

Professional Visualizer

VZ-C12² / VZ-C32
VZ-27plus² / VZ-57plus

WOLFVISION[®] ENGLISH
Visualizer



Professional & Ceiling Visualizers

Professional Visualizer or Ceiling Visualizer ?

This brochure includes WolfVision's Professional and Ceiling Visualizer series because the two series have a lot in common. WolfVision's **Ceiling Visualizers** are actually "**variations**" of the **Professional Visualizer** series. **The same high end electronics, lenses and cameras are applied.**

Basic differences between the two series are:



VZ-27plus²
VZ-57plus

Advantages of the Professional Visualizer series:

- **Mobility** (can easily be placed somewhere else)
- **No installation required** (just "plug and play")
- **Ability to record behind the unit and show objects from the side**
- **Ability to scroll through a document** with remote control (motorized top mirror)
- **Built-in lightbox** for x-rays and slides

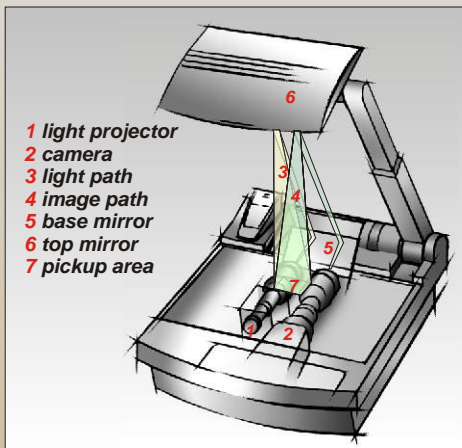


VZ-C12²
VZ-C32

Advantages of the Ceiling Visualizer series:

- **No unit on the table**
- **Objects can easier be moved** anywhere on the table
- **Visualizer can be completely hidden** in a suspended ceiling
- **No cables on the table**
- **Displayed objects can be larger and higher**
- **Fix installed unit can hardly be stolen**

The Inside of the Professional and Ceiling Visualizers



Technical description:

A **light projector (1)** inside the unit projects a **light field (7)** the same size as the pick-up area of the built-in camera via the **base mirror (5)** and the **top mirror (6)** onto the working surface. The image is recorded by the **camera (2)** using the same path.

The lenses of the **light projector (1)** and the **camera (2)** are synchronized. Thus the size of the light field on the working surface changes when the user changes the zoom range of the camera.

WolfVision's **Ceiling Visualizers** work with the same technique. The only difference is that there is only one mirror instead of two. This mirror is equipped with two motors, enabling easy basic setup of the unit.

This **patented** WolfVision scanning and illuminating system offers a number of unique advantages as described in this brochure.

Extremely High Depth of Focus (Depth of Field)

high depth of focus:



low depth of focus:



WolfVision uses **professional telezoom lenses** for the Professional and Ceiling Visualizer. This results in a **very high depth of focus.**

High depth of focus is **very important for working with larger 3-dimensional objects.** Even at high magnification, they are always sharp from top to bottom.

Due to the great depth of focus, using the manual focus keys or the **one-push autofocus** is hardly necessary, since **the focus virtually never needs adjustment.**

Easy Positioning (with Synchronized Lightfield)

A key feature of WolfVision's Professional and Ceiling Visualizer series is the **Synchronized Lightfield**. This popular feature is a special patent of WolfVision and can only be found on WolfVision's Visualizers.

A lightfield, the size of the pick-up area of the built-in camera is projected onto the working surface. The illuminated part of the working surface is always identical to the pick-up area of the camera. **When zooming in and out, the size of this lightfield changes accordingly.**

This allows very **easy positioning of objects**.

There is no need to look at a monitor. Just place the object in the illuminated portion of the working surface!

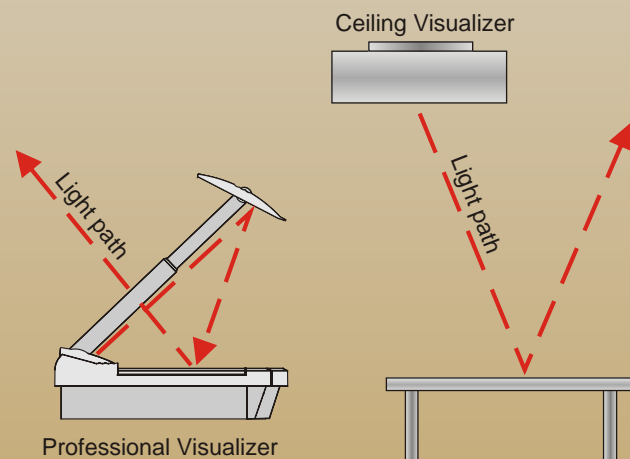


100% Reflection Free

The illustrations on the right show that with the special illumination system of WolfVision's Professional and Ceiling Visualizer series, it is impossible for the Visualizer's light to be reflected back into the camera.

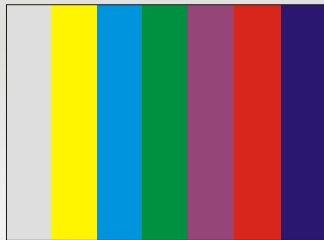
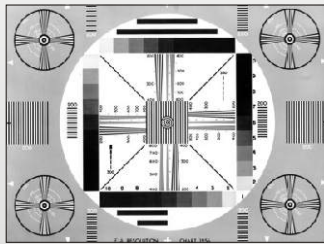
Thus the whole working surface or working plate is always 100% reflection free.

No light adjustment is necessary in order to avoid disturbing reflections on glossy material (photos, transparencies, etc.)



State of the Art Picture Quality

WolfVision's Visualizers are famous for their **outstanding picture quality**, which can only be achieved with a **perfect combination of high end electronics, CCDs and lenses**. The difference between WolfVision's 1-CCD and 3-CCD Visualizers is the built-in camera:



	VZ-57plus and VZ-C32	VZ-27plus ² and VZ-C12 ²
Camera	3-CCD Progressive Scan	1-CCD Progressive Scan
Measured horizontal resolution	1000 lines	820 lines
Resolution in Image Turn mode	1300 lines	1050 lines
Color reproduction	100% true colors (sRGB color precision)	Very good colors (sRGB color precision)
Effective Pixels	3 x 1024 x 768 (= 2,359,296)	1280 x 960 (=1,228,800)
Frames (pictures) per second	30 frames	30 frames
Pixels processed per second (=effective pixels x frames per second)	70,778,880	36,864,000
Native outputs	(real 3-CCD) XGA (1024x768)	SXGA- (1280x960) and 720p HD (High Definition - 1280x720)
Converted output modes (4:3)	UXGA (1600x1200) SXGA (1280x1024) SXGA- (1280x960) SXGA+ (1360x1024) SVGA (800x600)	UXGA (1600x1200) SXGA+ (1360x1024) SXGA (1280x1024) XGA (1024x768) SVGA (800x600)
Converted output modes (16:9 and 16:10 Widescreen)	720p HD (1280x720) 1080p HD (1920x1080) WXGA (1366x768) WSXGA+ (1680x1050)	1080p HD (1920x1080) WXGA (1366x768) WSXGA+ (1680x1050)

WolfVision 3CCD = High End ³

The picture quality of the 1-CCD Visualizers VZ-27plus² and VZ-C12² is very good, but the **3-CCD XGA camera** of the VZ-57plus and VZ-C32 tops it all. The built-in camera shows a **sharpness and color precision** which can not be achieved with a 1-CCD XGA- or SXGA camera (as a 1-CCD camera needs a part of the pixels for the color information). As a result, the higher resolution is even **visible on an XGA-projector**.



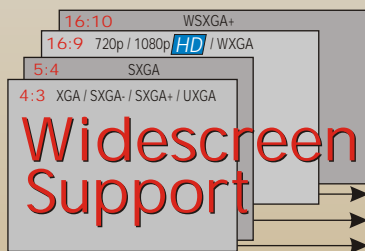
Connectors of VZ-C32

All units output the picture on **RGB** (15-pin D-Sub/VGA- and BNC-plugs) and **DVI** outputs.

The **Auto Resolution** function recognizes the connected projector or monitor and automatically selects the perfect output mode.

High End Scaler / Widescreen Support

The high end scaler can **scale the picture at the image source**. As a result the picture quality is not only perfect in native resolution, but also in all scaled signal formats.



The native signal output of the Visualizers has an aspect ratio of 4:3. The native 4:3 image can also be output in the following additional 16:9 and 16:10 widescreen formats: **720p HD (High Definition)**, **1080p HD** (both at 50 or 60 Hz), **WXGA** and **WSXGA+**.

All widescreen projectors, monitors or plasma displays on the market can display at least one of these standards.

If new standards come up in the future, WolfVision will be there with Firmware Updates!



sRGB Color Precision

WolfVision Visualizers have always been famous for their perfect colors. The outstanding color precision even meets the high requirements of the sRGB standard.

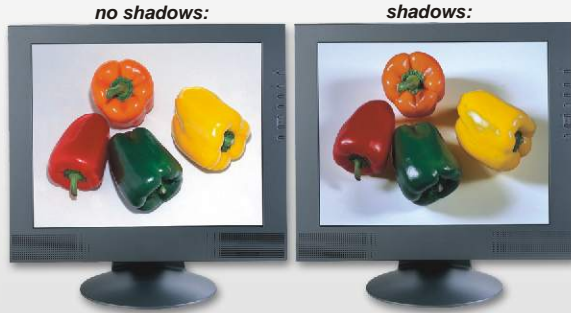
REAL TIME

30
Frames per Second

"**Motion**" used to be the weakness of Progressive Scan cameras. Until recently they could only pick up 15 or less pictures per second. A low number of pictures per second often resulted in a disturbing strobe effect on the screen, whenever something was moved in the picture or when adjusting the zoom or iris. WolfVision's Professional and Ceiling Visualizers can pick up **30 pictures (frames) per second**, which is very important for showing motion in good quality.

There is almost no difference in the smoothness of motion, when compared to PAL/NTSC video cameras. But the resolution is much higher!

Shadow Free Illumination



As the camera and the light projector are situated side by side within the Professional and Ceiling Visualizers and they follow the same path, **shadows are almost completely eliminated.**

During a presentation, it is often necessary to write something on a document on the working surface or point to a certain detail with a finger or a pencil. When doing so, there is practically no shadow covering up important details.

Illumination of Hollow Objects / No Light Adjustments



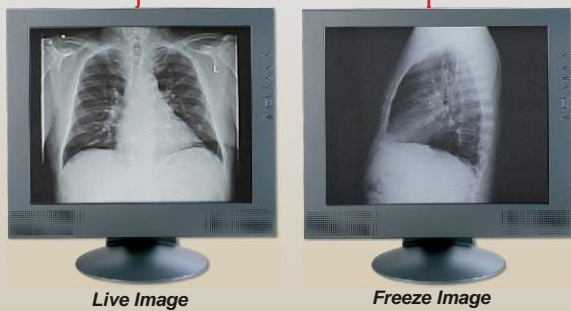
Due to the special light system of the Professional and Ceiling Visualizers, every part of the recorded picture is always perfectly illuminated.

Hollow objects or complex 3-dimensional objects are **always completely illuminated - even on the inside.**

As a result, **there is never a need for adjustment of the light!**



Live to Freeze Comparison

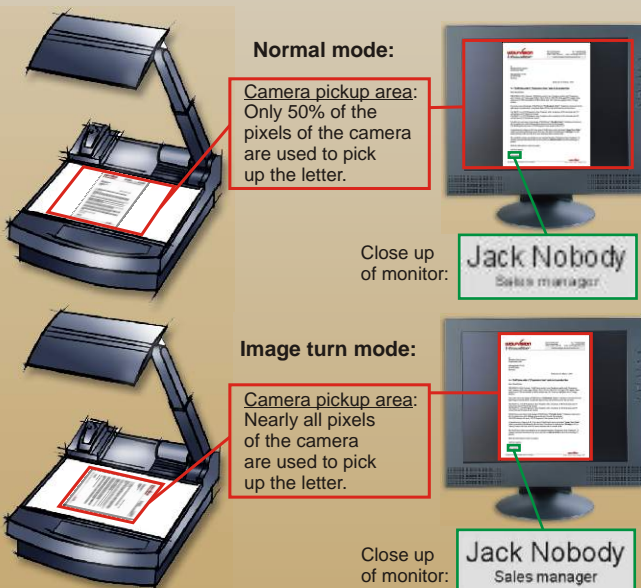


The **Preview output** of the Visualizers always outputs the live image of the Visualizer camera, while the other outputs (DVI, RGB) can be set to output a "freeze" image.

This can be used for a "Live Picture to Freeze Picture Comparison" on **two** monitors or screens with just **one** Visualizer.

While one monitor or screen displays a "freeze" image for comparison, another monitor or screen can be used for the presentation of the live image from the Visualizer.

"Image Turn" Mode for Higher Resolution



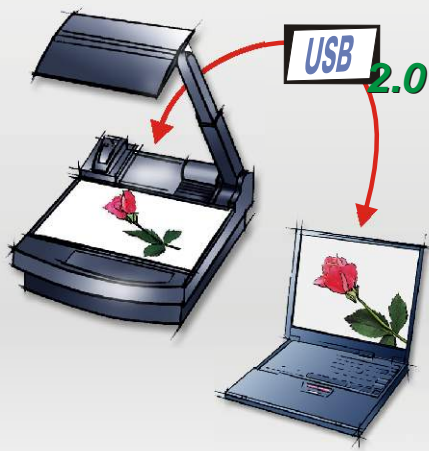
Picking up a complete vertical (portrait) letter or A4 page has always been a critical issue for a Visualizer, because the image is always picked up in a horizontal (landscape) format. As a result, only 50% of the camera pixels could be used to pick up the vertical (portrait) document.

WolfVision's "Image Turn" mode solves this problem. The user places the document on the working surface horizontally and zooms in on it completely. In doing so, approximately 90% of the camera's effective pixels are used to pick up the document. WolfVision's state of the art electronics turn the image at an angle of 90 degrees and output it in a vertical format with **40% higher resolution**. The margins left and right are blacked out.

In this mode, the resolution of a **complete** vertical (portrait) document is much better. The 1-CCD Visualizers VZ-C12² and VZ-27plus² can show **8-point** characters and the 3-CCD Visualizers VZ-C32 and VZ-57plus can even show **6-point** characters.

Another advantage of the image turn mode is that very long vertical pages (like **US legal format**) can be picked up completely.

USB 2.0 port / Twain Compatible Scanning of 3-D Objects



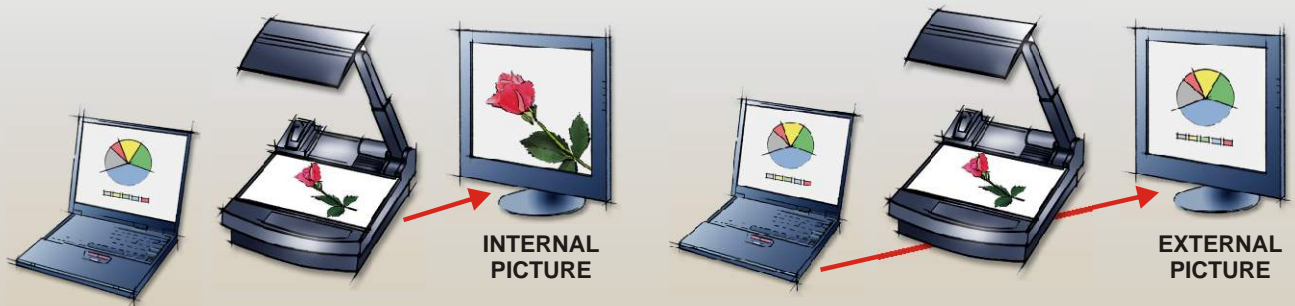
The USB output of the Visualizer can be used to transfer images from a Visualizer to a computer and save them in JPG, TIF or BMP format. This way the Visualizers can be used as a **3-D scanner** for a computer.

WolfVision Visualizers are equipped with a fast USB 2.0 port. This allows for uploading images onto a PC in a fraction of a second. Connecting slower computers with the older USB 1.1 standard is also no problem. It still takes only a small fraction of the time a desktop scanner requires to scan an image.

WolfVision's USB software works under Windows 98, ME, 2000, XP and Apple Macintosh and is fully Twain compatible. This is important when using the Visualizer in connection with popular graphic programs such as Photoshop, or for connecting them to Interactive Whiteboards (Smart Boards).

The fast USB 2.0 port can also output live motion. The WolfVision USB software can store AVI-files and includes a video capture driver. You can view and save the live image from the Visualizer on your computer in almost every modern video editing software.

Computer Input (Internal/External Switch)



A computer can be connected to the RGB input (15-pin D-Sub/VGA-plug) of the Visualizer. With the **Ext/Int switch**, a user can switch between the Visualizer image and computer image to be output by the Visualizer's **outputs**.

The advantage of using the Ext/Int switch is that **only one cable** to the display unit (projector, monitor, video conferencing system etc.) is required and **no separate remote control** has to be used for switching between the two image sources.

The Visualizer has a built-in **digital image scaler** which can process the signal from the external input and output it in the same mode as the Visualizer image (For example: If the Visualizer is set to output an XGA image to the projector and the computer outputs an SVGA signal, the scaler of the Visualizer converts the SVGA image of the computer to XGA. As a result the projector does not readjust the input mode when switching between the Visualizer and computer image) In addition the scaler also allows the image from the external input to be output on the DVI output.

Firmware Updates Via Internet



WolfVision's Visualizers are the only units on the market that offer an **upgradeable firmware**. This allows for new features and technical improvements to be added at no cost!

Downloading firmware updates from the internet and uploading them onto the Visualizer is very easy. The user can choose 3 different connections between Visualizer and computer for updating the firmware: **Serial (RS232)**, **USB** or **Ethernet (LAN)**.

WolfVision's engineers are constantly working on new improvements and features to keep your units up to date with the technology of tomorrow!

9 Picture Memory



With the Professional and Ceiling Visualizers, a user has the opportunity to **store 9 images** and recall them by pressing one of the numerical keys on the infrared remote control.

By pressing the "All" key, a **split image with all 9 pictures** of the memory can be displayed, enabling easy selection.

Perfect for Video Conferencing



WolfVision's camera electronics produce a very **strong and stable picture**, which is very important when a Visualizer is used as a document camera for videoconferencing systems. The **even lighting, smooth auto iris and perfect focus** are very important features, enabling video conferencing systems to digitize and transfer the picture from a WolfVision Visualizer much **faster** than pictures from other document cameras.

Furthermore, there is no blinding **stray light** from a WolfVision Visualizer, which could disturb the auto iris of the room camera.

Of course, these features are equally important for live image presentations with a data projector or other Visualizer applications.

The Visualizer also supplies the proper signal for modern **widescreen** videoconferencing systems.

The Ceiling Visualizers have the advantage that they are **completely invisible** at a video conference. The pick-up area can be on the table in front of the people and nothing disturbs the view between people and room camera.

External Controlling



There are 4 different possibilities to control the Visualizers from external devices, such as a remote control system for the whole room, a video conferencing system or a computer:

- Serial RS232 port
- USB port
- Infrared Remote Control
- Ethernet/LAN port



Ethernet (LAN) Port



The Visualizers are equipped with an Ethernet (LAN) port (10/100 Mbps). It is IP-addressable, so that it can be integrated into a computer network and controlled from any computer in the network. It can even be controlled over the internet, if it is assigned an official (WAN) IP-address.

The network/LAN-port has become a key feature of all high-end Visualizers from WolfVision in recent years. Many new network features have been developed and most of them can also be added to older units via Firmware Updates.

New LAN features are for example: E-Mail Notification, Status Page and Quality Optimized Image Transfer via LAN.

Other important features

- **Large optical Zoom range plus 4x Digital Zoom extension**
- **No Disturbing Stray Light** (important for projection) and **No Blinding of the Audience or the Speaker**
- **Professional Serial Input (RS232)** for External Control (including position setting and status report)
- **3 User Programmable Presets** (for zoom, focus, iris, light, camera settings etc.) Preset keys can also be used for specific functions (like black/white, negative, negative/blue, image on/off, iris etc.)
- **Intelligent Automatic Lamp Changer** (Built-in spare lamp is automatically activated if the first lamp fails. An on-screen warning message indicates if a bulb is faulty)
- **Constant Sync Signal on all Outputs** (no image distortion when switching the image on and off)
- **On-Screen Menu** for setting up the unit according to your own requirements, 3 individual settings of the on-screen menu can be stored as presets. Plus **On-Screen Help** with **Reset Function**
- **Alternative Image Display:** Text-enhancer, negative, negative-blue, black/white
- **Laser Center Marker** (VZ-57plus and VZ-27plus?) marks the center of the pick-up area when the Synchronized Lightfield is not available (e.g. when the lightbox is used). By means of a special technique this laser pointer dot is only visible on the working surface, but **NOT** on the picture the audience sees.

Special Features of the Professional Visualizer Series

Motorized Arm and Top Mirror (for Scrolling)



With the push of one button, the motorized arm of the **VZ-27plus²** and **VZ-57plus** can be raised or lowered automatically.

The top mirror is also motorized. This allows for **scrolling text** in a document or showing an object in detail by just pressing the up/down keys on the infrared remote control from anywhere in the room.



Recordings Outside of the Working Surface



With WolfVision's professional Visualizers, recording **outside the working surface** can be done very quickly and easily by just tilting the top mirror. Recording is possible at any distance from the unit.

The zoom range outside of the working surface is the same as with most professional video cameras.

This feature is important for picking up objects which are too large to be placed on the working surface or which need to be shown from the side.



Special Surface for Transparencies / Built-in Bottom Light



The working surface of all WolfVision Visualizers has a special crystalline white color.

This is perfect for true color reproduction of **transparencies** with the Visualizer's **top light**.

The Professional Visualizers **VZ-27plus²** and **VZ-57plus** are equipped with a large **built-in lightbox** for x-rays, slides and darker transparencies.

The size is the whole working surface: 380 x 280 mm / 15" x 11" (In Image Turn mode it is: 280 x 380 mm / 11" x 15").



Special Features of the Ceiling Visualizer Series



The basic idea behind the Ceiling Visualizer is to **keep the speaker's table or lectern free**, so that nothing disturbs the view between the speaker and audience and objects can easily be moved around the whole table.

In situations like this pastry cook training, it would be impossible to place everything the audience is supposed to see on a working surface of a "Desktop Visualizer". A Ceiling Visualizer is the ideal solution for such applications.

Designed like a Projector / Supplied Ceiling Mount



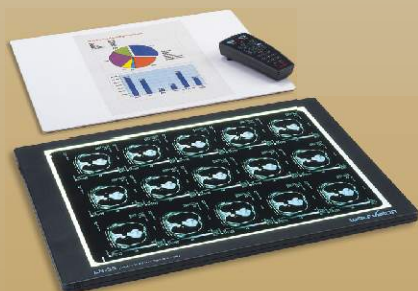
WolfVision's Ceiling Visualizers can be **mounted to the ceiling like a projector**. The design fits perfectly to modern data projectors. Furthermore, the Ceiling Visualizers can also be **integrated into a suspended ceiling**.

The Visualizers come with their own **ceiling mounts**. The height of the ceiling mount is only 40mm (1.6"). To suspend the Visualizer from the ceiling, any standard ceiling mount for projectors can be used. The **flexible fixings** will fit with almost any brand.

VZ-C12² and **VZ-C32** come in a **new housing** - small and elegant. Connectors are on the top side of the unit. Accessing the cable connectors and the lamp exchange cover is very easy, as the unit can be **opened with just one pull**.

The **automatic height adjustment mode** allows easy installation and also offers the possibility to expand the optical zoom range with a height adjustable table or ceiling mount.

X-large Lightbox can be Used



Transparencies can be picked up in perfect quality on the supplied **crystalline white working plate** of the Ceiling Visualizers.

For **x-rays and slides**, an **external lightbox** is required. A big advantage of the Ceiling Visualizer in the medical field is that it can also pick up the **largest x-rays**.

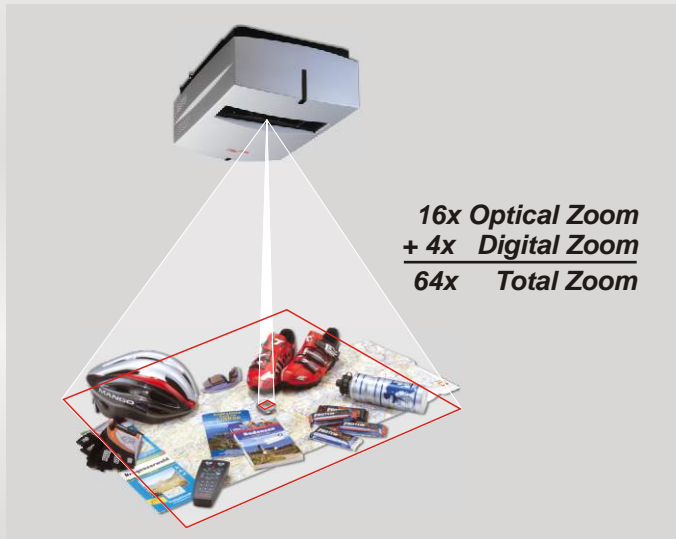
For this purpose, WolfVision offers the **very large optional Lightbox LB-38**. The size of the lit area is 430 x 359mm (16.9" x 14.1"). The unit has a very elegant appearance and is very thin (only 14mm / 0.6").

Zoom Range of Ceiling Visualizers

Extended Zoom Range

The Ceiling Visualizers VZ-C12² and VZ-C32 have a new zoom lenses with an amazing 16x optical zoom factor. In combination with the 4x digital zoom, the total zoom range of the new Ceiling Visualizers is 64x.

This allows for the installation in rooms with differing heights. The new Ceiling Visualizers can zoom in very close as well as pick up very large objects.



A difference to standard Visualizers is that the size of the smallest and largest picture the units can pick up is not fixed. Instead, it depends on how high above the table the Ceiling Visualizer is mounted. The tables below show the ratio between mounting height and pick-up sizes:

Distance in mm	Length			Width		
	Smallest picture with 4x digital zoom	Smallest picture with optical zoom	Largest picture	Smallest picture with 4x digital zoom	Smallest picture with optical zoom	Largest picture
1.100	6	22	352	7	30	470
1.200	6	24	382	8	32	509
1.400	7	28	441	9	37	589
1.600	8	32	502	11	42	669
1.800	9	35	562	12	47	749
2.000	10	39	623	13	52	831
2.200	11	43	685	14	57	913
2.400	12	47	747	16	62	996
2.600	13	50	810	17	67	1079
2.800	14	54	873	18	72	1164
3.000	14	58	937	19	77	1249
3.200	15	62	1001	21	82	1334
3.400	16	65	1066	22	87	1421
3.600	17	69	1131	23	92	1508
3.800	18	73	1197	24	98	1596
4.000	19	77	1264	26	103	1685

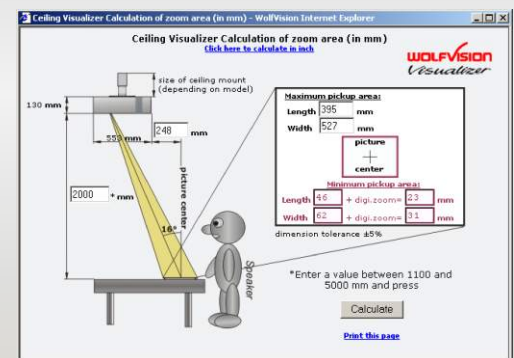
Distance in inch (feet)	Length			Width		
	Smallest picture with 4x digital zoom	Smallest picture with optical zoom	Largest picture	Smallest picture with 4x digital zoom	Smallest picture with optical zoom	Largest picture
40" (3.33')	0.2"	0.82"	12.89"	0.27"	1.09"	17.19"
50" (4.17')	0.25"	1"	15.85"	0.33"	1.34"	21.14"
60" (5.00')	0.3"	1.19"	18.84"	0.4"	1.58"	25.12"
70" (5.83')	0.34"	1.37"	21.86"	0.46"	1.83"	29.15"
80" (6.67')	0.39"	1.56"	24.92"	0.52"	2.08"	33.22"
90" (7.50')	0.44"	1.75"	28.01"	0.58"	2.33"	37.34"
100" (8.33')	0.48"	1.93"	31.13"	0.64"	2.58"	41.5"
110" (9.17')	0.53"	2.12"	34.28"	0.71"	2.83"	45.71"
120" (10.00')	0.58"	2.31"	37.47"	0.77"	3.08"	49.97"
130" (10.83')	0.63"	2.5"	40.7"	0.83"	3.34"	54.27"
140" (11.67')	0.67"	2.7"	43.96"	0.9"	3.59"	58.62"
150" (12.50')	0.72"	2.89"	47.26"	0.96"	3.85"	63.02"
160" (13.33')	0.77"	3.08"	50.6"	1.03"	4.11"	67.46"

Values in these tables are for standard 4:3 aspect ratio output modes (like XGA, SXGA etc.) For widescreen outputs please use the width values in these tables and calculate the length values with the ratio of 16:9 (for 720p, 1080p, WXGA+) or 16:10 (for SXGA+).

Please note that in very dark rooms the light of the Visualizer may not be strong enough if the unit is mounted more than 3m (10 feet) above the working surface!

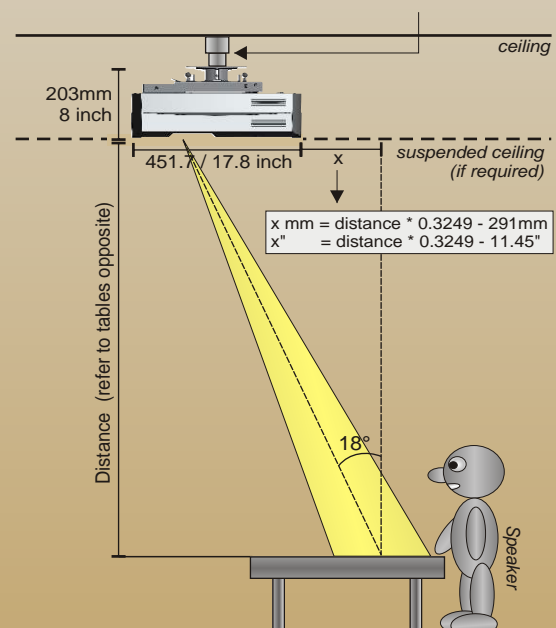
Calculation Program

A very comfortable method to calculate the exact positioning and the possible image sizes of the Ceiling Visualizer is a dedicated calculation program on WolfVision's homepage:



www.wolfvision.com/wolf/indexdistance.html

In extremely high rooms the smallest picture the unit can pick up may not be small enough. In such cases, a standard ceiling mount with pole or lift for projectors can be used to suspend the Ceiling Visualizer further from the ceiling.



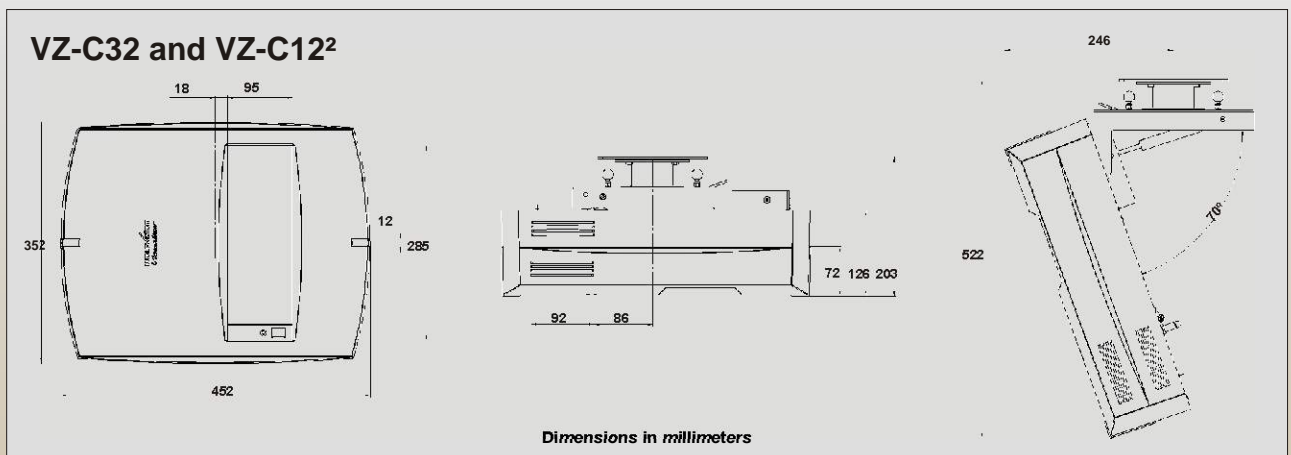
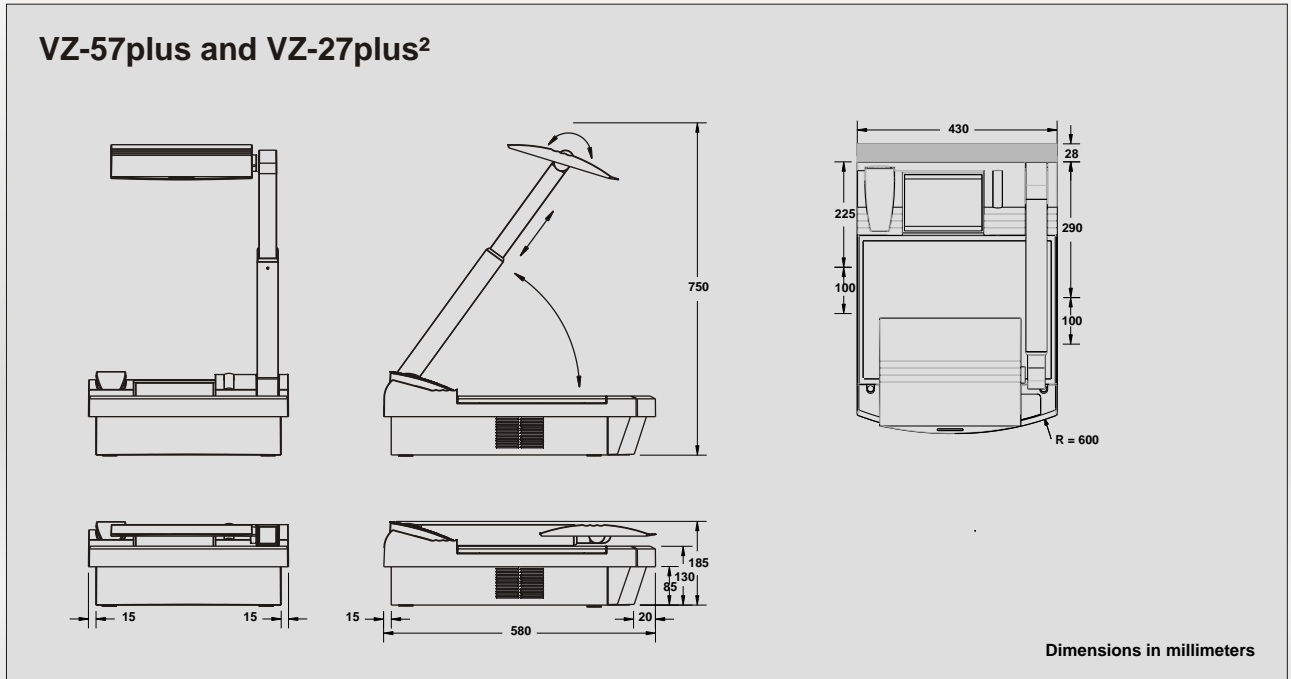
Technical data:

	VZ-C12 ² Ceiling Visualizer	VZ-C32 Ceiling Visualizer	VZ-27plus ² Professional Visualizer	VZ-57plus Professional Visualizer
Technology	Progressive Scan	Progressive Scan	Progressive Scan	Progressive Scan
Camera	1-CCD 1/3"	3-CCD 1/3"	1-CCD 1/3"	3-CCD 1/3"
Pictures per second	30 frames (=full pictures)	30 frames (=full pictures)	30 frames (=full pictures)	30 frames (=full pictures)
Effective Pixel	1280 x 960 (=1.228.800)	3 x 1024 x 768 (=2,359,296)	1280 x 960 (=1.228.800)	3 x 1024 x 768 (=2,359,296)
Total pixels of CCD(s)	1,320,000	2,550,000	1,320,000	2,550,000
Pixels processed per second	36,864,000	70,800,000	36,864,000	70,800,000
Color reproduction	very good colors (sRGB color precision)	100% lifelike colors (sRGB color precision)	very good colors (sRGB color precision)	100% lifelike colors (sRGB color precision)
Native signal output	SXGA- (1280x960) and HD (High Definition) 720p (1280x720)	3 x XGA (1024x768)	SXGA- (1280x960) and HD (High Definition) 720p (1280x720)	3 x XGA (1024x768)
Converted output signals (4:3)	UXGA (1600x1200), SXGA+ (1360x1024), SXGA (1280x1024), XGA (1024x768), SVGA (800x600)	UXGA (1600x1200), SXGA, (1280x1024), SXGA- (1280x960), SXGA+ (1360x1024), SVGA (800x600), PAL and NTSC	UXGA (1600x1200), SXGA+ (1360x1024), SXGA (1280x1024), XGA (1024x768), SVGA (800x600)	UXGA (1600x1200), SXGA, (1280x1024), SXGA- (1280x960), SXGA+ (1360x1024), SVGA (800x600), PAL and NTSC
Converted Widescreen output signals (16:9 and 16:10)	1080p HD (1920x1080) (High Definition at 50/60Hz), WXGA (1366x768), WSXGA+ (1680x1050)	720p HD (1280x720), 1080p HD (1920x1080) (both High Definition at 50/60Hz), WXGA (1366x768), WSXGA+ (1680x1050)	1080p HD (1920x1080) (High Definition at 50/60Hz), WXGA (1366x768), WSXGA+ (1680x1050)	720p HD (1280x720), 1080p HD (1920x1080) (both High Definition at 50/60Hz), WXGA (1366x768), WSXGA+ (1680x1050)
Resolution (measured)	820 lines	1000 lines	820 lines	1000 lines
Resolution in Image turn mode	1050 lines	1300 lines	1050 lines	1300 lines
Image Turn mode (for increased resolution of portrait pages)	yes	yes	yes	yes
Image Rotation	90, 180 and 270 degrees	90, 180 and 270 degrees	90, 180 and 270 degrees	90, 180 and 270 degrees
Iris and White Balance	automatic and manual	automatic and manual	automatic and manual	automatic and manual
Autofocus	one-push-autofocus	one-push-autofocus	one-push-autofocus	one-push-autofocus
Manual focus	yes	yes	yes	yes
Synchronized lightfield (for easy positioning of objects)	yes (in size of pick-up area) with 4:3 / 16:9 switching	yes (in size of pick-up area) with 4:3 / 16:9 switching	yes (in size of pick-up area of camera)	yes (in size of pick-up area of camera)
Laser center marker	-	-	yes	yes
Text Enhancer	yes	yes	yes	yes
Live to Freeze comparison (on two monitors or screens with just one Visualizer)	yes (One outputs shows a live image, another output shows a freeze image)	yes (One outputs shows a live image, another output shows a freeze image)	yes (One outputs shows a live image, another output shows a freeze image)	yes (One outputs shows a live image, another output shows a freeze image)
On screen menu, on screen help	yes	yes	yes	yes
Upgradeable firmware (through internet downloads)	yes (through serial, USB or Ethernet port)	yes (through serial, USB or Ethernet port)	yes (through serial, USB or Ethernet port)	yes (through serial, USB or Ethernet port)
Lens / Zoom	2 pcs. telezoom, 64x zoom (16x optical + 4x digital)	2 pcs. telezoom, 64x zoom (16x optical + 4x digital)	2 pcs. telezoom, 64x zoom (16x optical + 4x digital)	2 pcs. telezoom, 48x zoom (12x optical + 4x digital)
Max object height on working surface	no limit	no limit	250mm (9.7")	250mm (9.7")
Max. pick-up area on working surface	depending on installation height	depending on installation height	Length: 270mm (10.8"), Width: 360mm (14.4")	Length: 270mm (10.8"), Width: 360mm (14.4")
Min. pick-up area on working surface (with optical zoom)	depending on installation height	depending on installation height	22.5 x 17 mm (0.9" x 0.7")	30 x 22 mm (1.2" x 0.9")
Min. pick-up area on working surface (with digital zoom)	depending on installation height	depending on installation height	5.6 x 4.2mm (0.22" x 0.17")	8 x 6mm (0.3" x 0.2")
Depth of focus on small object (42 x 33 mm)	larger than 70mm (2.75")	larger than 70mm (2.75")	70mm (2.75")	70mm (2.75")
Depth of focus on large object (360 x 270 mm)	larger than 250mm (9.7")	larger than 250mm (9.7")	250mm (9.7")	250mm (9.7")
Shadow free illumination	yes	yes	yes	yes
Illumination of hollow objects	yes	yes	yes	yes
Disturbing stray light	none	none	none	none
Blinding of audience or speaker	none	none	none	none
Light source	2 pcs. standard halogen lamps (24V/150W)	2 pcs. standard halogen lamps (24V/150W)	2 pcs. standard long life halogen lamps (12V/100W)	2 pcs. standard long life halogen lamps (12V/100W)
Automatic lamp changer (with built-in spare lamp)	yes	yes	yes	yes
USB software for image capture and controlling	Twain compatible, for still images and live motion	Twain compatible, for still images and live motion	Twain compatible, for still images and live motion	Twain compatible, for still images and live motion
Reflection free area on working surface	whole working plate	whole working plate	whole working surface	whole working surface
Recordings outside of the working surface	-	-	yes (to the back of the unit)	yes (to the back of the unit)
Motorized arm	-	-	yes	yes
Motorized top mirror (for scrolling text with remote control)	-	-	yes	yes
User programmable presets	3 (plus 8 fixed) and 3 presets of on-screen menu	3 (plus 8 fixed) and 3 presets of on-screen menu	3 (plus 8 fixed) and 3 presets of on-screen menu	3 (plus 8 fixed) and 3 presets of on-screen menu
Special working surface for transparencies	yes (special working plate included)	yes (special working plate included)	yes	yes
Bottom light	optional external Lightbox WolfVision LB-38	optional external Lightbox WolfVision LB-38	built-in, size: 380 x 280mm / 15" x 11" = whole working surface	built-in, size: 380 x 280mm / 15" x 11" = whole working surface
External computer input / Input switch	yes (15-pin D-Sub/VGA plug)	yes (15-pin D-Sub/VGA plug)	yes (15-pin D-Sub/VGA plug)	yes (15-pin D-Sub/VGA plug)
Built-in digital scaler for the computer input	yes (processes the signal for RGB- and DVI- outputs)	yes (processes the signal for all RGB-, DVI- and Video outputs)	yes (processes the signal for RGB- and DVI- outputs)	yes (processes the signal for all RGB-, DVI- and Video outputs)
Image memory and "Show all"	9 pictures	9 pictures	9 pictures	9 pictures
Alternative Image display:	negative / negative-blue / black and white	negative / negative-blue / black and white	negative / negative-blue / black and white	negative / negative-blue / black and white
Y/C (=S-video) output	-	one (converted Prog.Scan)	-	one (converted Prog.Scan)
Composite output (BNC)	-	one (converted Prog.Scan)	-	one (converted Prog.Scan)
RGB output	three (2x 15-pin D-Sub/VGA-plug and 5x BNC-plugs)	three (2x 15-pin D-Sub/VGA-plug and 5x BNC-plugs)	three (2x 15-pin D-Sub/VGA-plug and 5x BNC-plugs)	three (2x 15-pin D-Sub/VGA-plug and 5x BNC-plugs)
DVI output (HDMI compatible)	DVI-I (digital and analog)	DVI-I (digital and analog)	DVI-I (digital and analog)	DVI-I (digital and analog)
USB port / standard	USB 2.0	USB 2.0	USB 2.0	USB 2.0
Ethernet/LAN port	IP-addressable, 10/100 Mbps	IP-addressable, 10/100 Mbps	IP-addressable, 10/100 Mbps	IP-addressable, 10/100 Mbps
RS232 port	9-pin D-Sub	9-pin D-Sub	9-pin D-Sub	9-pin D-Sub
Weight	12 kg (25 lbs)	12 kg (25 lbs)	17 kg (36 lbs)	17 kg (36 lbs)
Infrared remote control	yes (with laserpointer)	yes (with laserpointer)	yes (with laserpointer)	yes (with laserpointer)
Power	multi range 100-240 V	multi range 100-240 V	multi range 100-240 V	multi range 100-240 V
Warranty	3 years	3 years	3 years	3 years

All units are Made in EU (Austria)

Specifications and availability subject to change!

Dimensions



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More detailed dimension drawings can be downloaded from: www.wolfvision.com/support

Design and specifications subject to change!

Your WolfVision dealer:

More information on our Internet Homepage:
www.wolfvision.com



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