



HEXAGON



VGSTUDIO MAX

System Requirements

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Introduction

VGSTUDIO MAX is a software for the analysis and visualization of voxel data. It is used in a variety of application areas, such as industrial CT, medical research, life sciences, animation, and many others.

To use VGSTUDIO MAX in the context of consulting projects in connection with Deep Segmentation, the advanced segmentation method based on modern machine-learning algorithms, recent accelerator hardware is required to efficiently perform the computations. Refer to the dedicated system requirements for Deep Segmentation and make sure to discuss them with the VG Consulting team.

Table 1-1: Product details

| Feature | Description |
|-------------------------------|---|
| Product name | VGSTUDIO MAX |
| Release | 2024.1 |
| Optional modules ^a | <ul style="list-style-type: none"> > Coordinate Measurement > Manufacturing Geometry Correction^b > Reverse Engineering > CAD Import^{c,d} > PMI Extension for CAD Import^{e,f} > Nominal/Actual Comparison^g > Wall Thickness Analysis > Porosity/Inclusion Analysis^h > Fiber Composite Material Analysis > Foam/Powder Analysis > Digital Volume Correlation > Battery Analysis > Transport Phenomena Simulation > Fixture Simulation > Structural Mechanics Simulation > Volume Meshing > CT Reconstruction (Cone Beam, Fan Beam, Parallel Beam) > IAR^{i,j} for CT Reconstruction > Special Algorithms (Helix, ART) for CT Reconstruction > CT Reconstruction (Planar) |
| Document ID | SystemRequirements-1036-v019-002-en |

^a Available at surcharge. May not be part of your installation. Contact Volume Graphics for details.

^b Requires the Coordinate Measurement and Nominal/Actual Comparison modules.

^c Requires the Coordinate Measurement module. Available for Windows operating systems only.


^d CAD translation technology supplied by Tech Soft 3D. Supported CAD formats are: CATIA V4 (up to 4.2.5), CATIA V5 (up to V5 6R2023), JT (up to 10.9), Unigraphics/NX (Unigraphics 11.0 to NX 2306), Creo (up to 10.0), SolidWorks (97 to 2023). In beta status: Solid Edge (V19 to 2023).

^e Requires the Coordinate Measurement and CAD Import modules. Available for Windows operating systems only.

^f CAD translation technology supplied by Tech Soft 3D. PMI import is supported for CATIA V5 (*.catpart, *.catproduct) and Creo (*.prt, *.prt.*, *.asm, *.asm.*). In beta status also for SolidWorks (*.sldprt, *.sldasm) and Unigraphics/NX (*.prt).

^g Requires the Coordinate Measurement module.

^h Supports BDG P 203, BDG/VDG P 202/VW 50093, and VDG P 201/VW 50097.

ⁱ Technology licensed from Fraunhofer EZRT 

j Available for Windows operating systems only.

System Requirements

Operating System

The software supports the following operating systems:

Table 2-1: Supported operating systems

| Platform | Operating System |
|----------------------|--|
| Windows: | Windows 10 Enterprise 64 bit Windows 10 Professional 64 bit Windows 11 Enterprise 64 bit Windows 11 Professional 64 bit |
| Linux ^a : | Ubuntu 20.04 LTS 64 bit |

^a The following add-on modules or functions are not available under Linux: "CAD Import," "PMI Extension for CAD Import," "IAR for CT Reconstruction," performing an OCR analysis, reporting via Excel, exporting AVI/ASF movies, and importing newer versions of the NSI format (*.nsihdr).

Processor

- > Minimum:
x86-64 CPU with instruction set SSE 4.1.



ARM processors are not supported.

- > Recommended:
Performant Intel or AMD multi-core processors, e.g., Intel® Core™ i7 or i9 or Xeon® Gold processors with 3 GHz or higher.

RAM

- > Minimum:
VGSTUDIO MAX requires a minimum of 4 GB free memory. However, the actual free main memory needed for creating or loading a complete project will usually be significantly higher, since it depends on the size of the data set and on the analyses to be performed. For the calculation of the required RAM, the size of the data set when it is loaded into the RAM is relevant. If the data is saved in compressed files (e.g., in JPEG 2000 format (.jp2)), the size of the data set on the hard disk may be significantly smaller than the size of the data set when it is loaded into the RAM.
 - > For visualization, the free main memory should be twice the size of the data set. If a project contains more than one data set, double the sum of the data set sizes.
 - > Performing analyses, segmentation, surface determination, and other operations requires additional memory.
 - > Performing advanced analyses, such as transport phenomena or structural mechanics simulations, requires a minimum of 20 GB free memory.

- > Please make use of our evaluation license of the software to test with your typical data sets and analyses. Contact our support team during the evaluation phase in case any questions arise.
- > Recommended for professional use:
 - > 16-bit data set with 1024 slice images. Slice image with 1024 x 1024 pixels. $1024^3 = 2$ GB of data
=> Visualization only: minimum 4 GB free memory
=> Data analysis: 8–16 GB free memory
 - > 16-bit data set with 2048 slice images. Slice image with 2048 x 2048 pixels. $2048^3 = 16$ GB of data
=> Visualization only: minimum 32 GB free memory
=> Data analysis: 64–96 GB free memory
 - > For performing advanced analyses, such as transport phenomena or structural mechanics simulations, a free memory of 50 GB or more is recommended.
 - > Typical for industrial use with data set sizes as in the examples above (2 to 16 GB) is a PC with at least 64 (for one data set) to 512 GB RAM (for multiple data sets). Higher RAM clock speeds are recommended.

Graphics Card

- > Minimum:
A dedicated NVIDIA or AMD graphics card with at least 2 GB VRAM, OpenGL 3.3 support, and—for Windows operating systems—the latest WHQL driver.
- > Recommended:
A dedicated NVIDIA or AMD graphics card with at least 8 GB VRAM, OpenGL 4.1 support, and—for Windows operating systems—the latest WHQL driver.
Some functions, such as CT reconstruction (see [chapter 3 Recommendations for CT Reconstruction on page 7](#)), may benefit from increased graphics card performance. For details, please contact your local VG Support.



Onboard graphics chips (integrated graphics processors) are not supported.



Make sure to have the latest driver version for your graphics card installed.

Display

The minimum resolution is 1400 x 1050 at 100% scale; the recommended resolution is 1920 x 1080 at 100% scale.

The actual display resolution results from the display scale multiplied by the minimum resolution. This means that for a display scale of 200%, you should use a display resolution of at least 2800 x 2100.

VGSTUDIO MAX supports 4K monitors.

Swap Space

The available swap space should have the same order of magnitude as the RAM. If available, we recommend that you place the swap partition on an SSD.



Deactivating the swap space may cause the system to crash.

Disk Space

Make sure to have sufficient free disk space in the directory for temporary files (for the path, see **File > Preferences > General > Expert**). If there is less than 1 GB available in this directory, a warning message will be issued. This message is also issued if this directory has been deleted.

User Rights

Make sure every user either has user or administrator rights. The license might not work on guest accounts.

Running Several Instances of the Software

Problems may arise when you run more than one instance of the application.

Typical problems involve the user interface, such as incomplete or misplaced interface elements or errors in the display of images. User settings like presets or workspace layout may inadvertently be overwritten. Processor capacity, graphics card memory, and main memory will be shared between instances of the application and may prove insufficient. This may result in dramatically low system performance or even application crashes, especially if parts of the information need to be swapped to disk due to high memory consumption.

Virtual Machines

Virtual machines are not supported. VGSTUDIO MAX has to be executed on a physical computer.

Upload to Metrology Reporting Function

The optional **Upload to Metrology Reporting** function requires an Internet connection and a user account for the Nexus platform. For more information, log in to the Nexus portal¹ and navigate to the Metrology Reporting product page.

¹ <https://nexus.hexagon.com/>

Third Party Software

> Reporting via Excel

The optional reporting functions using an Excel add-in support the following Microsoft® Excel versions:

- > Microsoft® Excel 15 (part of Microsoft® Office 2013), 32 bit
- > Microsoft® Excel 16 (part of Microsoft® Office 2016, Microsoft® Office 2019, Microsoft® Office 365, and Microsoft® Office 2021), 32 bit



64-bit versions of Microsoft® Excel are not supported.



Using the Excel add-in for reporting is currently only supported for Windows.

> Floating licenses

Floating licenses need to be installed using the FlexNet Licensing Server. During installation of the FlexNet Licensing Server, Java Runtime Environment 17 or later (64-bit version) or OpenJDK 21.0.2 (64-bit version) is required, which is not part of the license or installation package.



The installation of the FlexNet Licensing Server requires a 64-bit version of Java Runtime Environment or OpenJDK.

Recommendations for CT Reconstruction

In addition to the above-mentioned requirements, the optional **CT Reconstruction** module places some specific requirements on the system.

RAM

- > Minimum:
4 GB free memory to run the reconstruction for very small data sets.
- > Recommended:
At least 128 GB free memory.

Calculate the optimal size of memory based on the size of the volume ($x * y * z$), the size of one projection ($x * y$), and the number of projections:

size of memory = (volume size * 4) + (projection size * number of projections * 4)

The result is the optimal size of memory in bytes. To convert to MB, divide by 1,000,000.

Example:

- > volume: $2048 * 2048 * 2048$
- > size of one projection: $2048 * 2048$
- > number of projections: 3000
- > size of memory = $(2048 * 2048 * 2048 * 4) + (2048 * 2048 * 3000 * 4) = 84,691,386,368$

This equates to 84,691 MB or 84.691 GB.

Graphics Card

CT reconstruction requires increased graphics card memory. If you are using more than one graphics card, it is recommended that all graphics cards are of the same type. For details, please contact your local VG Support.

Display

If the performance of a CT reconstruction performed on the graphics card in a dual monitor setup seems to be slow, remove the second monitor and reboot the computer.

Troubleshooting

The table below lists some common problems and their solutions.

Table 4-1: Troubleshooting

| Problem | Possible cause | Possible solutions |
|--|---|--|
| Rendering problems occur, e.g., the 3D window is not (correctly) displayed, saved images are faulty. | <ul style="list-style-type: none"> > An outdated graphics card driver is installed. | Download and install the latest driver for your graphics card. |
| | <ul style="list-style-type: none"> > An onboard graphics card is installed. | Onboard graphics cards are not supported. Deactivate the onboard graphics card in the BIOS in order to use the dedicated graphics card (if available). |
| | <ul style="list-style-type: none"> > The installed graphics card is not recognized correctly. | In File > Preferences > General > Expert > Hardware renderer , check the Memory override option and manually set the correct memory of your graphics card. |
| The performance is low. | There is not enough RAM available due to other applications running at the same time. | Close all other applications when running VGSTUDIO MAX. |
| The performance is extremely low with large data sets. | The size of the data sets exceeds the installed RAM, data is swapped on hard disk. | <ul style="list-style-type: none"> > If possible, install more RAM. > Reduce the size of the data set (for example, by using suitable import settings). |
| The application crashes when working with large data sets. | The size of the data sets exceeds the installed RAM, the swap space is not activated or too small. | <ul style="list-style-type: none"> > Activate the swap space. > Enlarge the size of the swap space to about the order of magnitude of the RAM. > Install more RAM. > Reduce the size of the data set (for example, by using suitable import settings). |
| The application crashes when you save large image stacks (NVIDIA graphics card). | There is an incorrect implementation of OpenGL in the graphics card driver. | Download and install a more recent driver for your graphics card. |

| Problem | Possible cause | Possible solutions |
|---|---|---|
| On a notebook with two graphics cards: The application crashes before or while showing the splash screen. | Automatic switching between the graphics cards does not work properly. | Deactivate the onboard graphics card in the BIOS in order to use the dedicated graphics card of the notebook. |
| An installed codec is not visible in the codec selection when saving a .avi file. | > The codec is not compatible with the selected settings of the avi. | > Change the settings for the .avi file, e.g., frame size, frame rate (fps). In many codecs, the width and height of the image must be a multiple of 2. > Select a different codec. |
| | > A 32-bit version instead of a 64-bit version of the codec is installed. | > Install the 64-bit version of this codec. > Select a different codec. |
| The application crashes when you try to save an animation to a .avi file using a third-party codec package. | Most codecs are continuously being developed and are not always free of bugs. | > Select a different codec of this codec package to save the animation to a .avi file. > Use a different codec package. > Render the animation as an uncompressed .avi file or an image stack and convert it to a compressed .avi file using a third-party software (e.g., VirtualDub). |
| When double-clicking a .vgl file in the Windows Explorer, it is not opened by VGSTUDIO MAX. | .vgl files are not linked to the executable of VGSTUDIO MAX. | Re-install the software. |
| VGSTUDIO MAX does not start for a user with administrator rights. | The message "Do you really want to run the program as administrator or elevated process?" was answered with No and the Never show this dialog again checkbox was checked. | Delete the <i>settings_vgstudio-max2024.1.ini</i> file in the C:\Users\<user name>\AppData\Roaming\ Volume Graphics\ directory. |
| When you install the FlexNet license server, an error message related to Java appears. | A 32-bit version instead of a 64-bit version of Java Runtime Environment or OpenJDK is used. | Install the 64-bit version of Java Runtime Environment or OpenJDK. |
| VGSTUDIO MAX is working locally but cannot be accessed remotely. | | Contact your IT department to check your remote setup. |