



## Frequently Asked Questions About VisionGauge® OnLine

The following frequently asked questions address the most common issues and inquiries about VisionGauge® OnLine:

**1. What is VisionGauge® OnLine?**

VisionGauge® OnLine is a powerful and easy-to-use software product for automated machine vision inspection and data collection.

**2. Is VisionGauge® OnLine another edition of VisionGauge®?**

No. VisionGauge® and VisionGauge® OnLine are two completely different products.

VisionGauge® is used for operator-assisted inspection, measurement and data collection. There is one exception to this: the Motorized Stage Configuration of VisionGauge® can carry out fully-automated measurements, but only when used in conjunction with a motorized-stage-based system.

VisionGauge® OnLine, on the other hand, is designed for automated, repetitive inspection & measurement tasks. No operator intervention is required. Furthermore, VisionGauge® OnLine can interact with other equipment (such as production equipment, handlers, etc...) using various types of I/O & trigger signals.

**3. What are some typical applications of VisionGauge® OnLine?**

VisionGauge® OnLine is capable of carrying out a broad range of automated inspection and measurement tasks, including:

- Alignment
- Pattern matching
- Measurement
- Analysis
- Defect detection
- Assembly verification
- Optical character recognition and verification
- Blob analysis
- Color verification
- Presence/absence detection
- Object counting and sizing

**4. How is VisionGauge® OnLine sold?**

VisionGauge® OnLine is generally sold as a complete machine vision system, and many standard system configurations are available. We can also put together customized systems for unusual and one-of-a-kind applications.

VisionGauge® OnLine is also available as a “board & software” bundle.

**5. What does a typical VisionGauge® OnLine system include?**

A standard VisionGauge® OnLine system includes the VisionGauge® OnLine software package (containing the software CD, a hardware security key, a demo & training CD and a user's guide), a high-resolution color camera, framegrabber, illumination, optics, PC, digital I/O board and a terminator board (for external I/O connections), as well as all required power supplies & cabling.

VisionGauge® OnLine systems are shipped complete, fully configured, tested & “ready-to-run”.

**6. What informational material is available about VisionGauge® OnLine?**

An Audio / Video demo & training CD – demonstrating VisionGauge® OnLine’s main tools and features - is available. A printed brochure and electronic datasheets are also available.

**7. Can VisionGauge® OnLine be interfaced to different types of machinery and equipment, such as production lines, etc...**

Yes, this can be done very easily. VisionGauge® OnLine has full digital I/O capability. VisionGauge® Online uses standard TTL level I/O signals (i.e. low = 0V, high = 5V) with which PLCs and other equipment can easily interface.

The I/O signals can be used to trigger the image capture when the part is under the camera, for example, or to output the PASS or FAIL result of an inspection or measurement operation. This PASS / FAIL signal can then be used by the production equipment to remove the part from the line, activate a light, stop the equipment, etc...

**8. How many I/O signals does VisionGauge® OnLine support?**

A basic VisionGauge(r) Online system has 24 I/O channels. The number of I/O channels can also be increased, in increments of 24. There is no upper limit on the number of I/O channels.

**9. What operating systems does VisionGauge® OnLine support?**

Windows 95™, 98™, NT™, 2000™ & XP™.

**10. What framegrabbers does VisionGauge® OnLine support?**

- Integral Technologies FlashBus Spectrim (for standard analog cameras)
- Integral Technologies MV (for standard analog cameras)
- Integral Technologies MX (for both standard and non-standard analog cameras)
- Integral Technologies FlashBus DX (for CameraLink digital cameras)
- Integral Technologies XPress (for standard analog cameras)

- DirectX-compliant video acquisition devices (i.e. IEEE 1394 / FireWire(tm), USB 2.0, etc...)

Support for other framegrabbers, cameras and acquisition devices is being added in an ongoing fashion.

**11. How many cameras does VisionGauge® OnLine support?**

Basic systems have a single camera, but VisionGauge® Online is multi-camera-capable. There is no limit on the number of cameras that VisionGauge® Online can support.

**12. How many inspections per second can VisionGauge® OnLine carry out?**

This depends on the specifics of the application and on the system configuration. But in most applications, VisionGauge® Online is capable of carrying out inspections at full frame rate (i.e. 30 images per second for standard video). And with appropriate hardware, much faster rates are also possible. Note that VisionGauge® Online is multi-processor-capable, so that for specially demanding applications a multi-processor computer is used to achieve very high frame rates.

**13. What is VisionGauge® OnLine's measurement accuracy?**

VisionGauge® Online has advanced edge-detection technology that is capable of producing sub-pixel accurate measurements.

In a given application, the overall measurement accuracy depends on the specifics of the application as well as the system configuration (i.e. optical magnification, etc...). In some applications, VisionGauge® Online is achieving measurement accuracy better than 1.0  $\mu\text{m}$ .

**14. Can VisionGauge® OnLine deal with parts that are presented to the camera in different positions and orientations?**

Absolutely! VisionGauge® Online has a powerful “Alignment & Registration” tool that can “square up” the part in system memory, even if it is presented to the camera off-position and skewed.

Furthermore, many tools in VisionGauge® Online are rotationally-invariant, which means that they can find the desired feature regardless of the part’s orientation.

**15. Is VisionGauge® OnLine very sensitive to variations in light intensity?**

No. Many tools in VisionGauge® Online were optimized so as to be very robust in the presence of variations in illumination. Also, VisionGauge® Online has a number of tools to correct images for uneven illumination, adjust the image brightness & contrast, remove image noise, etc...

**16. Can VisionGauge® OnLine deal with parts that are in movement?**

Absolutely! In fact, VisionGauge® Online-based systems can deal, easily & reliably, with very fast motion. Furthermore, VisionGauge® OnLine has a unique and powerful tool that can correct interlace offset error, which are motion artifacts that occur with an interlaced (i.e. standard video) camera when parts are in movement.

**17. Can VisionGauge® OnLine deal with parts that are partially hidden?**

In many cases, yes! Many tools in VisionGauge® Online were specially designed to handle partial occlusion very reliably.

**18. Can the results of VisionGauge® OnLine be collected into a database and used by other applications?**

Yes! In fact, there are many simple ways to do this. For example, VisionGauge® OnLine can save all of its results – continuously – in an ASCII data file that can be read-in by other programs. Other widely-accepted data-exchange mechanisms, such as DDE (i.e. Dynamic data Exchange) are also supported.

**19. Can VisionGauge® OnLine accommodate different types of parts and inspections?**

Absolutely! VisionGauge® OnLine has no limitations as to the type or number of parts that it can handle. Furthermore, there are no restrictions as to part geometries. So, for example, you can “teach” VisionGauge® OnLine what a part should look like based on “known good” samples.

**20. Is it easy to create a program in VisionGauge® OnLine?**

With VisionGauge® OnLine, it’s extremely easy to create a complete program to solve even the most involved application! VisionGauge® OnLine has a graphical user-interface that lets you setup a program in no time at all.

In VisionGauge® OnLine, a program is simply a series of instructions. For example:

- a) capture an image when a trigger signal is received,
- b) carry out some corrections on the image using the image processing tools (correct for uneven illumination, adjust the image brightness, etc...)
- c) carry out a pattern matching operation and output either a PASS or FAIL signal.

Creating such a program in VisionGauge® OnLine requires only a few mouse clicks and keystrokes. It is all done visually, through VisionGauge® OnLine’s intuitive graphical user-interface.

**21. What is the warranty?**

The entire system is covered by a 1-year warranty and the PC is covered by an extra 2-year on-site warranty (bringing the total warranty period on the PC to 3 years).

**22. What about support?**

Every license of VisionGauge® OnLine comes with a one-year membership to the VisionGauge® OnLine Annual Support and Update Program. This allows users to download software updates and receive unlimited support by phone, fax or email, for a full one-year period.

**23. If I have a good potential application for VisionGauge® OnLine, what should I do?**

We'd be happy to help you solve your vision application. You can send us the project requirements and either imagery or sample parts. We will then suggest a system configuration to successfully solve your application and send you sample results.

**24. What has customer feedback to VisionGauge® OnLine been like?**

Very positive! Users very much like VisionGauge® OnLine's ease-of-use. They are finding that VisionGauge® OnLine allows them to automate their inspection and measurement processes, helps them improve the quality of their final products, allows them to reduce scrap and gives them much better control over their process.

**We are always available to answer any other questions or concerns you might have.**

**Please contact us at:**

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