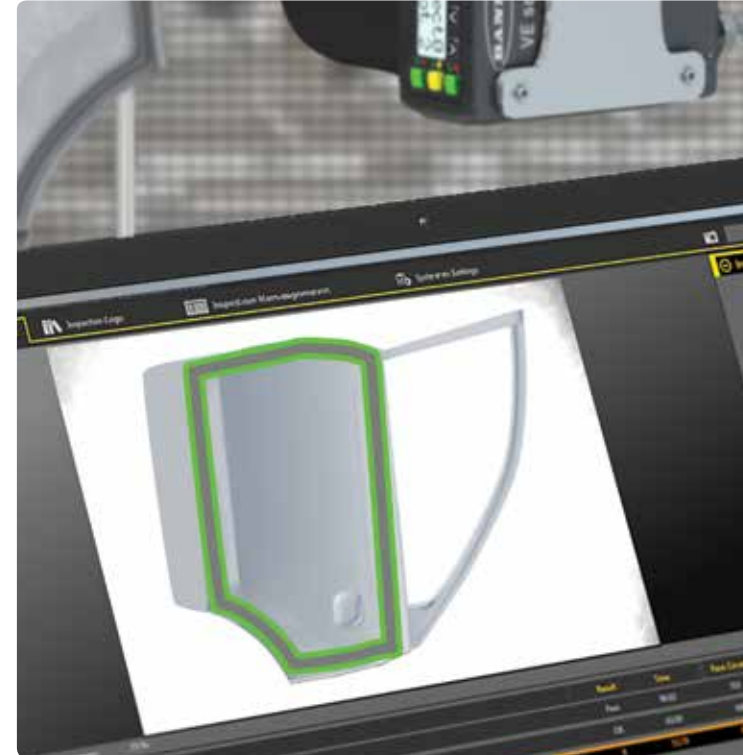
During vehicle assembly, a track of adhesive is applied along the perimeter of a door. Excessive adhesive can burst through the seams requiring cleanup, while an insufficient amount of adhesive will not seal the panel correctly.

### Solution

The Bead Tool can inspect each door panel for the presence and amount of adhesive, and provide real time feedback of improper bead application.



Bead Tool



## Cell Phone Inspection

### Challenge

Cell phones are comprised of many small electric parts and connectors. Manually inspecting to ensure the components are present and correctly installed is difficult and impractical.

### Solution

The VE Series Smart Camera has 5 mega pixels which allows for a higher resolution inspection. Using match tools, a single camera has enough resolution to detect very small electronic parts and confirm they are properly mounted on each cell phone.



Measure Tool



Match Tool





## Packaging Inspection

### Challenge

During packaging, tubes of toothpaste need to be placed into cartons. A logo on the tube indicates the specific type of toothpaste inside the box. Frequent product changeover, printing mistakes, human error and other factors can result in packaging errors.

### Solution

A VE Series Smart Camera uses a Match Tool to inspect the product logo on each box before the corresponding tube of toothpaste is inserted.



Match  
Tool



## Blister Pack Inspection

### Challenge

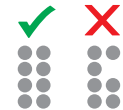
Pharmaceutical companies package medications into blister packs. Before being sealed, each cell must be inspected to verify that the tablet has been correctly placed and that the tablet is whole.

### Solution

Using the Blob Tool the VE counts and measures multiple rows of tablets in a single inspection.



Blob  
Tool



## Sortation Conveyor Inspection

### Challenge

Each tray is inspected to verify it is empty before a package is placed on the tray. The package can be any color, shape, and size and can be located anywhere on the tray.

### Solution

The VE Series Smart Camera with the 5mp imager uses the Blemish Tool to inspect the entire tray to detect if the smallest package was still on the tray before loading.



Blemish  
Tool





VE Series

Family

**VE**

Resolution

**202**

200 = WVGA, 752 x 480 pixels  
 201 = 1.3 MP, 1280 x 1024 pixels  
 202 = 2 MP, 1600 x 1200 pixels  
 205 = 5 MP, 2592 x 2048 pixels

Imager

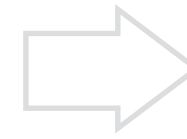
**G**

**G** = Grayscale

Ethernet Connection

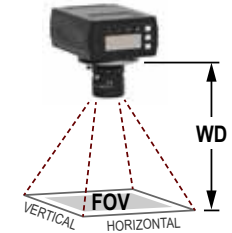
**1A**

**1A** = M12, 8-pin  
 Euro-style female



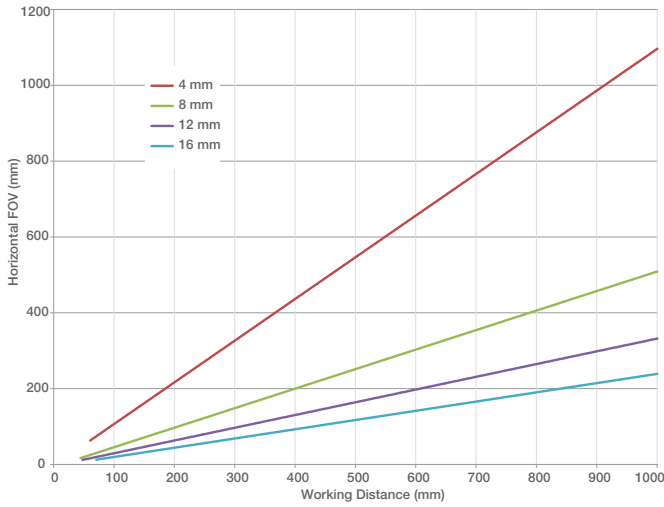
Choose lens based on Field of View (FOV) and Working Distance (WD)

Select a camera resolution

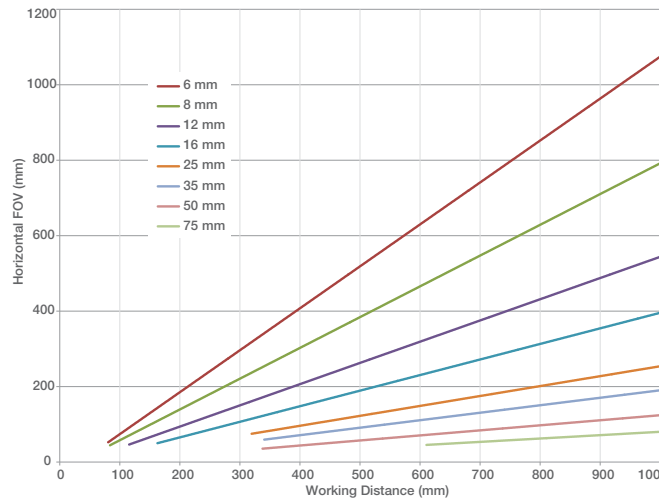


Lens Charts

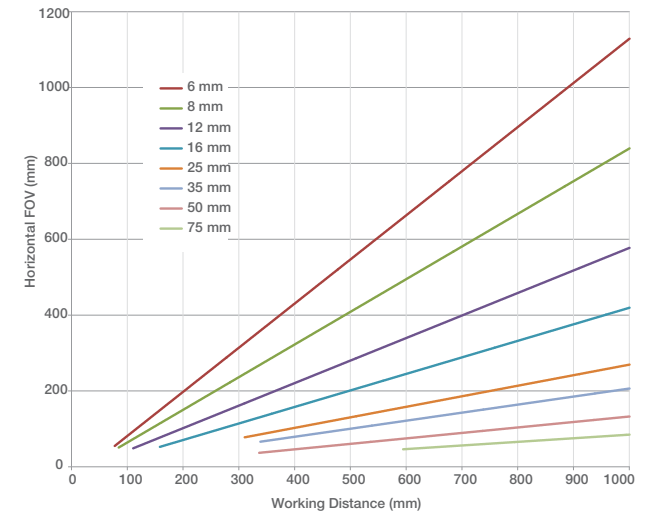
WVGA, 752 x 480 pixels



1.3 MP, 1280 x 1024 pixels



2 MP, 1600 x 1200 Pixels



C-Mount Lenses for use with WVGA cameras only

| Focal Length | Model |
|--------------|-------|
| 4 mm         | LCF04 |
| 8 mm         | LCF08 |
| 12 mm        | LCF12 |
| 16 mm        | LCF16 |

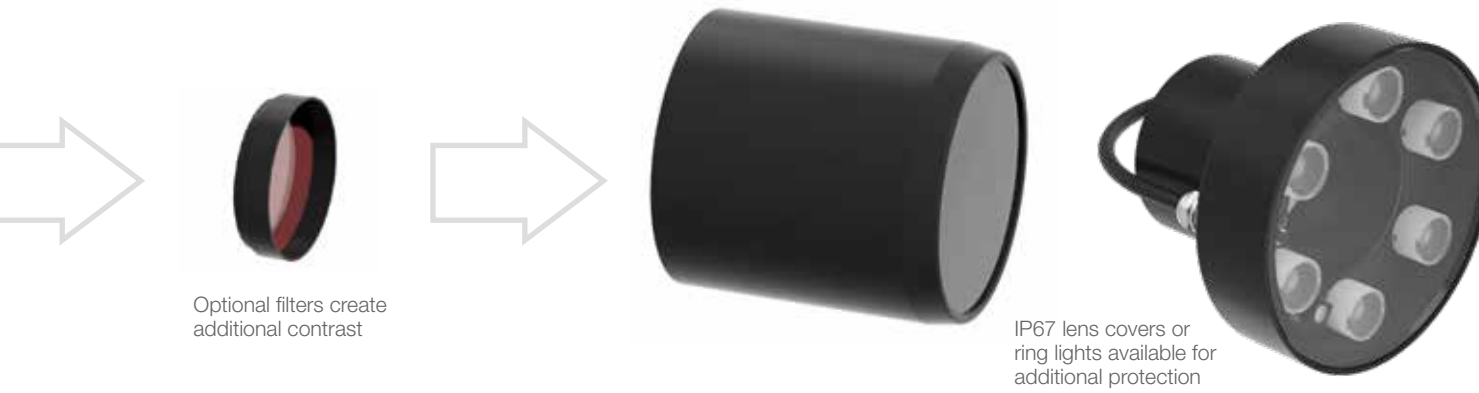
WVGA models can also use Megapixel C-mount Lenses

Megapixel C-mount Lenses for use with WVGA, 1.3 MP, or 2 MP cameras

| Focal Length | Model      | Focal Length | Model      | Focal Length | Model      |
|--------------|------------|--------------|------------|--------------|------------|
| 6 mm         | LCF06LEVMP | 16 mm        | LCF16LEVMP | 50 mm        | LCF50LEVMP |
| 8 mm         | LCF08LEVMP | 25 mm        | LCF25LEVMP | 75 mm        | LCF75LEVMP |
| 12 mm        | LCF12LEVMP | 35 mm        | LCF35LEVMP |              |            |

Contact factory or visit [www.bannerengineering.com](http://www.bannerengineering.com) for additional lens information and a comprehensive product offering.

Order  
Now



### Bandpass Filters

for use with Megapixel C-mount Lenses\*

| Type             | Model       |
|------------------|-------------|
| Blue             | FLTB470-27  |
| Green            | FLTG525-27  |
| Infrared         | FLTI850-27  |
| Red              | FLTR635-27  |
| Dark Red         | FLTR660-27  |
| Linear Polarizer | FLTPR032-27 |

\* For use with 8 to 35 mm focal lengths.  
Contact the factory for additional options.

### Power Cordsets

| Type                                   | Length         | Model       |
|--|----------------|-------------|
| 12-Pin M12/Euro-Style with Open Shield | 1.83 m (6 ft)  | MQDC2S-1206 |
|  | 4.57 m (15 ft) | MQDC2S-1215 |
|  | 9.14 m (30 ft) | MQDC2S-1230 |
|  | 15.2 m (50 ft) | MQDC2S-1250 |
|  | 22.9 m (75 ft) | MQDC2S-1275 |

For right-angle models add **RA** to the model number (example, **MQDC2S-1250RA**)

### Communication Cordsets

| Type  | Length         | Model       |
|---|----------------|-------------|
| RJ45 Ethernet to 8-Pin Threaded M12/Euro-Style (Cat5e Shielded) | 1.83 m (6 ft)  | STP-M12-806 |
|   | 4.57 m (15 ft) | STP-M12-815 |
|   | 9.14 m (30 ft) | STP-M12-830 |

### Sealed Ring Lights

IP67 lights that are powered and controlled by camera (work with most format lenses)

|          | Borosilicate Glass Window | Polycarbonate Window |
|----------|---------------------------|----------------------|
| Blue     | LEDBRV75BM                | LEDBRV75PM           |
| Green    | LEDGRV75BM                | LEDGRV75PM           |
| Infrared | LEDIRV75BM                | LEDIRV75PM           |
| Red      | LEDRRV75BM                | LEDRRV75PM           |
| White    | LEDWRV75BM                | LEDWRV75PM           |

### Sealed Lens Covers

Painted aluminum covers for IP67 rating (work with most format lenses)

|       | Borosilicate Glass Window | Polycarbonate Window |
|-------|---------------------------|----------------------|
| 60 mm | VELC60-BG                 | VELC60-PC            |
| 85 mm | VELC85-BG                 | VELC85-PC            |

### Brackets

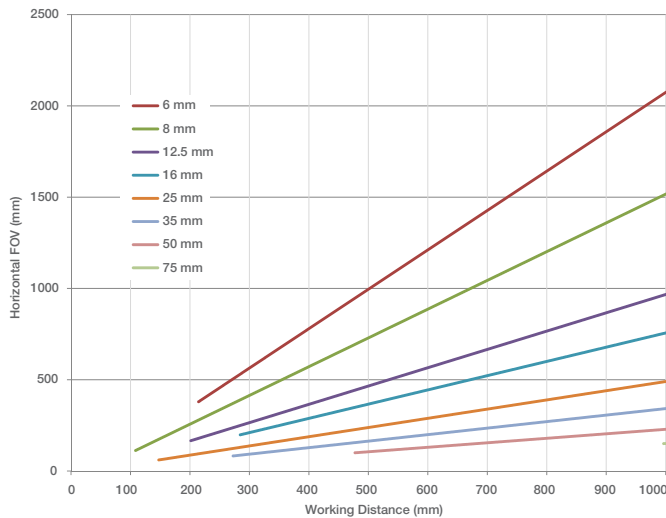


**SMBVERA**  
Right-angle bracket



**SMBVEMP**  
Mounting plate with M8x1.25, 10-32, and 1/2-20 adapter holes

5 MP, 2592 x 2048 Pixels



### 1" Format C-Mount Lenses for use with 5 MP cameras

| Focal Length | Model     | Focal Length | Model     |
|--------------|-----------|--------------|-----------|
| 6 mm         | LCF06LK1F | 25 mm        | LCF25LK1F |
| 8 mm         | LCF08LK1F | 35 mm        | LCF35LK1F |
| 12 mm        | LCF12LK1F | 50 mm        | LCF50LK1F |
| 16 mm        | LCF16LK1F | 75 mm        | LCF75LK1F |



## VE Series



|                                |  |
|--------------------------------|--|
| <b>Power</b>                   | 12 to 30 V dc  |
| <b>Discrete I/O</b>            | 1 Trigger IN<br>5 programmable I/O   |
| <b>Output Configuration</b>    | Optically isolated   |
| <b>Lens</b>                    | C-mount  |
| <b>Communication</b>           | 10/100/1000 Mbps Ethernet  |
| <b>Communication Protocols</b> | Ethernet/IP, Modbus/TCP, PCCC, PROFINET, TCP/IP, FTP, and RS-232   |
| <b>Acquisition</b>             | 256 grayscale levels<br>Frames per Second: 50 fps, max. depending on inspection settings<br>Image Size: 752 x 480 pixels<br>1280 x 1024 pixels<br>1600 x 1200 pixels<br>2592 x 2048 pixels |

|                             |  |
|-----------------------------|--|
| <b>Construction</b>         | Housing: Aluminum<br>Display Label: Polyester  |
| <b>Connections</b>          | Communications: M12, 8-pin Euro-style male<br>Light Connector: M8, 3-pin Pico-style female<br>Power, Discrete I/O: M12, 12-pin Euro-style female |
| <b>Environmental Rating</b> | IEC IP67 with optional lens cover  |
| <b>Software Tools</b>       | Average Gray, Bead, Blemish, Blob, Line Detect, Circle Detect, Edge, Locate, Logic, Match, Math, Measure, Object                                 |
| <b>Certifications</b>       |  |

## Vision Lighting

Lighting is the key to creating all-important contrast between the feature of interest and its background. Contact Banner for more information about our wide Vision Lighting product offering.



## Status Indicators

Monitor system status by integrating a wide selection of indicator lights into camera outputs.



## Trigger Sensors

Large selection of sensors are available to use as trigger inputs to the camera.



194166 rev. C

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This product includes software developed by the University of California, Berkeley and its contributors

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