Vision
ENGINEERING

User guide
VE Cam

NAVIGATION INSTRUCTIONS

The symbols in the left-hand margin of each page of the manual will enable you to carry out the following functions:

The buttons in text below do not function. They are for illustrative purposes only.

Contents   Click on this button to display the Contents page.

Back one page.

Forward one page.

Back button.

Forward button.

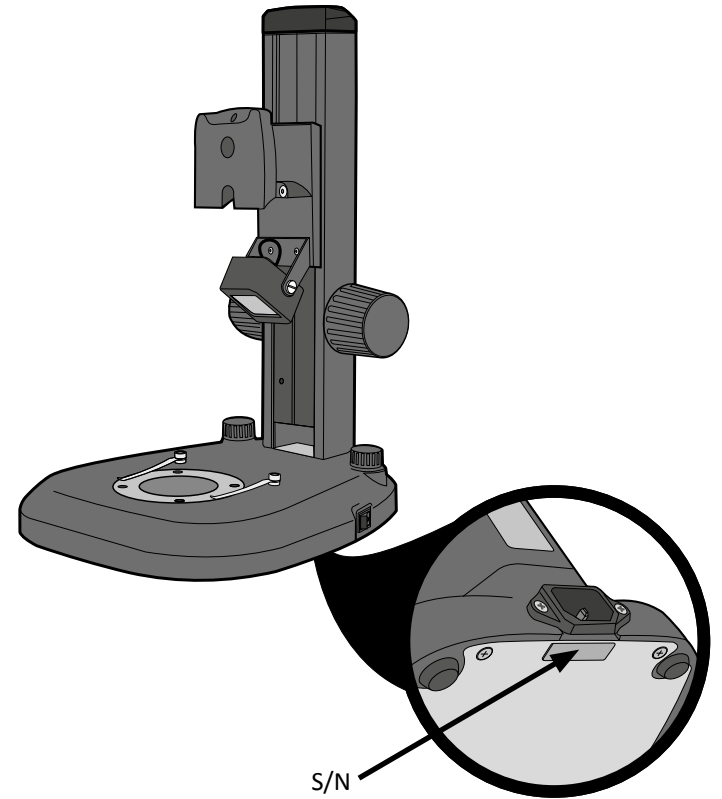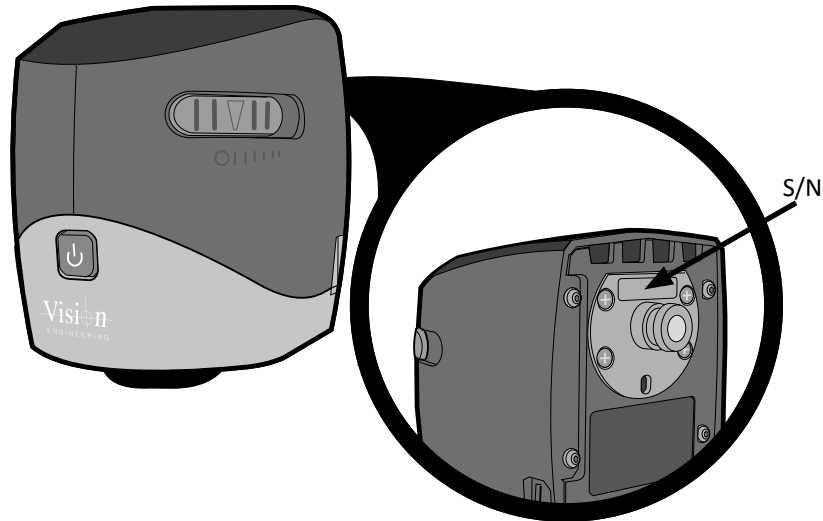Click this button to print some or all of the document (specific pages can be chosen).

Exit   Click this button to exit the user guide.

Press the Esc key to display normal Acrobat© Controls.

Unit serial number

Unit type	Serial number
VE Cam	
Stand	

S/N

S/N

Copyright

Disclaimer

General

Safety

Before using your system for the first time, please read the Health & safety section of the user guide.

Ensure that:

Your system and accessories are operated, maintained and repaired by authorised and trained personnel only.

All operators have read, understood and observe the user manual, in particular the safety regulations.

Servicing

Repairs may only be carried out by Vision Engineering-trained service personnel. Only original Vision Engineering spare parts may be used.

Symbols used

⚠ Warning!

A potential risk of danger exists. Failure to comply can cause i) a hazard to personnel; ii) instrument malfunction and damage. Please consult the operating instructions provided with the product.

❗ Important information

This symbol indicates important information. Please carefully follow the instructions or guidelines.

Health & safety

❗ **Unauthorised alterations to the instrument or non-compliant use shall invalidate all rights to any warranty claims.**

Electrical safety

Disconnect your system from the electrical source before undertaking any maintenance.

Avoid using any form of liquid near the system.

Do not operate your system with wet hands.

Only use with the power supply unit provided, in case of a lost or damaged power supply, the correct replacement must be obtained from Vision Engineering.

Illumination safety

Do not look directly at the illuminated LED's. This may cause damage to the eyesight.

Environmental considerations

Avoid large temperature fluctuations, direct sunlight and vibrations.

Ensure electrical components are at least 10cm from walls and combustible materials.

Position the system on a firm, rigid and level table.

The equipment should be positioned so that access to the electrical input connector is always available.

Avoid positioning your system where bright reflections may affect the image.

Operator wellbeing

The advanced ergonomic design and construction of Vision Engineering products are intended to deliver superior ergonomic performance, reducing the exertion of the user to a minimum. Depending on the duration of uninterrupted work, appropriate measures should be taken to sustain optimal operator performance. This could include: Optimal arrangement of workplace; Variation in task activity; Training of personnel on workplace ergonomics and general health and safety principles.

It is important to set-up and optimise your working environment correctly in order to obtain maximum benefit from the advanced ergonomic design of your system. For more information visit: www.visioneng.com/ergonomics

Cleaning

Disconnect your system from the electrical source before cleaning.

Do not use any unsuitable cleaning agents, chemicals or techniques for cleaning.

Never use chemicals to clean coloured surfaces or accessories with rubberised parts.

Use a specialist lens cloth to clean optical surfaces.

Compliance statements

Vision Engineering and its products conforms to the requirements of the EC Directives on Waste Electrical and Electronic Equipment (WEEE) and Restriction of Hazardous Substances (RoHS).

This product conforms to the UKCA and CE marks, demonstrating that it meets the requirements of the applicable directives.

CONTENTS

Introduction

Congratulations on your selection of a VE Cam from Vision Engineering. Vision Engineering Ltd. prides itself in designing and manufacturing products that make a real difference to your work.

VE Cam 50 and 80 are the next additions to a line of ground breaking products. They offer a wide field of view, small footprint, and ease-of use (with a number of user set presets) to maximise your productivity.
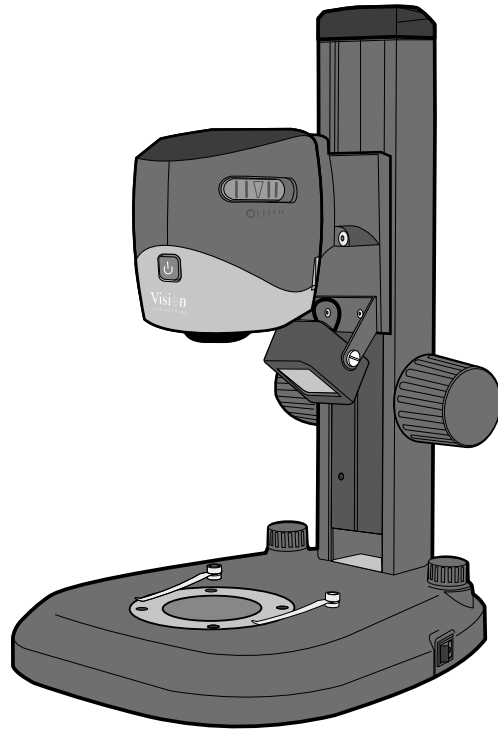
Unpacking the VE Cam

❶ VE Cam

❷ Mouse (not shown)
Power supply (not shown)
HDMI cable (not shown)
USB stick (not shown)
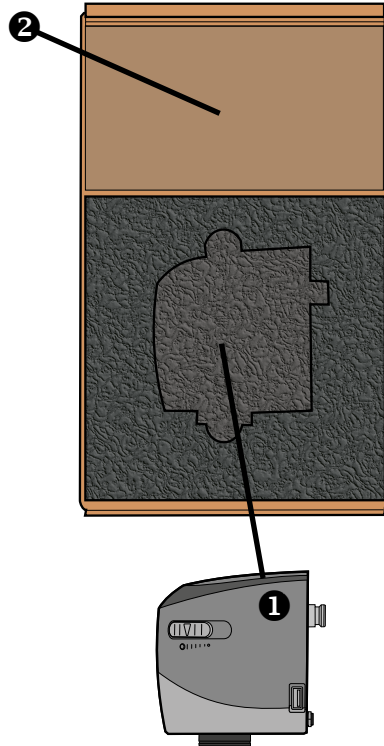
Unpacking the stand

❶ Bench stand

❷ Allen key

❸ SX Microscope bracket
(not used)

❹ Power cable

❺ Round inserts For substage
(not shown)

UNPACKING
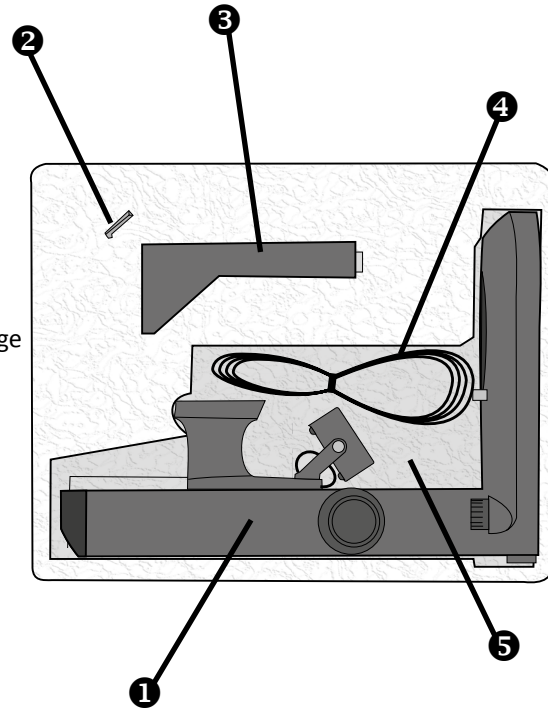
Attaching VE Cam to the stand

▸ Insert the location spigot ❶ on the rear of the VE Cam into the receptor ❷ on the stand.

▸ Ensure that the spigot is fully inserted, with the VE Cam objective lens pointing down, tighten the grub screw ❸ until the head is secure.

▸ Alignment can then be adjusted when the VE Cam is operational by slightly loosening the grub screw and tightening it back up when in the desired position.
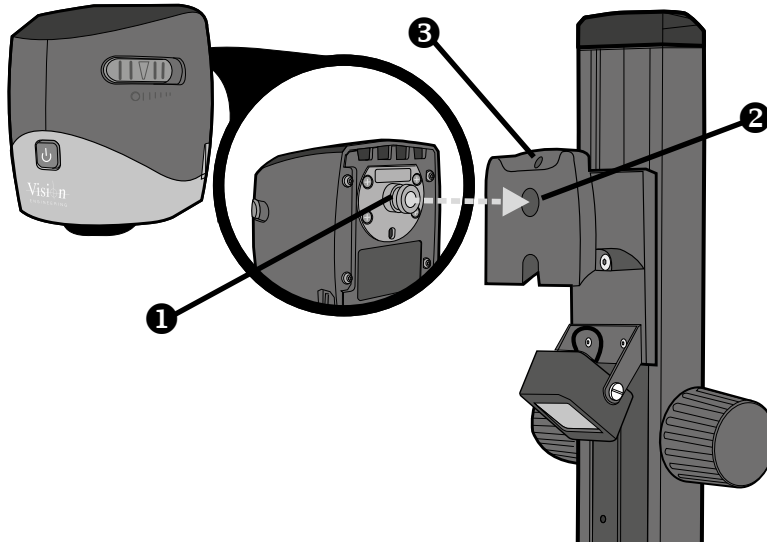
❗ The front vertical seam of the VE Cam should run parallel with the column of the stand when straight. However the camera can be mounted at an angle if required.

Connections

▸ Connect the power lead supplied to socket ❶.

▸ Connect either a touch screen or monitor to the HDMI socket ❷.

▸ Use the rear USB ports ❸ to connect a mouse, optional keyboard, or touch screen control cable.

▸ Use the 2 USB connectors ❹ (one each side) for any additional lighting options or USB stick during operation.

❗ A USB hub can be used with the system should more USB sockets be required. The VE Cam however will only save to the first connected USB memory device.
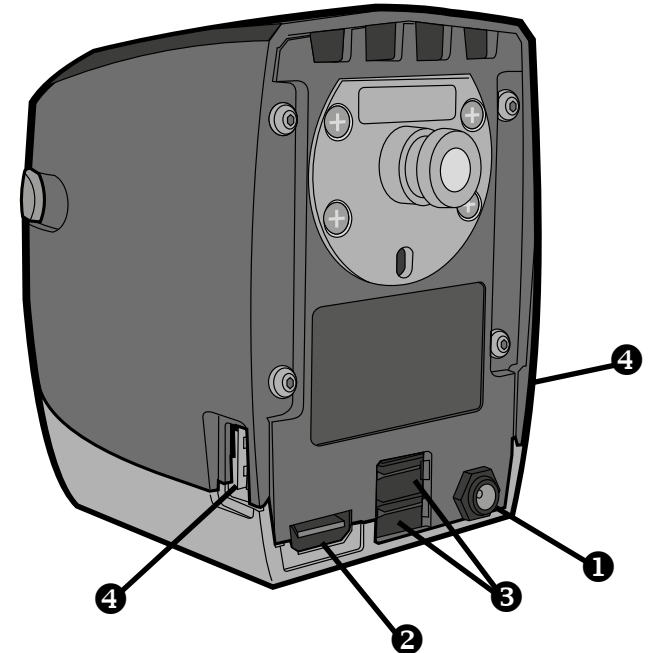
❗ When power is connected the unit will power to standby.

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Physical controls

‣ Turn the VE Cam on by pressing the On/Off button ❶ on the front of the head.

‣ Use the slider ❷ for Iris control and ❸ for focus adjustment.

‣ All other system operations are software controlled.
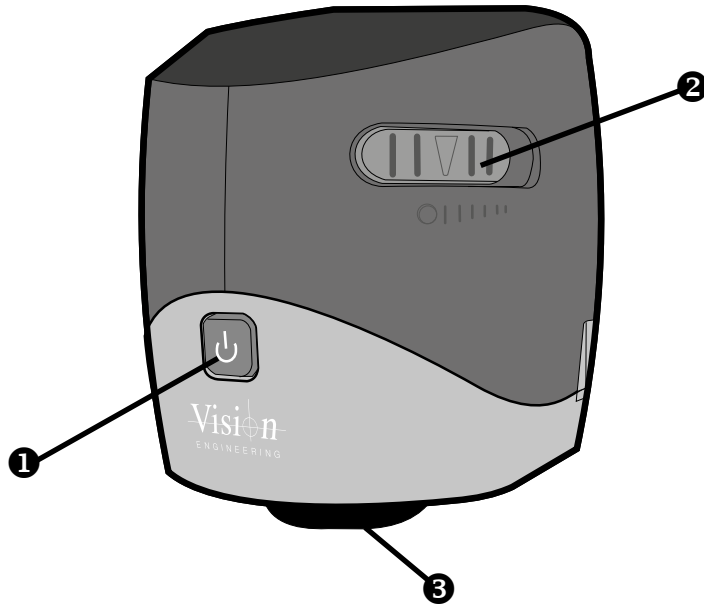
Interfaces

The VE Cam is compatible with several interface devices:

You can control the menu via mouse, keyboard, touch screen and the Vision Engineering keypad.

For information on image manipulation controls please see relevant section.

Software controls

‣ When the VE Cam is turned on, a splash screen will be displayed while the unit boots up. A screen as below will then be displayed.

‣ The icons ❶ to the right of the screen can be turned off (see *Sliders* on *page 14*).

‣ The menu information bar ❷ displays the current magnification and exposure settings.

Menu information bar

‣ Click Menu on the menu information bar (shown below) to access the software functions (see Software functions on *page 12*).

OPERATION
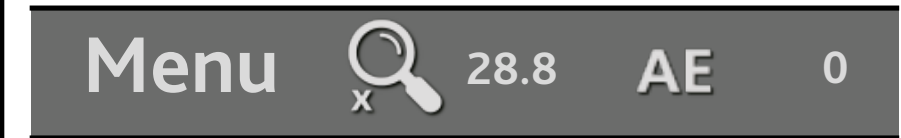
Image manipulation

The live image can be manipulated in several ways:

Mouse

Use the scroll wheel to zoom a live image and once zoomed use the left mouse button to pan. Two finger pinch zoom is also supported on mouse pads (if they offer this feature).

Touch Screen

Two finger pinch zoom is supported via a touch screen. Once zoomed, the live image can be panned by sliding a finger on the screen.

Vision Keypad

Zoom functionality of the Vision Engineering Keypad is supported.

USB Keyboard

The following keys produce the following:

Key	Action
'+' + 'CTRL'	Zoom image in
'-' + 'CTRL'	Zoom image out
'1'	Zoom image to 1x (fully zoomed out)
'2'	Zoom image to 1.33x zoom
'3'	Zoom image to 2x zoom
'4'	Zoom image to 4x zoom
'5'	Zoom image to 5x zoom
'Left'	Pan image left
'Right'	Pan image right
'Up'	Pan image up
'Down'	Pan image down

Software functions

▶ When Menu is selected from the menu information bar, the main menu will be displayed (see below).
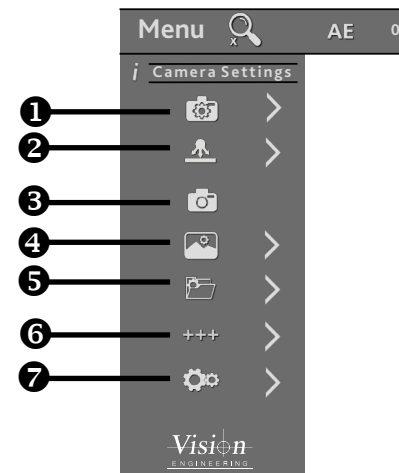
▶ The following functions can be selected from the main menu:

❶ Camera settings (see *page 13*)

❷ Lighting control (see *page 13*)

❸ Record a screen image (see *page 13*)

❹ Images settings (see *page 13*)

❺ Presets (see *page 14*)

❻ Crosshairs (see *page 14*)

❼ Device settings (see *page 14*)

! In order to indicate when a function has been selected, the arrow to its right will change from ❯ to ❯ .

Camera settings ⚙

▶ Click on the icon shown above to display the options.

▶ When any function below has been selected and viewed or altered, return to the main menu by clicking an icon (to open that menu) or navigate using the back arrow. To close the menu, click on **Menu** in the menu information bar.

Exposure AE/ME

▶ Click on the icon shown above to select either manual or automatic exposure.

▶ If manual exposure is selected, the gain ▦ and exposure time ⏱ icons will be displayed with their adjustment sliders.

▶ Click on the appropriate slider and adjust it to the required value.

One button White Balance WB

▶ Place a white object under the camera and click on the icon shown above to perform a one button press white balance.

Focus assist on/off

This function gives an on screen indication indicator to help manually focus the subject.

▶ Click on the icon shown above to display two window sizes.

▶ Click on the window size required. The focus assist will analyse the focus within the window. The relative focus level is indicated in the focus assist bar.

▶ Click on the focus slider and use it to alter the focus value. A maximum value will be reached when the object is in focus. If the object starts to go out of focus then the value decreases.

Magnifier window on/off 🔍

▶ Click on the icon shown above so an area of the screen is magnified 2x greater than at the current magnification. This area can be selected out of two sizes.

Lighting control

▶ To adjust the illumination level, click on the icon shown above and the lighting slider will be displayed.

▶ Click on the slider and use it to adjust the ringlight's illumination to the required level.

Record a screen image 📷

▶ Click the icon shown above to save the image on screen to a file. File location can be set in the Image settings menu (internal memory is set by default).

🛈 **To set the preferences for a saved image, see Image settings below.**

Image settings

▶ Click on the icon shown above to display the following preferences:

Image file format

▶ Click on the icon shown above and then select either PNG or JPG as the format in which the image file will be saved.

Time stamp ⏱

▶ Click on the icon shown above so that a time stamp is displayed in the corner of the image.

Graphics option

▶ Click on the icon shown above to save image with menu over the top or image with no graphics (other than time stamp if turned on).

File manager 🗁

▶ To select where an image is stored, click on the icon shown above and then click on 🗁 . The USB or internal options will then be displayed.

▶ Click on the required option.

Image playback

▶ To select an image to view on the screen. When clicked a file explorer will open and the file location can be chosen.

▶ If using a mouse, right clicking on a file will give you the option to rename the file using an on screen keyboard (or USB keyboard if attached).

▶ Saved images can also be deleted.

Presets 📁

The current settings can be saved as one of 10 preset files. These settings can then be recalled or cleared as follows:

▸ Click on the icon shown above to display the 10 presets.

▸ Select a preset and then click on one of the following icons:

    💾 to save setting to the selected preset

    💾 to save the current preset to USB

    💾 to load the preset from USB into the selected preset

Crosshairs & grids ✛

▸ To turn crosshairs and grids on or off, or alter their appearance, click on the icon shown above and proceed as follows:

▸ Click ✛ to change to the following:

    Short crosshair
    Long crosshair
    Course grid
    Fine grid
    Turned off

▸ Click ✛ to select the required crosshair colour.

Device settings ⚙

▸ Click the icon shown above to change the following system settings:

    Magnification
    Display
    Sliders
    User interface
    WIFI
    Set up

Magnification 🔍

▸ Click the icon shown above and then ⬚ to alter the screen size.

▸ Click on the slider and use it to adjust the screen size as required.

Display ▦

▸ Click the icon shown above to show the aspect ratio choices.

▸ Click 4:3 to select to show the camera in the native 4:3 format, or 16:9 to select the full screen 16:9 ratio.

❗ **16:9 fills the screen but loses a small amount of image top and bottom, decreasing the field of view vertically.**

Sliders ▤

▸ Click the icon shown above to display the dedicated controls that can be activated to appear on screen. The controls that can be activated or deactivated are as follows:

    Zoom 🔍 (slider)

    Lighting ⚖ (slider)

    Magnifier 🔍 (see *Magnifier window on/off*, *page 13*)

    Capture image 📷

    Hotkeys P1 to P6. Any preset can be assigned to any of the programmable keys. The first 3 hotkeys (P1 to P3) are also available on P1 to P3 of the Vision Engineering keypad.

When activated these controls will appear on the right hand side of the screen.
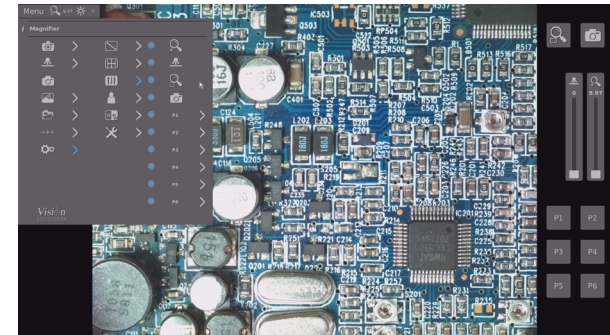
User interface 👤

▶ Click the icon shown above to select a language or the position of the information bar.

▶ To select a language, click on Language and click on the required language from the following list:

> English
>
> Deutsch (German)
>
> Français (French)
>
> Español (Spanish)
>
> Italiano (Italian)
>
> Portugues do Brasil (Brazilian/Portuguese)
>
> 中文 （Chinese)
>
> 日本語 (Japanese)
>
> Русский （Russian)
>
> 한국어 (Korean)

▶ To alter the corner position of the Information bar, click on 👤 and select the required option from the following list:

> Up left
>
> Up right
>
> Down left
>
> Down right
>
> Off

Wi-Fi 📶

▶ Click on the radial button next to the Wi-Fi icon to enable a Wi-Fi hotspot within the device.

▶ When clicking on the Wi-Fi icon 📶 two QR codes will be shown on the screen.

▶ When scanned with a QR scanner on your mobile device, the first QR code will prompt you to connect to the VE Cam's hotspot (entering the password for you). Once connected, the second QR code when scanned will prompt you to go to the local URL where the live image can be streamed.

▶ Once the portable device is showing the website, the live image playback can be activated by pressing the play button.

▶ If you do not have a QR code reader then the SSID and password details are included below the QR code. Once connected, open a Internet browser and navigate to 192.168.0.1.

🛈 **The Wi-Fi Password can be changed to an alphanumeric string containing 8 or more characters.**

Set up ⚙

Click on the icon shown above to make the following system changes:

Time 🕐

Date 📅

Factory reset ⚙

Import Settings - imports a settings file from a USB memory stick

Export Settings - Exports the current settings of the VE Cam to a file on a memory stick so that they can be ported to another VE Cam or recalled at a later time.

Upgrade – Vision Engineering may provide a software upgrade for the VE Cam to enhance the performance of the product. To do this place the upgrade folder (supplied by Vision Engineering) onto a memory device and insert the memory device into one of the USB ports on the VE Cam. When upgrade is selected from the menu the VE Cam will look for the upgrade file and will prompt with an on screen message to start the upgrade.

Technical data

Optical data

Function	VE Cam50	VE Cam80
Filed Of View		
Minimum Magnification		
Horizontal FOV	40mm	64mm
Vertical FOV	30mm	48mm
Diagonal FOV	50mm	80mm
Magnification using 24" screen	9.97	6.23
Maximum magnification		
Horizontal FOV	8mm	12.8mm
Vertical FOV	6mm	9.6mm
Diagonal FOV	10mm	16mm
Magnification using 24" screen	49.9	31.15
Zoom ratio		
Digital zoom ratio	5:1	5:1
Lens focus travel	30mm	25mm
Working distance		
(Distance from front of lens to subject in focus)	163mm	148mm

Function	VE Cam50	VE Cam80
Maximum subject height when mounted to a stand		
S240 - Bench Stand with Illumination	75mm	90mm
S206 - Boom Stand	87mm	102mm
S241 - Double Arm Boom Stand	230mm	245mm
S242 - Double Arm Boom Stand with Base	375mm	390mm
S207 - Articulated Arm Stand	505mm	520mm
Camera information		
Camera resolution	8Mp	8Mp
Capture resolution	3280 x 2464	3280 x 2464
Display resolution	1920 x 1080	1920 x 1080
Optical resolution		
(Line pairs per mm)	22.63	16
Frame rate		
Maximum	15 fps	15fps
Monitor mount options	Accessory available	
Mouse interface	USB	USB
Keyboard interface	USB	USB
Touch screen compatible	Yes	Yes
Image capture formats	jpg/png	jpg/png
Saved image sizes (MB)	1-3 Mb	1-3 Mb
USB stick compatibility	FAT32	FAT32
Time stamp	DD/MM/YY HH:MM	DD/MM/YY HH:MM

Function	VE Cam50	VE Cam80
Menu languages	English	
	German	
	French	
	Spanish	
	Italian	
	Brazilian/Portuguese	
	Chinese	
	Japanese	
	Russian	

Keyboard Short Cuts

F1=P1
F2 = P2
F3 = P3
F4 = up arrow
F5 = down arrow
F6 = Light +
F7 = Light -
F8 = Zoom +
F9 = Zoom -
F10 = Save image
F11 = left arrow
F12 = right arrow
`+' + `CTRL' = Zoom image in
`-' + `CTRL' = Zoom image out
`0' + `CTRL' = Zoom image to 1x (fully zoomed out)
`1' = Zoom image to 1x (fully zoomed out)
`2' = Zoom image to 1.33x zoom
`3' = Zoom image to 2x zoom
`4' = Zoom image to 4x zoom
`5' = Zoom image to 5x zoom
`Left' = Pan image left
`Right' = Pan image right
`Up' = Pan image up
`Down' = Pan image down

System weight

VE Cam System	Weight
Head weight	VE Cam50 = 520g VE Cam80 = 504g
Stand weight (S240)	3.72kg
Total system	VE Cam50 =4.24kg VE Cam80 = 4.22kg

🛈 **All weights are net.**

System power

Input	Output
100-240V AC 50/60Hz	10W

🛈 **Only use with the supplied power supply.**

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TECHNICAL DATA

Troubleshooting

No video
Check HDMI connections.

Power button should be illuminated green

No Wi-Fi
Check that Wi-Fi is enabled in the menu

Scan local Wi-Fi signals. Your VE Cam should be listed.

No Power
Check that jack plug is fully home in the socket.

Check that power button is red when power is applied.

Unit can not be controlled.
Check that controller is connected into a USB socket on the VE Cam

Image looks blurred
Adjust focus using the fine adjustment of turning the objective lens

The lens could be dirty. The lens can be cleaned gently with a soft, dry cloth. A damp or course cloth can damage the coating and polished surface on the lens.

⚠️ **Never look directly at the LED light source for any prolonged period of time.**

Use only the supplied power supply and inspect the cabling regularly for damage.

🛈 **VE Cam contains a small battery to enable time and date settings to be retained while the unit is powered off. Should the battery need replacing please contact your Vision Engineering representative who will be able to advise you.**

Service record

Service	Comments	Date of service	Date of next service	Company	Signature

All product specifications and data are subject to change without notice

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SERVICE RECORD
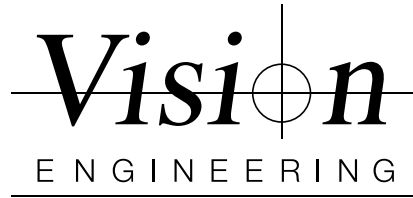
WARRANTY

This product is warranted to be free from defects in material and workmanship for a period of one year from the date of invoice to the original purchaser.

If during the warranty period the product is found to be defective, it will be repaired or replaced at facilities of Vision Engineering or elsewhere, all at the option of Vision Engineering. However, Vision Engineering reserves the right to refund the purchase price if it is unable to provide replacement, and repair is not commercially practicable or cannot be timely made. Parts not of Vision Engineering manufacture carry only the warranty of their manufacturer. Expendable components such as fuses carry no warranty.

This warranty does not cover damage in transit, damage caused by misuse, neglect, or carelessness, or damage resulting from either improper servicing or modification by other than Vision Engineering approved service personnel. Further, this warranty does not cover any routine maintenance work on the product described in the user guide or any minor maintenance work which is reasonably expected to be performed by the purchaser.

No responsibility is assumed for unsatisfactory operating performance due to environmental conditions such as humidity, dust, corrosive chemicals, deposition of oil or other foreign matter, spillage, or other conditions beyond the control of Vision Engineering.

Except as stated herein, Vision Engineering makes no other warranties, express or implied by law, whether for resale, fitness for a particular purpose or otherwise. Further, Vision Engineering shall not under any circumstances be liable for incidental, consequential or other damages.

Vision Engineering is a global manufacturer of ergonomic stereo microscopes, digital inspection systems and optical and video measuring systems.
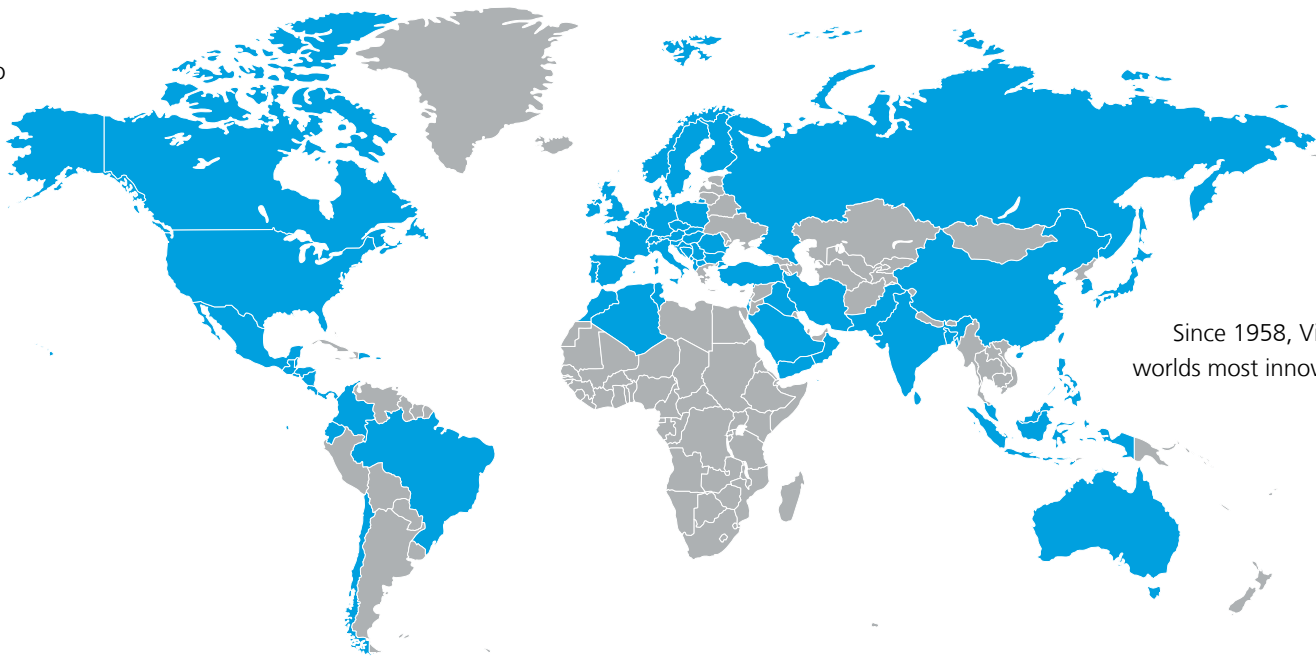
Since 1958, Vision Engineering has become one of the worlds most innovative and dynamic microscope suppliers.

For more information...

For more information, please contact your Vision Engineering branch, local authorised distributor, or visit our website.

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C E

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