g.tec

SUITE2020

BCI & NEUROTECHNOLOGY
SOFTWARE

USER MANUAL

User Manual: g.tec Suite 2020
Version: 1.22.00

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CONTENTS

1 INTRODUCTION

The g.tec Suite 2020 contains the software library to run data-acquisition and real-time processing experiments with g.USBamp, g.HIamp and g.Nautilus. It consists of the packages g.HIsys, g.Recorder, g.NEEDaccess and g.BSanalyze. Furthermore, it allows to control the g.Estim FES, g.Estim PRO and the g.Cube.

g.HIsys allows to create data-acquisition and real-time processing Simulink models. It is a rapid prototyping environment that contains pre-processing, transformation, feature extraction, classification algorithms and blocks to control all g.tec amplifiers and stimulators. The big advantage is that new experiments can be realized quickly and that it is integrated seamlessly into g.BSanalyze to perform the off-line analysis.

g.Recorder allows to acquire, visualize and store biosignal data and allows to calculate the compressed spectral array, the cerebral function monitor signal and evoked potentials. g.Recorder has a review mode and stores the data for later off-line analysis with g.BSanalyze.

g.NEEDaccess is a server service that facilitates simple and platform independent data acquisition from (multiple) devices over a network, and thereby eases the user's workload considerably.

g.NEEDaccess allows users to acquire data easily from g.tec devices without having to take care of low-level data acquisition issues. The server handles data acquisition and pre-processing, so the user receives data ready to analyze.

Since data acquisition is realized over the network, it is now possible to collect the acquired data on a different computer than the g.tec device is connected to (if both are connected to the network). Moreover, the server can provide data from a single acquisition simultaneously for multiple clients. Thus, more than one user can monitor a certain experiment at the same time.

The reference implementation of the server's network API provides a wide range of functions that ease data acquisition and support device-specific operations. The Client API is delivered as a library designed for easy integration into your own projects. It is based on the Client C API, which implements the underlying functionality. g.NEEDaccess comes with a C, .NET, MATLAB and Python API.

g.BSanalyze is an off-line biosignal processing environment that allows to read in data from g.HIsys and g.Recorder. It has functions for pre-processing, transformation, parameter extraction, data analysis and classification. The big advantage is the seamless integration with g.HIsys which allows efficiently to train BCI classifiers for P300, SSVEP and motor imagery experiments.

2 RELEASE NOTES

Release notes help to learn about new features and changes of the g.tec Suite 2020 when upgrading to a newer version.

2.1 NEW FEATURES

- None

2.2 CHANGES

- System requirements are displayed in the diagnosis dialog.

3 INTENDED USE

3.1 g.NEEDACCESS

g.NEEDaccess is intended to be used to acquire and transmit measured biosignal data from g.USBamp, g.HIamp, g.Nautilus PRO and g.Nautilus devices to an application. These biosignals may include electroencephalogram (EEG), electromyogram (EMG), electrooculogram (EOG), and electrocardiogram (ECG), for example.

3.1.1 INTENDED USE WITH g.USBAMP

Measuring, recording and analysis of electrical activity of the brain (EEG) and/or through the attachment of multiple electrodes at various locations to aid in monitoring and diagnosis as routinely found in clinical settings for the EEG.

3.1.2 INTENDED USE WITH g.HIAMP

The g.HIamp amplifier is intended to be used to acquire biopotentials and transmit them to a computer via the USB port connection. These biopotentials include the electroencephalogram (EEG), electromyogram (EMG), electrooculogram (EOG), and electrocardiogram (ECG).

3.1.3 INTENDED USE WITH g.NAUTILUS PRO

The g.Nautilus PRO is intended to be used to acquire the electroencephalogram (EEG) and transmit it wirelessly to a computer.

3.1.4 INTENDED USE WITH g.NAUTILUS

The g.Nautilus amplifier is intended to be used to acquire the electroencephalogram (EEG) and/or electrooculogram (EOG) and transmit them wirelessly to a computer.

3.2 g.RECORDER, g.HISYS AND g.BSANALYZE

g.Recorder and g.HIsys are intended to be used for acquisition, processing, recording and review of biosignal data measured by g.tec biosignal amplifiers. g.BSanalyze is used to analyze biosignals. These biosignals may include electroencephalogram (EEG), electromyogram (EMG), electrooculogram (EOG), and electrocardiogram (ECG), for example.

3.3 LIMITATIONS

The device **must not** be used for patient monitoring. The device **must not** be used for the determination of brain death. Additional examinations are needed for diagnosis, and no diagnosis may be done only based on using this device.

In order to use this product safely and fully understand all its functions, make sure to read this manual before using the product.

Medical client applications that incorporate the g.NEEDaccess Server or Client API must be developed according to national/international laws for medical device and software development and must be thoroughly tested before they are used with patients.

Follow the instructions for use of the used PC and the connected devices for allowed environmental conditions.

The used PC must not go to sleep, hibernate, turn off, or turn on the screensaver during a measurement.

4 SYSTEM REQUIREMENTS

The minimum requirements of the g.tec Suite 2020 are listed below:

4.1 HARDWARE

Hardware	Properties	Package
CPU	2.6 GHz or faster processor	All
Screen resolution	1920 x 1080 pixels	All
Hard disk	>=100 GB	All
RAM	>= 8 GB	All
USB 2.0 port (EHCI – enhanced Host controller interface)	One free USB port for each device that shall be connected	g.NEEDaccess, g.HIsys, g.Recorder
Network	Optional Gigabit or faster Ethernet adapter for peer-to-peer network transmission.	g.NEEDaccess, g.HIsys, g.Recorder
g.STIMbox with vibro-tactile stimulators		g.HIsys, vibro-tactile P300
g.STIMbox with SSVEP box		g.HIsys, SSVEP
g.Cube	Stimulation Platform	g.HIsys
g.Estim PRO		g.HIsys
g.Estim PRO Switching Unit		g.HIsys, Switching Unit Control Software
g.Estim FES		g.HIsys, motor imagery bandpower FES and motor imagery common spatial patterns FES
g.Nautilus		g.NEEDaccess, g.HIsys, g.Recorder
g.HIamp		g.NEEDaccess, g.HIsys, g.Recorder
g.USBamp Research		g.NEEDaccess, g.HIsys, g.Recorder
Tobii Pro Glasses Eye Tracker	Tobii Pro Lab 1.181 Eye Tracker Manager 2.3.7 Tobii Pro Glasses Controller 1.83.11324	g.HIsys, Eyetracker

EyeLink Camera System DM 890 Eye Tracker	EyeLink 1000 plus SDK 1.11.5.0	g.HIsys, Eyetracker
Tobii Pro X3-120 Eye Tracker	Tobii Pro Eye Tracker Manager 1.12.0	g.HIsys, Eyetracker
Oculus Rift HMD	For user: with CPU i5-8400, GPU GeForce GTX 1060 3GB and RAM 16GB equivalent or higher, with Oculus SW version < 3 In addition, for developer: unity package Oculus Integration for Unity, version 17.0 and unity editor version 2018.2.17f1 (64-bit)	g.HIsys, Virtual and Augmented Reality
HTC Vive PRO HMD	For user: with CPU i5-8400, GPU GeForce GTX 1060 3GB and RAM 16GB equivalent or higher, with VIVEPORT version 1.0.9.202 and VIVEPORT Diagnosis version 1.2.2.6, with Steam 2.10.91.91 and SteamVR In addition, for developer: unity package StreamVR Plugin, version 2.5.0 (sdk 1.8.19) and unity editor version 2018.2.17f1 (64-bit)	g.HIsys, Virtual and Augmented Reality
Video camera	Webcam	g.HIsys, g.Recorder

NOTE

The size of the data-set which can be loaded into g.BSanalyze is determined by the RAM size of your computer. The RAM size should be approximately 5 times bigger than the data-set size. Try to work with as small data-sets as possible by splitting the recording experiment in shorter segments.

4.2 SOFTWARE

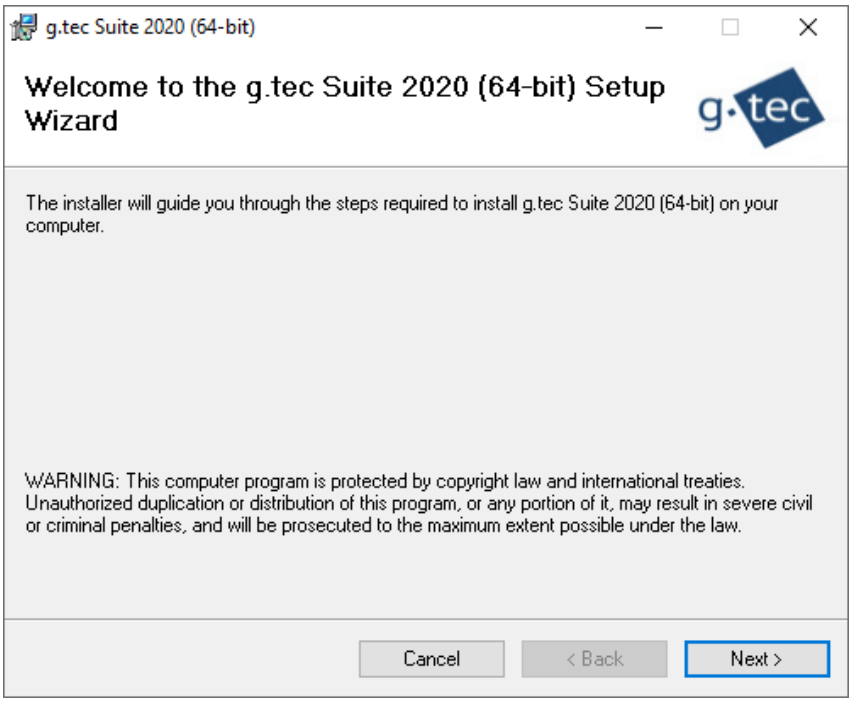
Software	Version	Package
Windows	Windows 10 Pro, Version 1809 English 64-bit	All
Adobe Reader	DC 2018.011.20035	All
MATLAB	Release 2020a	g.BSanalyze, g.HIsys
Signal Processing Toolbox	Release 2020a	g.BSanalyze, g.HIsys
DSP System Toolbox	Release 2020a	g.HIsys
Simulink	Release 2020a	g.HIsys
Image Processing Toolbox	Release 2020	g.HIsys
Statistics and Machine Learning Toolbox	Release 2020	g.HIsys
ASIO4ALL	2.15	g.HIsys
EEGlab	2022.0	g.HIsys
Microsoft Visual Studio	Visual Studio 2015 Update 3	g.NEEDaccess C/.NET Client API
Python	>= 3.6	g.NEEDaccess Python Client API
Numpy	>=1.13.3	g.NEEDaccess Python Client API
Matplotlib	>=2.1.0	g.NEEDaccess Python Client API
Cffi	>=1.11.2	g.NEEDaccess Python Client API
Pywin32	>=223	g.NEEDaccess Python Client API
HASP	7.51	g.Estim FES g.Estim PRO
USB Multi-Channel Audio Device (C-Media Electronics, Inc.)	1.00.0002	g.Cube

Make sure that your Microsoft Windows installation works correctly before installing the g.tec Suite. Install other software packages if you are planning to use the corresponding g.tec package. Software packages other than the packages listed above MUST NOT be installed on the Windows PC. During operation of the g.tec Suite, other software than listed above MUST NOT be operated.

5 INSTALLATION

5.1 g.tec SUITE 2020

After purchasing the g.tec Suite 2020 you will receive an email with a download link. Download the software and follow the instructions to install the g.tec Suite 2020 onto your computer.



5.2 g.ESTIM FES

Please read the following notes carefully before installation. Make sure that your computer fulfils all the requirements. Then, perform the steps below for installation ***before*** attaching the device to your computer.

CAUTION

- Use the g.Estim FES only with a personal computer according to the specification given in the Instructions For Use.
- The control computer must not be integrated into a network for operating the g.Estim FES. Any active network connection or any additional software and/or hardware used in conjunction with the control computer can cause risks for the patient and/or other persons, harmful interference to the equipment or cause the equipment to fail to perform its intended function or degrade its intended performance. Therefore, before use, you must determine, analyze, assess, and mitigate those risks and assure the correct functionality of the system. If there is any undesired deviation from the intended operational performance during the operation of the equipment, you must avoid, identify and resolve the adverse effect before continuing to use the equipment. Note that changes like the integration into a network or altering the configuration, connection or removal of elements, updates or upgrades of elements, can induce new risks and may require additional analyses.
- Automatic updates of the operating system or other software installed on the computer are ideally turned off to prevent alteration of the system configuration that could potentially cause the equipment to fail to perform its intended function or degrade its intended performance. Performance settings should be set to maximum performance. Automatic sleep/hibernation/log-out/screensaver functionality should be switched off to prevent disturbances during the operation of the equipment.

NOTE

Do not connect g.Estim FES to the computer via a USB hub.

The g.tec Suite 2020 has to be installed before attaching the device to your computer.

Perform the following steps in the correct order to attach the g.Estim FES hardware to your system successfully:

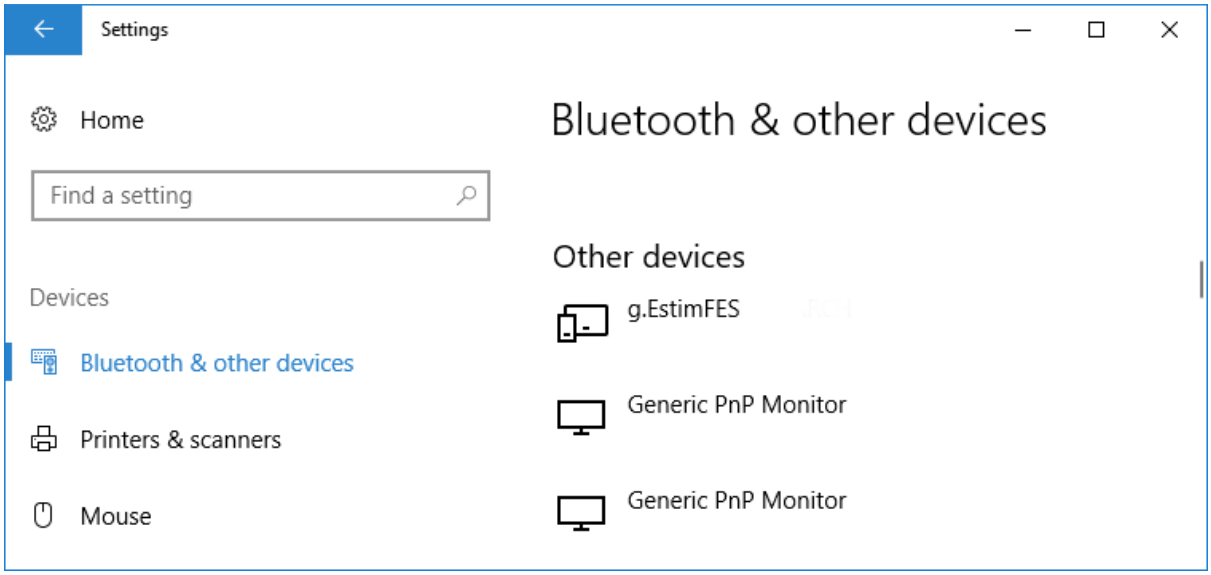
- Connect the USB cable to your g.Estim FES device and to a free USB 2.0 or 3.0 port of your computer.
- Power up the device using its power switch. The power LED indicates that the device is on.
- The Plug and Play manager will detect the new hardware and starts to install the device driver for g.Estim FES.

NOTE

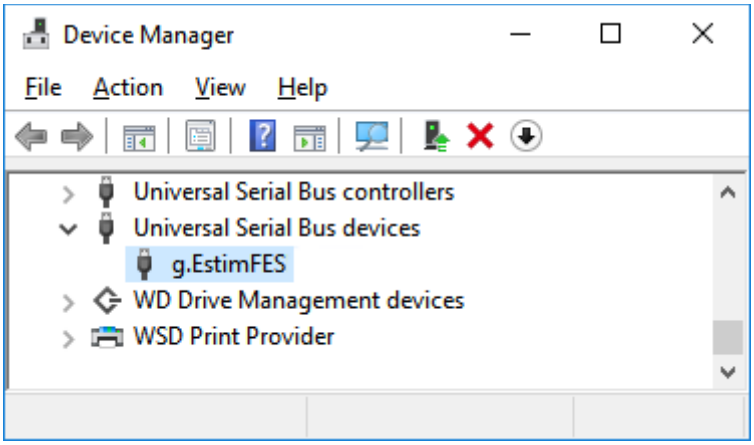
Driver installation in Windows 10 is done automatically. No user interaction is required.

- A notification icon indicates that the installation procedure starts.
- When the installation has finished another notification icon informs you that the installation has completed successfully.

To test the g.Estim FES, open the **Devices** tab from the Windows 10 **Settings** menu. The g.Estim FES should be listed under **Connected devices**.



Alternatively, you can start the device manager to test your installation. Under **Universal Serial Bus devices**, the g.Estim FES must be listed.



If you see a question mark beside the g.Estim FES icon or g.Estim FES is listed under "Other devices" the installation must be repeated.

Before using the device and its control software, make yourself familiar with the *g.Estim FES Instructions for Use* and read it carefully. The following sections are of particular importance:

- The intended use of the equipment
- Safe operation of g.Estim FES

5.3 g.ESTIM PRO

Please read the following notes carefully before installation. Make sure that your computer fulfils all the requirements. Then, perform the steps below for installation ***before*** attaching the device to your computer.

CAUTION

- Use the g.Estim PRO only with a personal computer according to the specification given in the Instructions For Use.
- The control computer must not be integrated into a network for operating the g.Estim PRO. Any active network connection or any additional software and/or hardware used in conjunction with the control computer can cause risks for the patient and/or other persons, harmful interference to the equipment or cause the equipment to fail to perform its intended function or degrade its intended performance. Therefore, before use, you must determine, analyze, assess, and mitigate those risks and assure the correct functionality of the system. If there is any undesired deviation from the intended operational performance during the operation of the equipment, you must avoid, identify and resolve the adverse effect before continuing to use the equipment. Note that changes like the integration into a network or altering the configuration, connection or removal of elements, updates or upgrades of elements, can induce new risks and may require additional analyses.
- Automatic updates of the operating system or other software installed on the computer are ideally turned off to prevent alteration of the system configuration that could potentially cause the equipment to fail to perform its intended function or degrade its intended performance. Performance settings should be set to maximum performance. Automatic sleep/hibernation/log-out/screensaver functionality should be switched off to prevent disturbances during the operation of the equipment.

NOTE

Do not connect g.Estim PRO to the computer via a USB hub.

g.Estim PRO Control software has to be installed before attaching the device to your computer.

Perform the following steps in the correct order to attach the g.Estim PRO hardware to your system successfully:

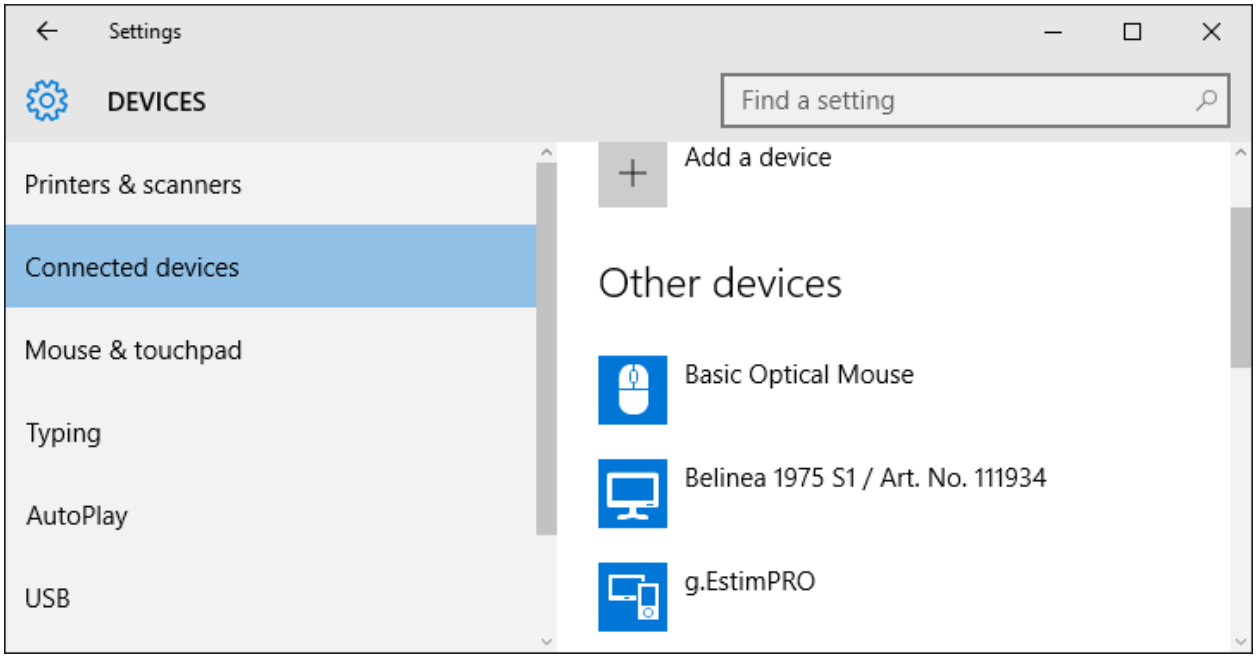
- Connect the USB cable to your g.Estim PRO device and to a free USB 2.0 or 3.0 port of your computer.
- Power up the device using its power switch. The power LED indicates that the device is on.
- The Plug and Play manager will detect the new hardware and starts to install the device driver for g.Estim PRO.

NOTE

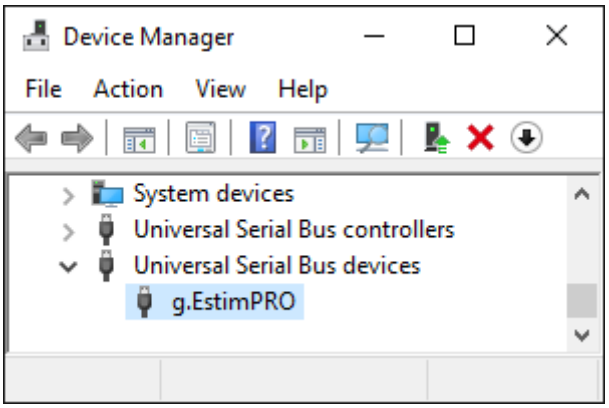
Driver installation in Windows 10 is done automatically. No user interaction is required.

- A notification icon indicates that the installation procedure starts.
- When the installation has finished another notification icon informs you that the installation has completed successfully.

To test g.Estim PRO open the **Devices** tab from the Windows 10 **Settings** menu. The g.EstimPRO should be listed under **Connected devices**.



Alternatively, you can start the device manager to test your installation. Under **Universal Serial Bus devices**, the g.EstimPRO must be listed.



If you see a question mark beside the g.EstimPRO icon or g.EstimPRO is listed under "Other devices" the installation must be repeated.

Before using the device and its control software, make yourself familiar with the *gEstim PRO Instructions for Use* and read it carefully. The following sections are of particular importance:

- The intended use of the equipment
- Safe operation of g.Estim PRO

5.4 g.ESTIM PRO SWITCHING UNIT

Please read the following notes carefully before installation. Make sure that your computer fulfils all the requirements. Then, perform the steps below for installation ***before*** attaching the device to your computer.

CAUTION

- Use the g.Estim PRO Switching Unit only with a personal computer according to the specification given in the Instructions For Use.
- The control computer must not be integrated into a network for operating the g.Estim PRO Switching Unit. Any active network connection or any additional software and/or hardware used in conjunction with the control computer can cause risks for the patient and/or other persons, harmful interference to the equipment or cause the equipment to fail to perform its intended function or degrade its intended performance. Therefore, before use, you must determine, analyze, assess, and mitigate those risks and assure the correct functionality of the system. If there is any undesired deviation from the intended operational performance during the operation of the equipment, you must avoid, identify and resolve the adverse effect before continuing to use the equipment. Note that changes like the integration into a network or altering the configuration, connection or removal of elements, updates or upgrades of elements, can induce new risks and may require additional analyses.
- Automatic updates of the operating system or other software installed on the computer are ideally turned off to prevent alteration of the system configuration that could potentially cause the equipment to fail to perform its intended function or degrade its intended performance. Performance settings should be set to maximum performance. Automatic sleep/hibernation/log-out/screensaver functionality should be switched off to prevent disturbances during the operation of the equipment.

NOTE

Do not connect g.Estim PRO Switching Unit to the computer via a USB hub.

g.Estim PRO Switching Unit Control software has to be installed before attaching the device to your computer.

Perform the following steps in the correct order to attach the g.Estim PRO Switching Unit hardware to your system successfully:

- Connect the USB cable to your g.Estim PRO Switching Unit device and to a free USB 2.0 or 3.0 port of your computer.

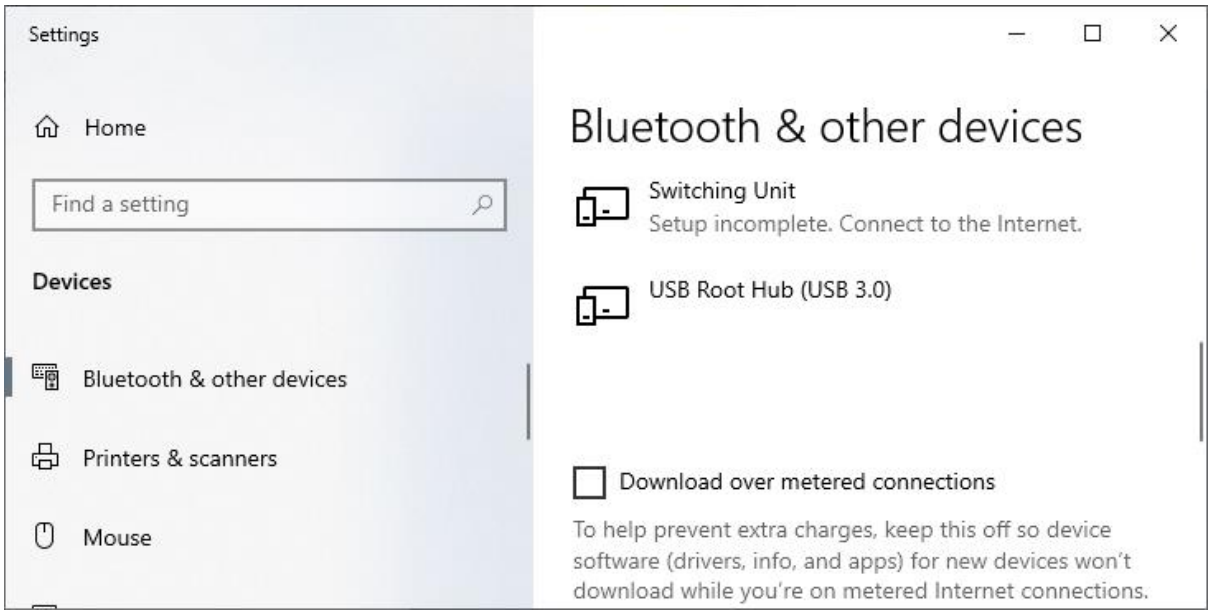
- Power up the device using its power switch. The power LED indicates that the device is on.
- The Plug and Play manager will detect the new hardware and starts to install the device driver for g.Estim PRO Switching Unit.

NOTE

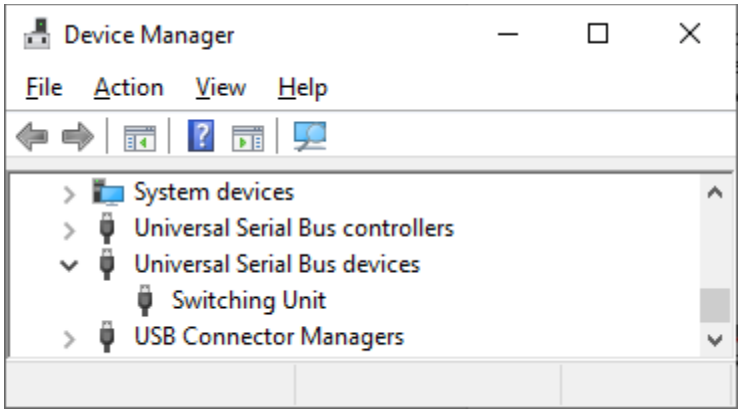
Driver installation in Windows 10 is done automatically. No user interaction is required.

- A notification icon indicates that the installation procedure starts.
- When the installation has finished another notification icon informs you that the installation has completed successfully.

To test g.Estim PRO Switching Unit open the **Devices** tab from the Windows 10 **Settings** menu. The Switching Unit should be listed under **Connected devices**.



Alternatively, you can start the device manager to test your installation. Under **Universal Serial Bus devices**, the Switching Unit must be listed.



If you see a question mark beside the Switching Unit icon or Switching Unit is listed under "Other devices" the installation must be repeated.

Before using the device and its control software, make yourself familiar with the *gEstim PRO Switching Unit Instructions for Use* and read it carefully. The following sections are of particular importance:

- The intended use of the equipment
- Safe operation of g.Estim PRO Switching Unit

5.5 g.CUBE

Please read the following notes carefully before installation. Make sure that your computer fulfils all the requirements. Then, perform the steps below for installation ***before*** attaching the device to your computer.

The g.tec Suite 2020 has to be installed before attaching the device to your computer.

Perform the following steps in the correct order to attach the g.Cube hardware to your system successfully:

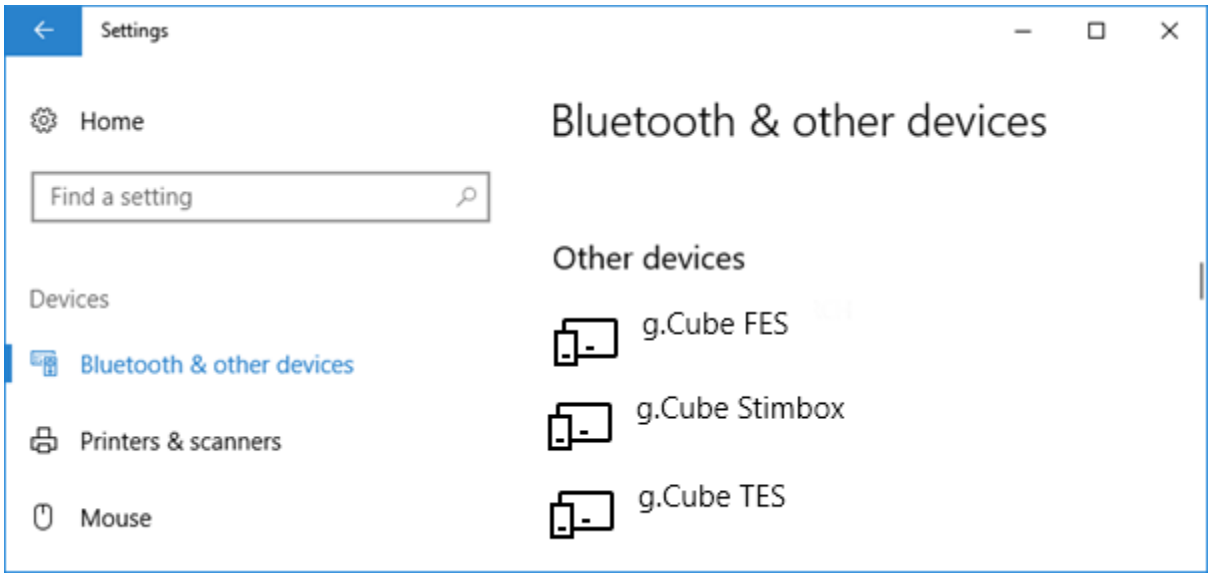
- Connect the USB cable to your g.Cube FES device and to a free USB 2.0 or 3.0 port of your computer.
- Connect the power cable to mains and connect the power supply to g.Cube.
- Power up the device using its power switch. The power LED indicates that the device is on.
- The Plug and Play manager will detect the new hardware and starts to install the device driver for g.Cube.

NOTE

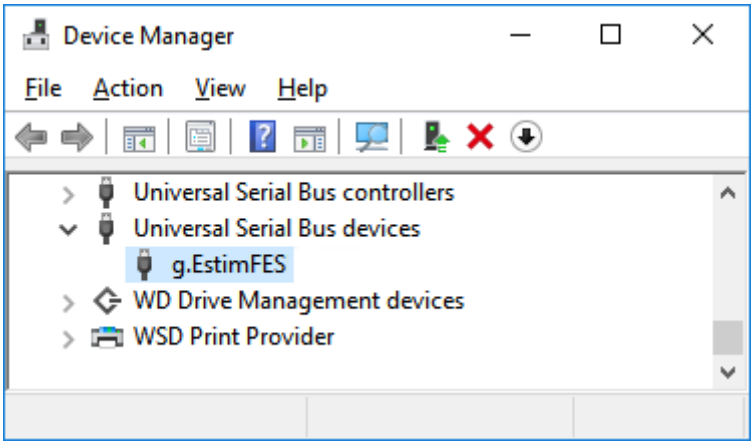
Driver installation in Windows 10 is done automatically. No user interaction is required.

- A notification icon indicates that the installation procedure starts.
- When the installation has finished another notification icon informs you that the installation has completed successfully.

To test the g.Cube, open the **Devices** tab from the Windows 10 **Settings** menu. The g.Cube components should be listed under **Connected devices**.



Alternatively, you can start the device manager to test your installation. Under **Universal Serial Bus devices**, the g.Cube components must be listed.



If you see a question mark beside the g.Estim FES icon or g.Estim FES is listed under "Other devices" the installation must be repeated.

Before using the device and its software, make yourself familiar with the *g.Cube Instructions for Use* and read it carefully. The following sections are of particular importance:

- The intended use of the equipment

- Safe operation of g.Cube

5.6 g.NEEDACCESS PYTHON CLIENT API

Install the g.tec Suite 2020 before installing *pygds*.

pygds uses CFFI. From the C definitions of a C header file, CFFI can learn how to access the functions in a library, specifically in this case the g.NEEDaccess DLL on Windows. Therefore, *pygds* needs the g.NEEDaccess header files, which are part of the g.NEEDaccess Client API, installed in:

```
C:\Program Files\gtec\gNEEDaccess Client API\C\
```

pygds is distributed as whl file.

pygds is installed using pip:

```
pip install pygds.<version>.whl
```

pip will automatically install the required packages CFFI, numpy and matplotlib.

The installed pygds consists of only one file
`pygds.py`

It should be available in `C:\Python36\Lib\site-packages` and `C:\Python36\Scripts` (or accordingly in `C:\Python27\..)`.

5.7 FILES ON YOUR COMPUTER

The default installation directory for g.tec products is `C:\Program Files\gtec\`.

A subdirectory named with the product name is generated within this directory, where all installed files are located:

g.NEEDaccess Server	
`..\gNEEDaccess\config`	Contains the server configuration file in HDF5 format

g.NEEDaccess C/.NET Client API

..\gNEEDaccess Client API\C	Contains the C API libraries for Windows 64-bit.
..\gNEEDaccess Client API\.NET	Contains the .NET API assemblies (which require the C API libraries underneath).
..\gNEEDaccess Client API\Python	Contains the installation package for the Python API (which requires the C API libraries underneath)
..\gNEEDaccess Client API\examples	Contains examples of how to use the Client API and the network API.

g.BSanalyze	
..\gBSanalyze\	Contains g.BSanalyze program files.
Documents\gtec\gBSanalyze\testdata	Contains the g.BSanalyze example data-sets
Documents\gtec\gBSanalyze\user	Contains the g.BSanalyze example data analysis batches

g.HIsys	
..\gHIsys\Library	Contains binaries of library blocks
..\gHIsys\Toolboxes	Contains additional toolboxes
..\gHIsys\EEGlab importer	Contains functions for importing g.tec files to EEGlab
..\Documents\gtec\gHIsys\Examples	Contains Simulink example models and data for the library blocks

g.Recorder	
..\gRecorder\	Contains g.Recorder program files
..\Documents\gRecorder	Contains recorded files
..\gRecorder\MATLAB Tools	Import tool for HDF5 files to MATLAB

g.BSanalyze Standalone	
`..\gBSanalyzeStandalone\`	Contains g.BSanalyze program files.
`Documents\gtec\gBSanalyze\testdata`	Contains the g.BSanalyze example data-sets
`Documents\gtec\gBSanalyze\user`	Contains the g.BSanalyze example data analysis batches

Converter	
`..\gConverter\`	Contains Converter program files

Montage Creator	
`..\gMONCreator\`	Contains Montage Creator program files

g.EstimPRO	
`..\gEstimPRO\`	Contains g.EstimPRO program files

g.Estim FES	
`..\gEstimFES\`	Contains g.Estim FES program files

g.NEEDaccess MATLAB API	
`..\gNEEDaccessMATLABAPI\Lib\`	Contains g.NEEDaccess MATLAB API program files

g.Estim FES Research	
`..\gHIsys\gEstimFES\`	Contains g.Estim FES Research program files

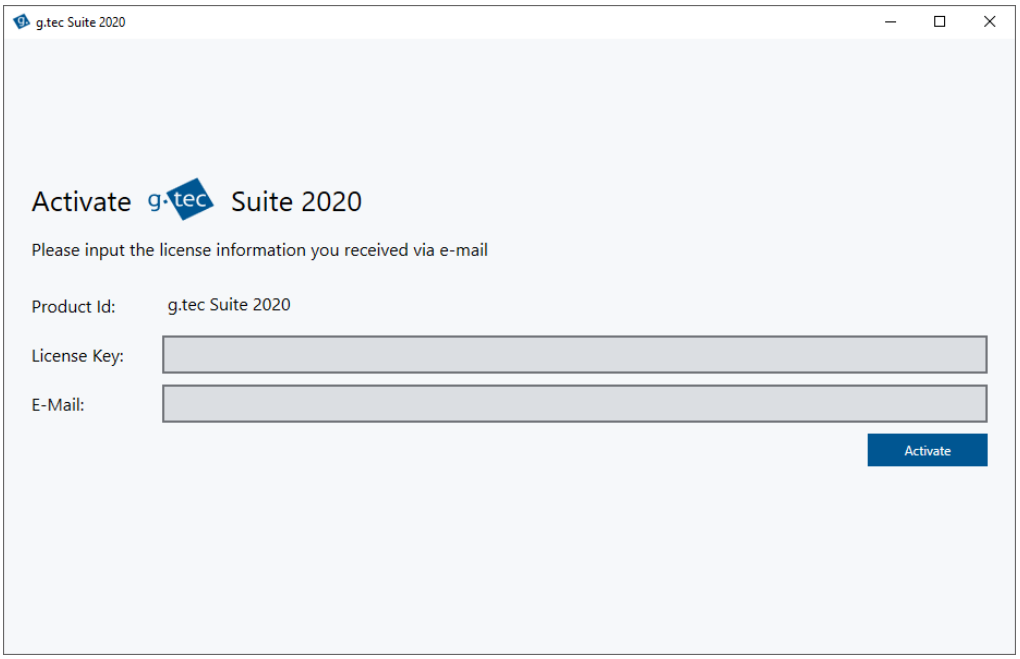
g.EstimPRO Research	
`..\gHIsys\gEstimPRO\`	Contains g.Estim PRO Research program files

g.EstimPRO Switching Unit Control Software	
..\SwitchingUnitControlSoftware	Contains g.Estim PRO Switching Unit Control Software program files

g.EstimPRO Switching Unit Research Software	
..\SwitchingUnitResearchSoftware	Contains g.Estim PRO Switching Unit Research Software program files

6 RUNNING THE g.tec Suite 2020

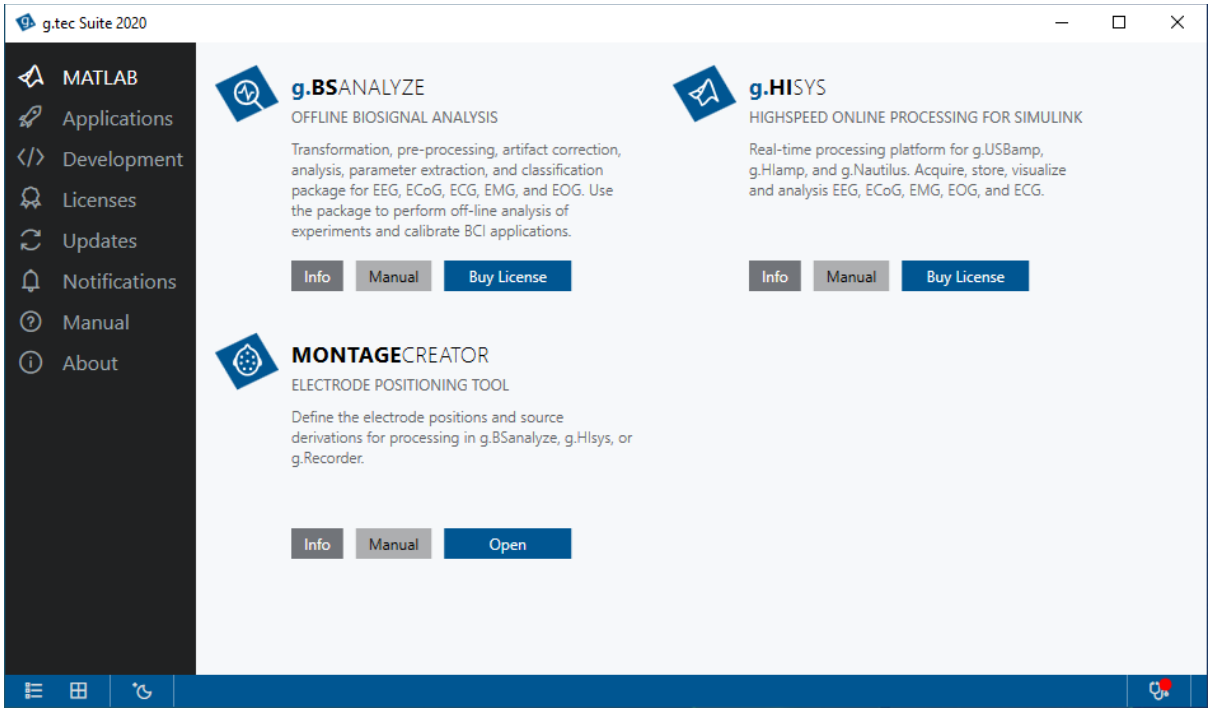
Before using g.tec Suite 2020, the software has to be activated by entering the license information you received via email.



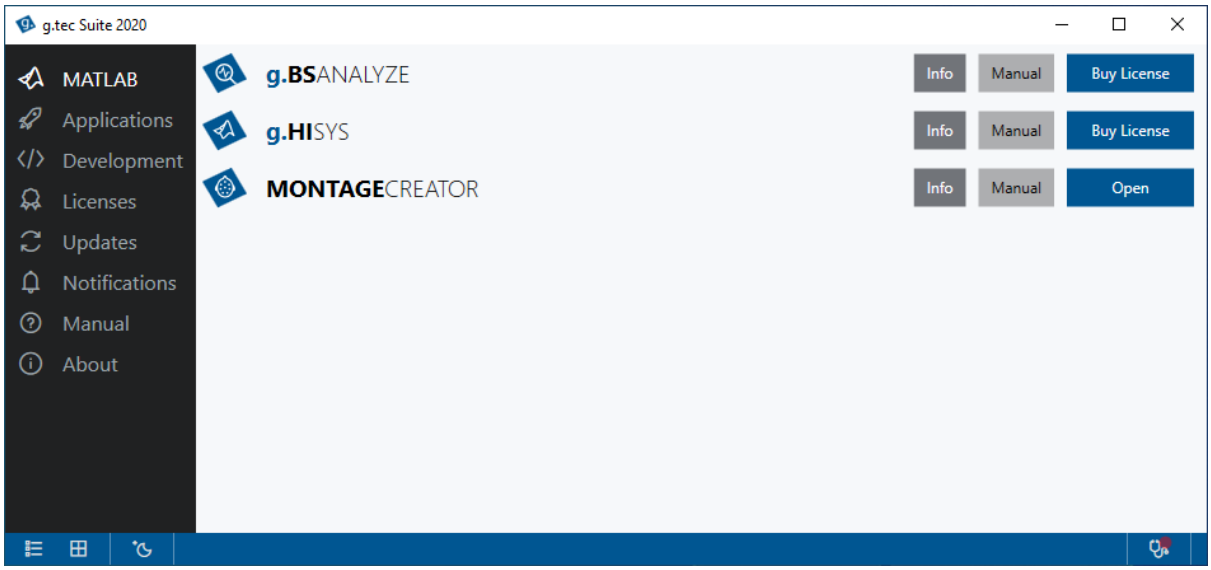
The g.tec Suite 2020 allows you to run g.HIsys, g.BSanalyze and the Montage Creator from the MATLAB menu. g.HIsys is used to acquire and analyze data in real-time. g.BSanalyze is used to analyze biosignal data in off-line mode and the Montage Creator allows to load or define an EEG electrode montage for source derivations or topographic result mapping.

Click on the Info button to show a product description and on the Manual button to show the User manual.

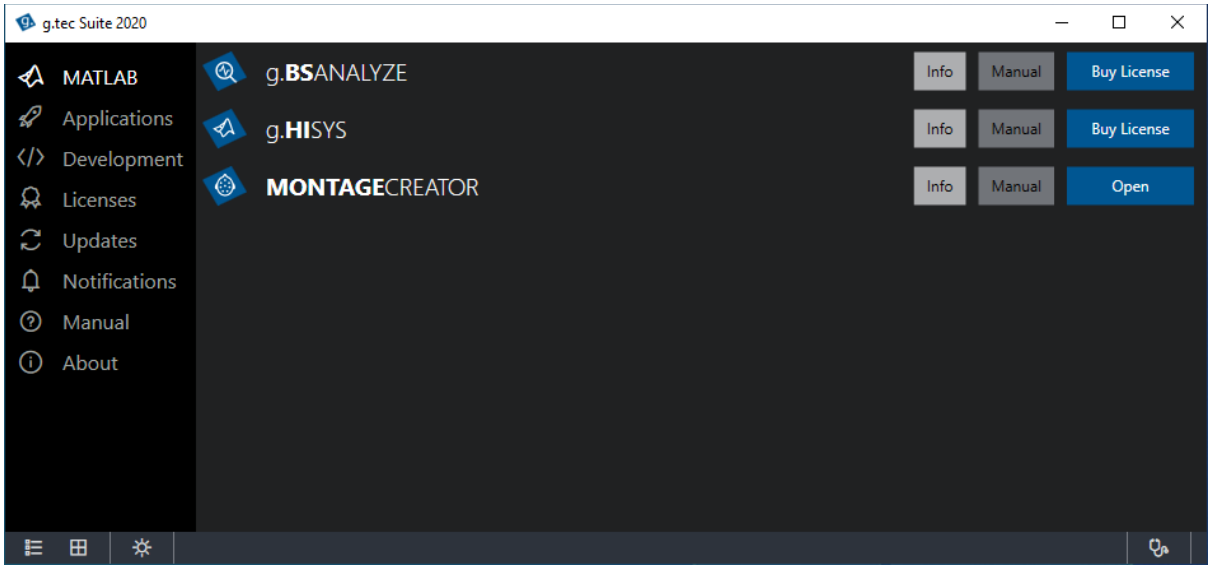
With the Buy License button, the software license can be acquired in the web-shop. With the Open button the software can be started.



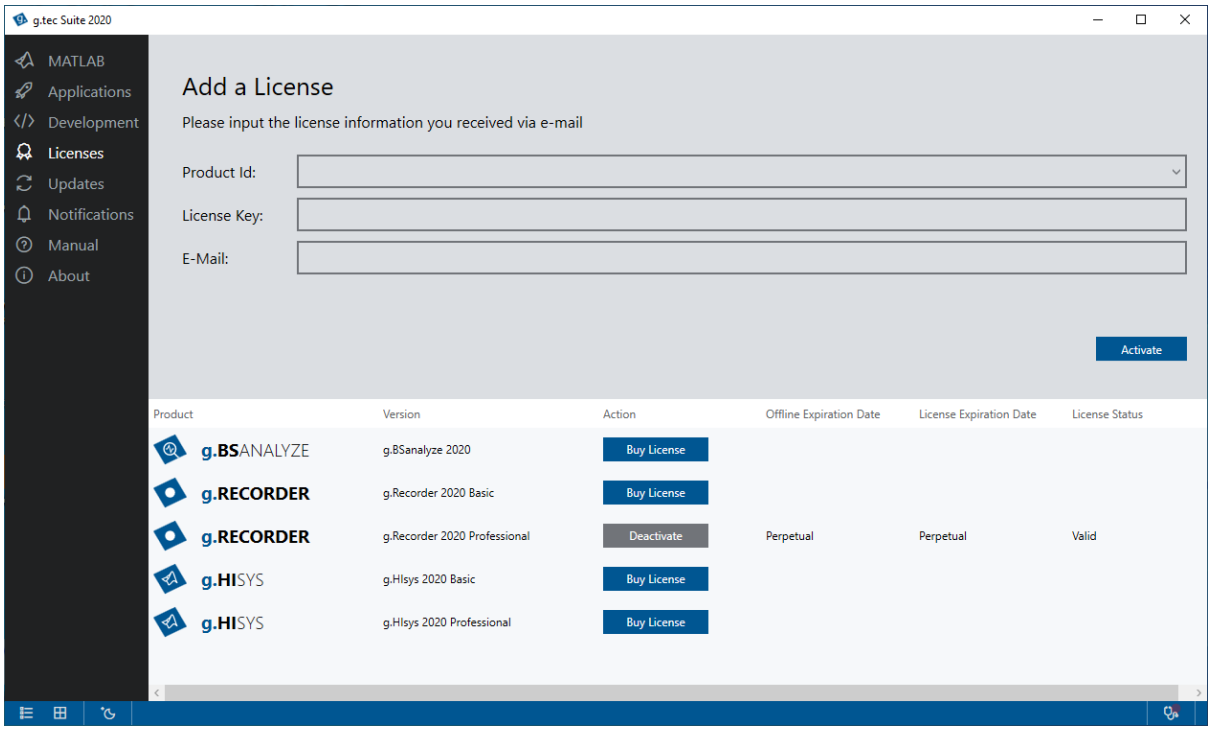
In the g.tec Suite 2020 the view mode can be changed to list view on the left bottom corner:



or dark mode:



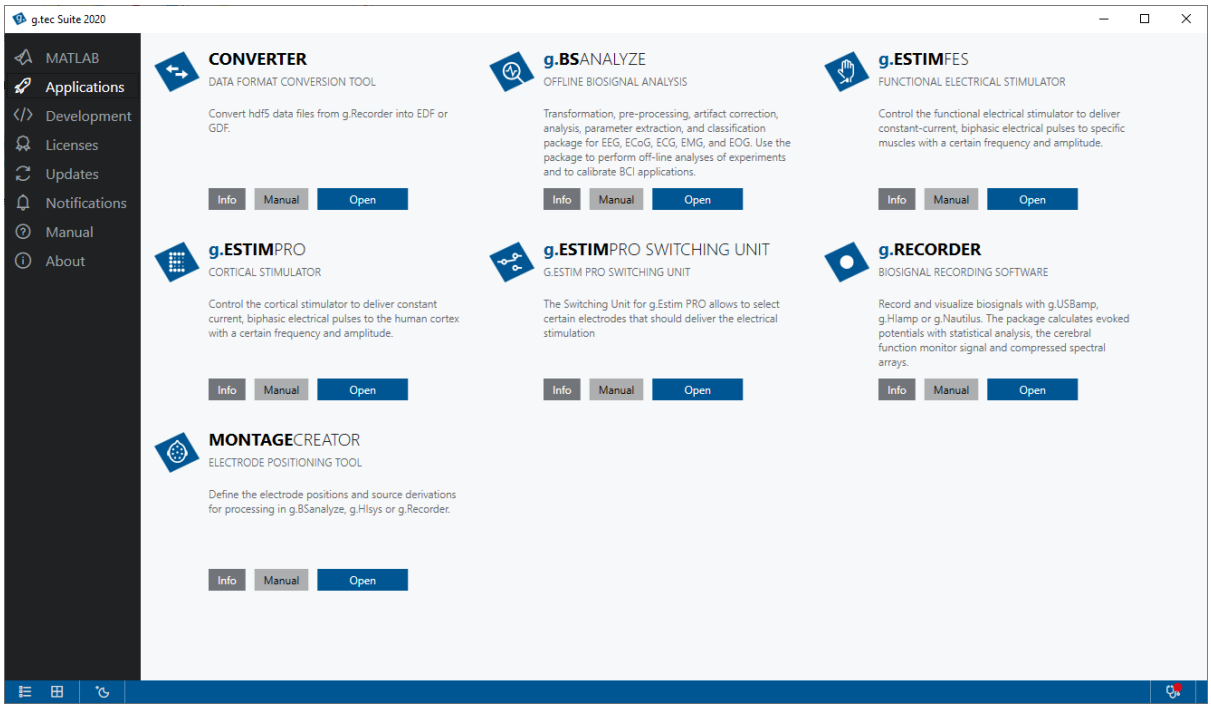
To buy a license you can either click on the Buy License button or you can go to the Licenses menu and press on Buy License for the specific product. g.Recorder and g.HIsys are available as BASIC or PROFESSIONAL packages.



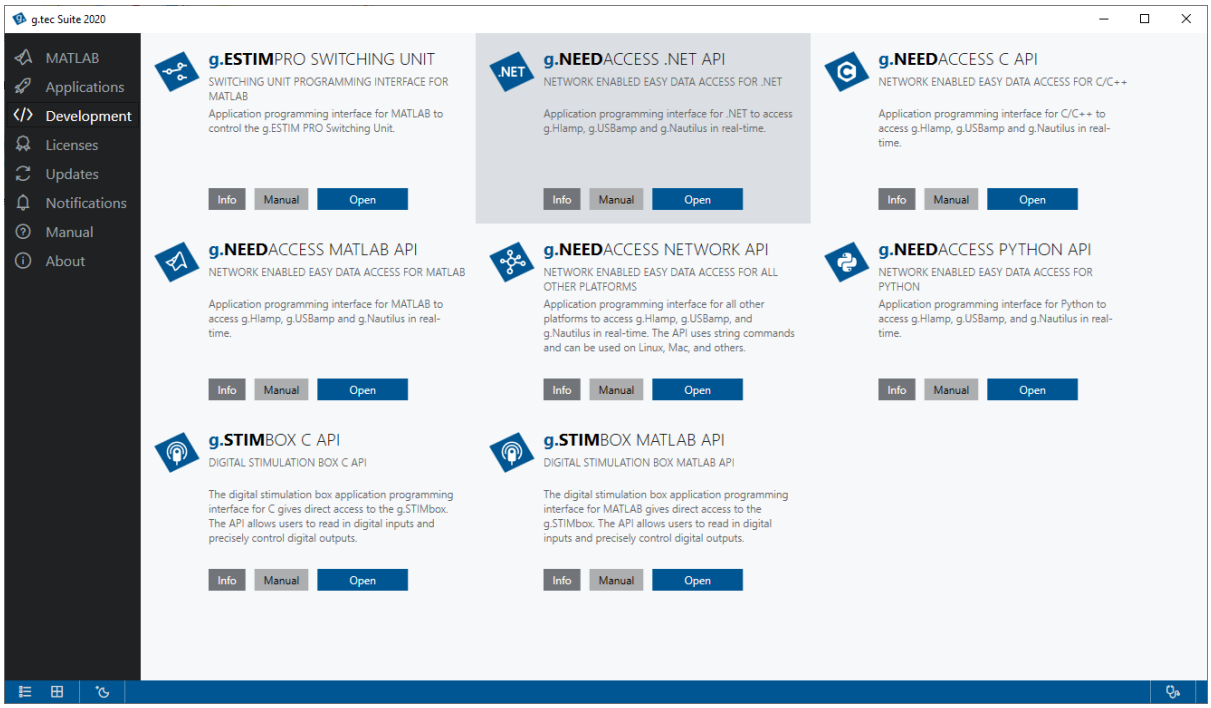
After you purchased a license you will receive an email with the license key. Enter the Product Id, the License Key and your E-Mail and press the Activate button.

The Applications menu contains the stand-alone g.BSanalyze and Montage Creator versions that do not need MATLAB. Please note that the MATLAB command line interface is not available for this version. Furthermore, it contains the g.Estim FES package to perform a functional electrical stimulation or the g.Estim PRO package to perform intracranial stimulation. g.Recorder allows to acquire, visualize

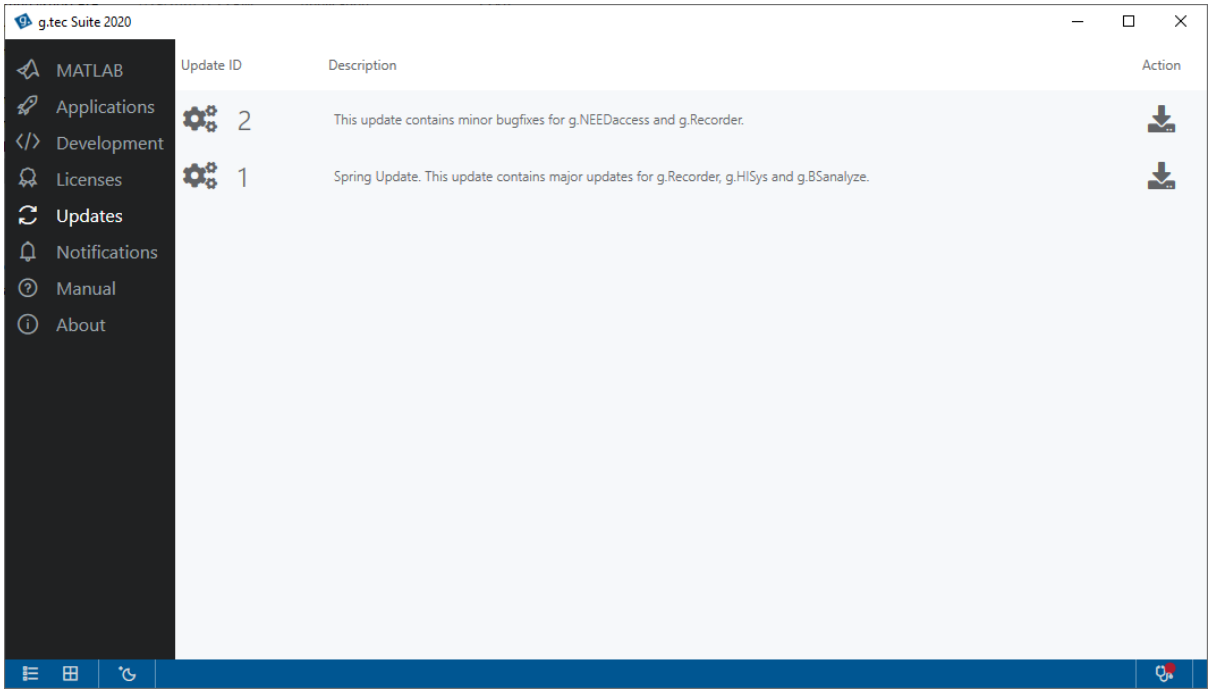
and store biosignal data. Use the Converter to generate EDF, GDF or GDF24 from g.Recorder files (*.hdf5) or MATLAB data files (*.mat).

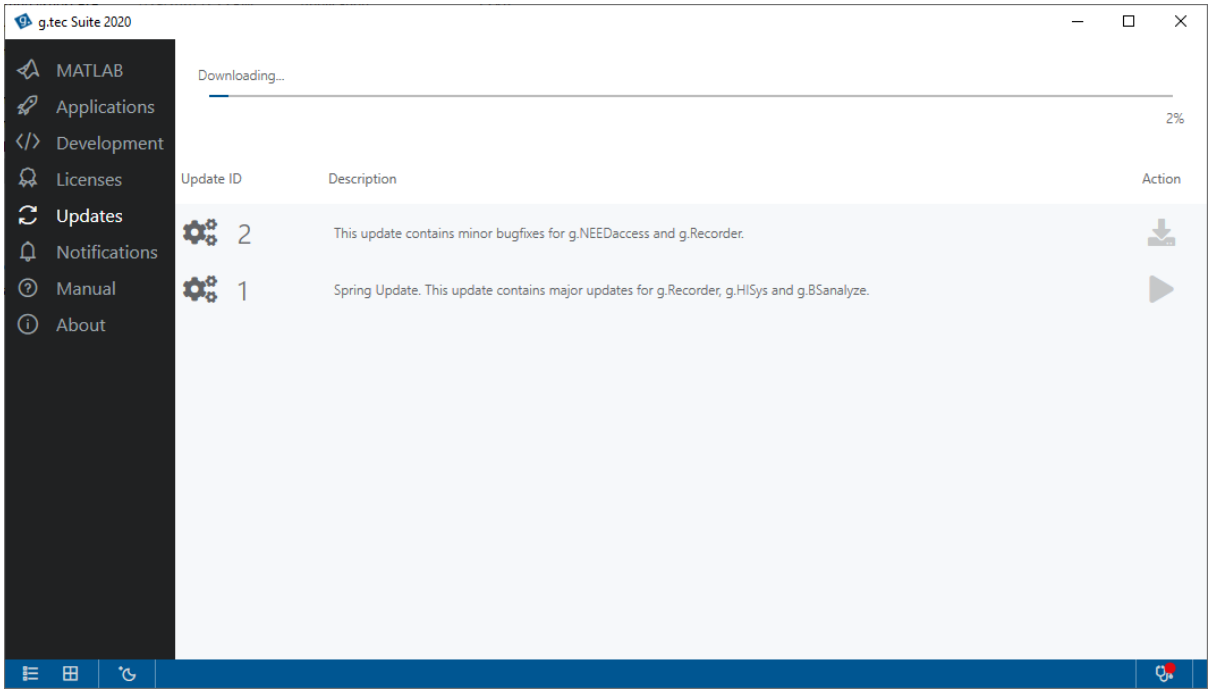


The Development menu has g.NEEDaccess application programming interfaces (API) for MATLAB, C, .NET and Python. The g.NEEDaccess Network API allows to send biosignal data from g.tec amplifiers via a network protocol to remote computers for further processing. Moreover, g.STIMbox application programming interfaces (API) for MATLAB and C are provided to generate and record trigger signals.

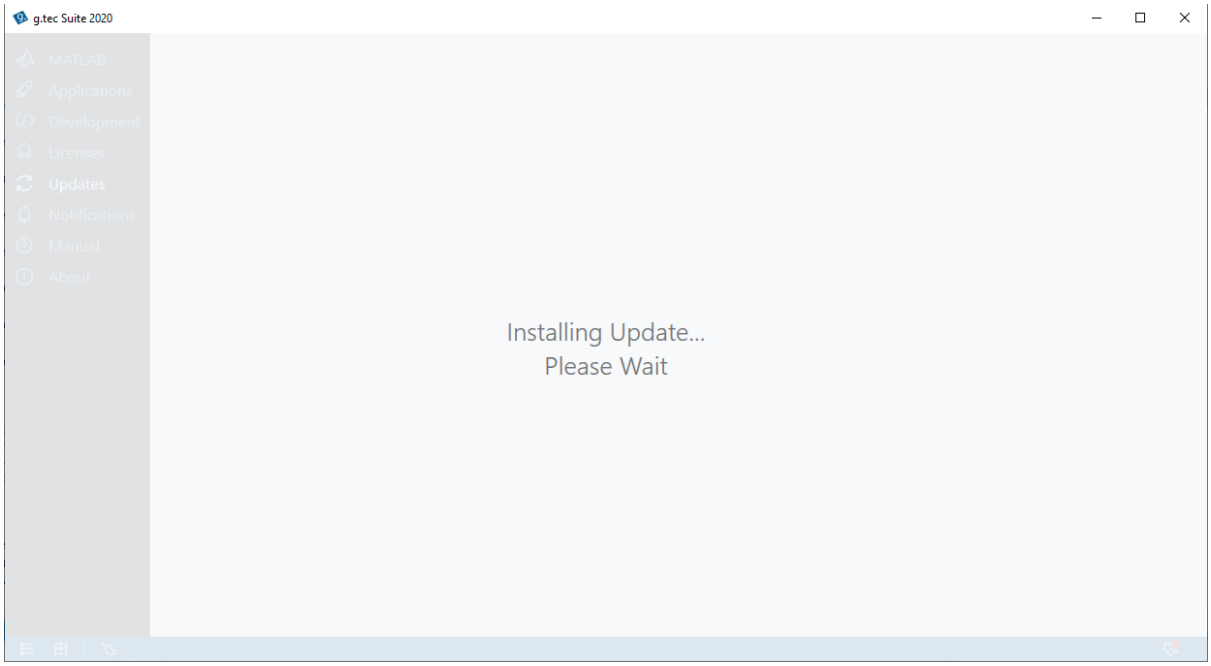


The Updates menu will show you which software package updates are available for download. The list of available updates is acquired while g.tec Suite is starting. Just click on the download icon to start the process.

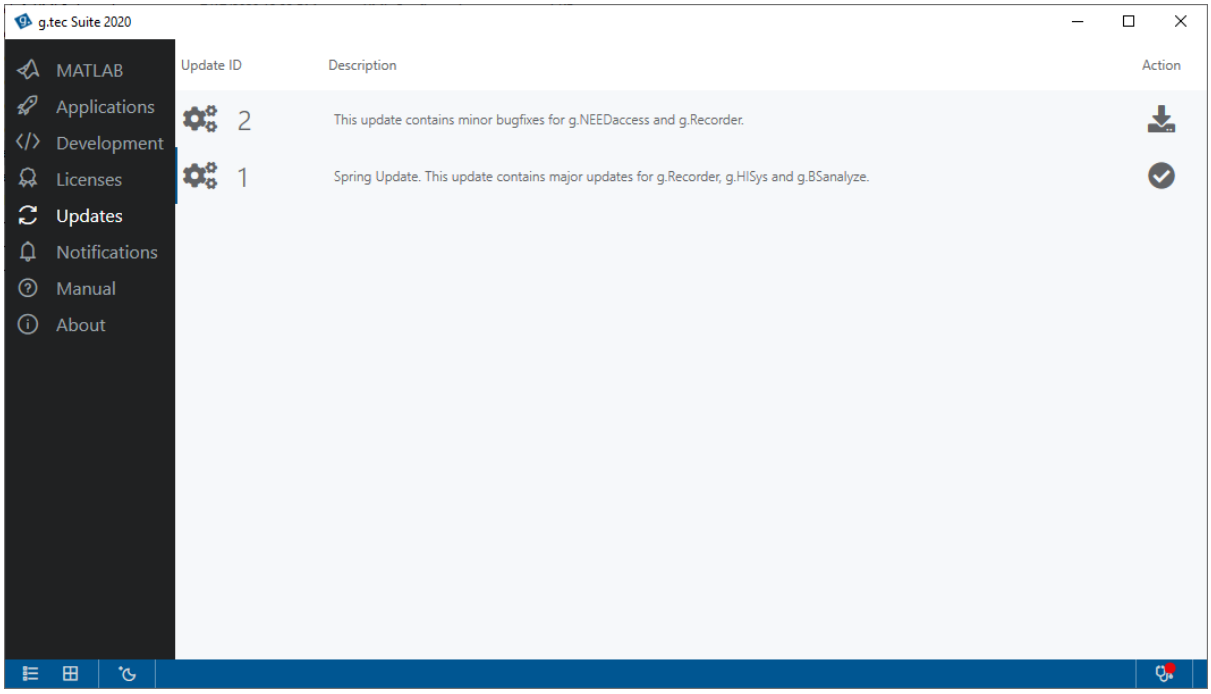




Then click on the play icon to start the installation of the new package.

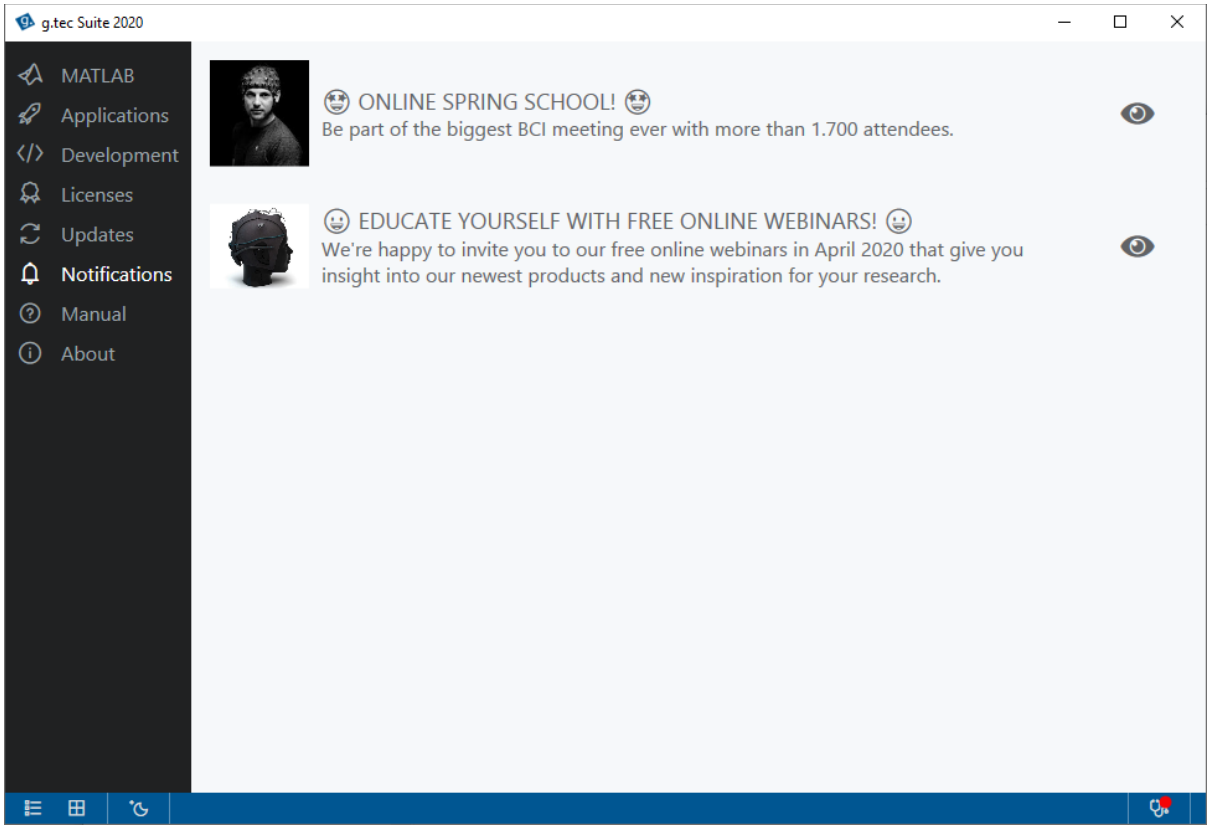


If the package was successfully installed a tick mark will be visible.



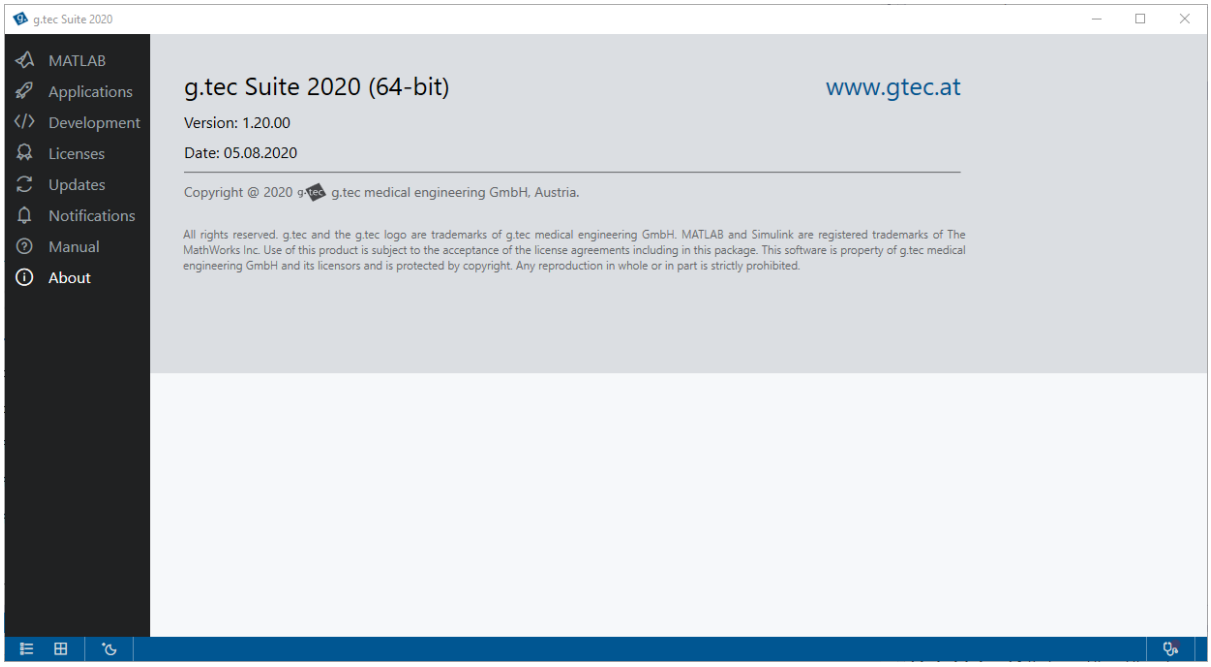
The Notifications menu lists the latest news from g.tec medical engineering.

By clicking the eye icon the link to the event or the news opens automatically.

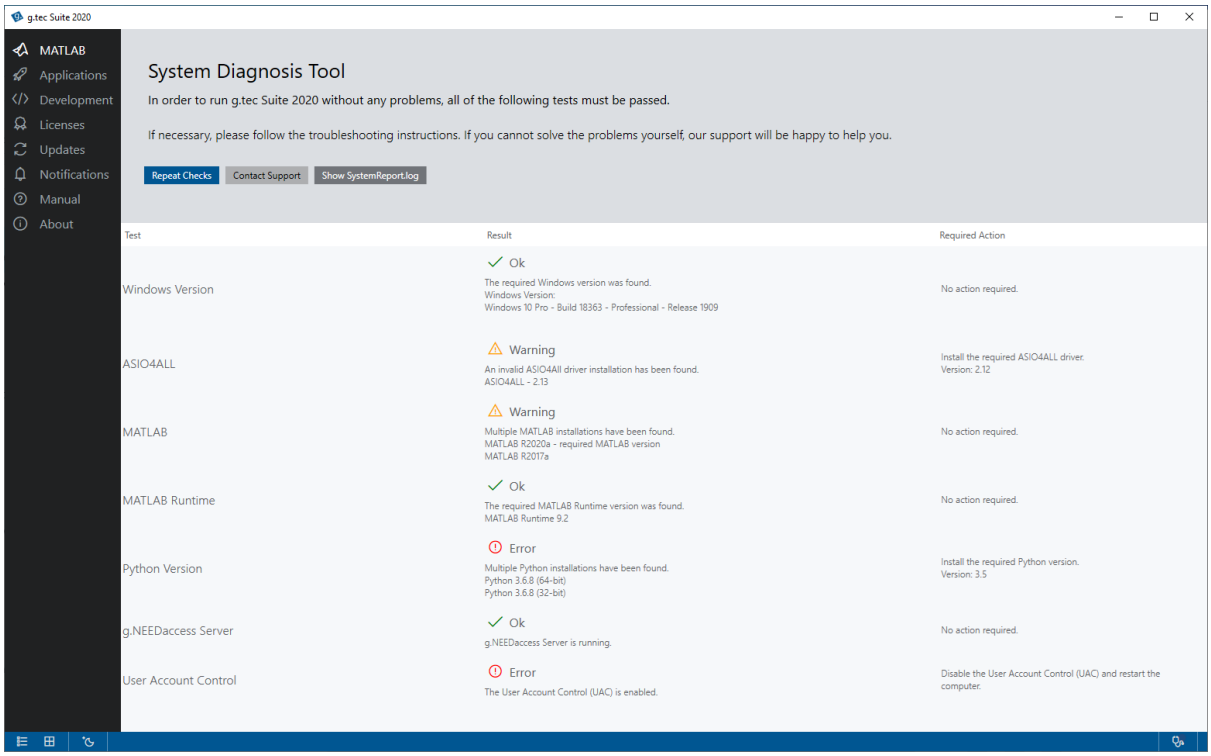


Clicking the Manual menu item opens the user manual of the g.tec Suite 2020.

The About menu shows you the installed version of the g.tec Suite. Please report this version if you are contacting the g.tec support team: support@gtec.at

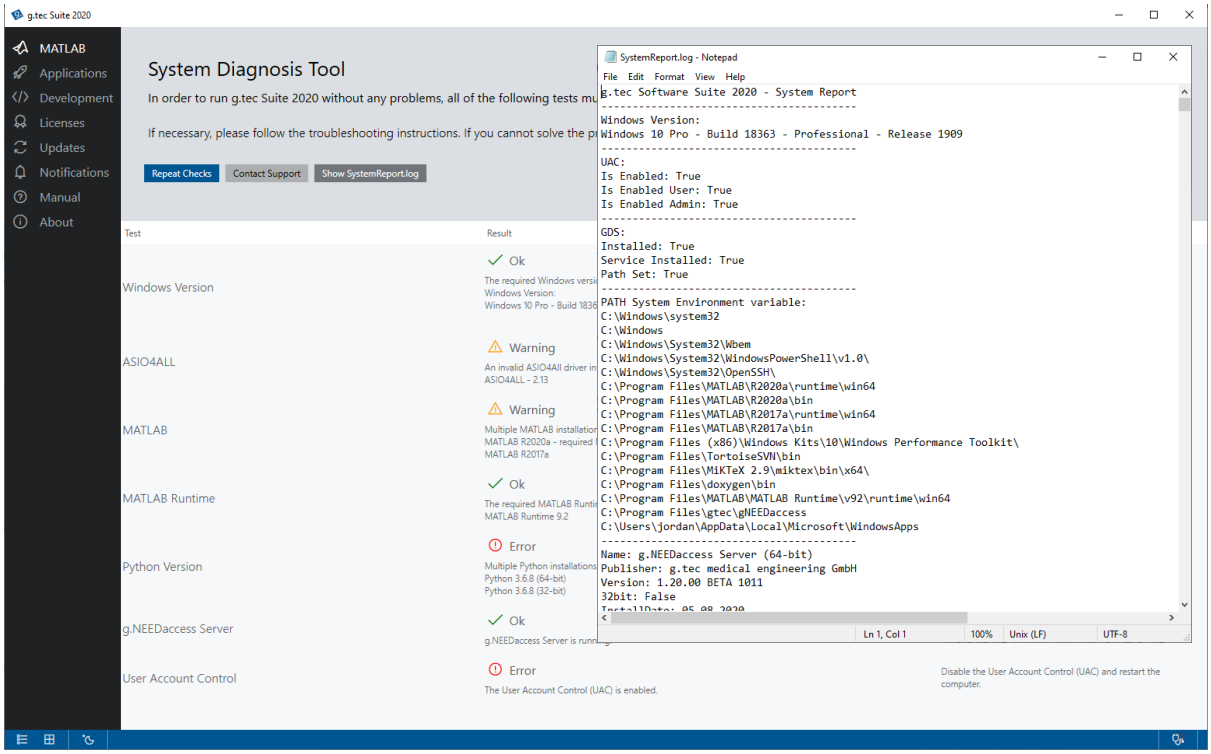


The System Diagnosis Tool can be started from the right bottom corner of the g.tec Suite 2020 and it shows a red indicator if a user action is needed:



Make sure that all Errors are corrected to run the g.tec Suite 2020 without any problems. Warnings indicate notifications that you have to take into consideration. Correctly installed packages are marked with OK.

To check your installation, click on Repeat Checks. You can inspect the log file by clicking Show SystemReport.log. For advanced troubleshooting, click the Contact Support button to open your standard E-Mail application. Attach the SystemReport.log to the newly created e-mail, which should be sent to support@gtec.at.


g.tec Suite 2020
MATLAB
Applications
Development
Licenses
Updates
Notifications
Manual
About
System Diagnosis Tool
In order to run g.tec Suite 2020 without any problems, all of the following tests mu
If necessary, please follow the troubleshooting instructions. If you cannot solve the pr
Repeat Checks
Contact Support
Show SystemReport.log
Test
Result
Windows Version
Ok
ASIO4ALL
Warning
MATLAB
Warning
MATLAB Runtime
Ok
Python Version
Error
g.NEEDaccess Server
Ok
User Account Control
Error
The User Account Control (UAC) is enabled.
Disable the User Account Control (UAC) and restart the computer.
SystemReport.log - Notepad
File Edit Format View Help
g.tec Software Suite 2020 - System Report
Windows Version:
Windows 10 Pro - Build 18363 - Professional - Release 1909
UAC:
Is Enabled: True
Is Enabled User: True
Is Enabled Admin: True
GDS:
Installed: True
Service Installed: True
Path Set: True
PATH System Environment variable:
C:\Windows\system32
C:\Windows
C:\Windows\System32\Wbem
C:\Windows\System32\WindowsPowerShell\v1.0\
C:\Windows\System32\OpenSSH\
C:\Program Files\MATLAB\R2020a\runtime\win64
C:\Program Files\MATLAB\R2020a\bin
C:\Program Files\MATLAB\R2017a\runtime\win64
C:\Program Files\MATLAB\R2017a\bin
C:\Program Files (x86)\Windows Kits\10\Windows Performance Toolkit\
C:\Program Files\TortoiseSVN\bin
C:\Program Files\MiKTeX 2.9\miktex\bin\x64\
C:\Program Files\doxygen\bin
C:\Program Files\MATLAB\MATLAB Runtime\v92\runtime\win64
C:\Program Files\gtec\gNEEDaccess
C:\Users\jordan\AppData\Local\Microsoft\WindowsApps
Name: g.NEEDaccess Server (64-bit)
Publisher: g.tec medical engineering GmbH
Version: 1.20.00 BETA 1011
32bit: False
Ln 1, Col 1
100%
Unix (LF)
UTF-8

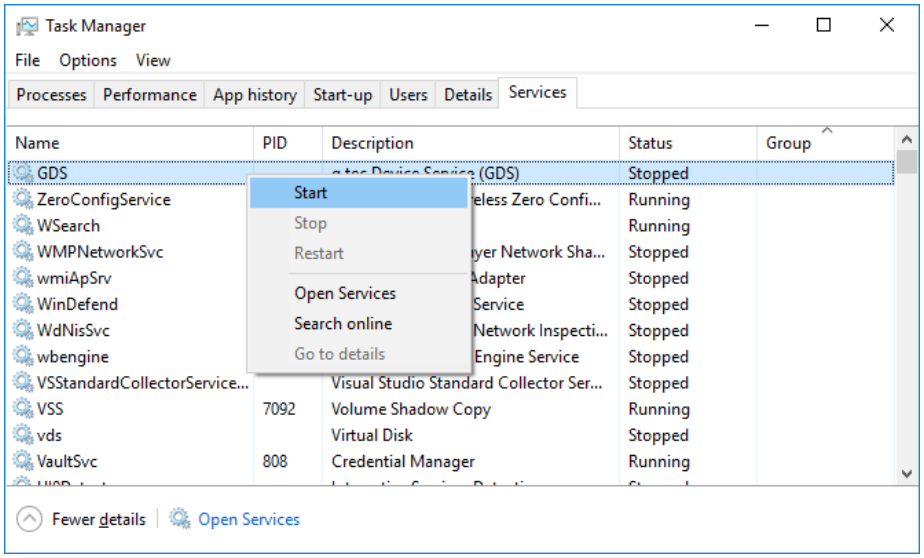
7 MANAGING THE g.NEEDACCESS SERVER

7.1 START / STOP / RESTART THE SERVER SERVICE

Open the *Task Manager* (usually by pressing the key combination CTRL+ALT+DEL or right-clicking the Windows *Start* button and selecting *Task Manager*) and go to the *Services* tab.

Find the server service named *GDS* (it is possible to arrange the service names alphabetically by clicking on the column header *Name*) and right-click for the context menu. There you have the options for starting and stopping the service.

The following figure shows the start or stop the server service from the task manager.



NOTE

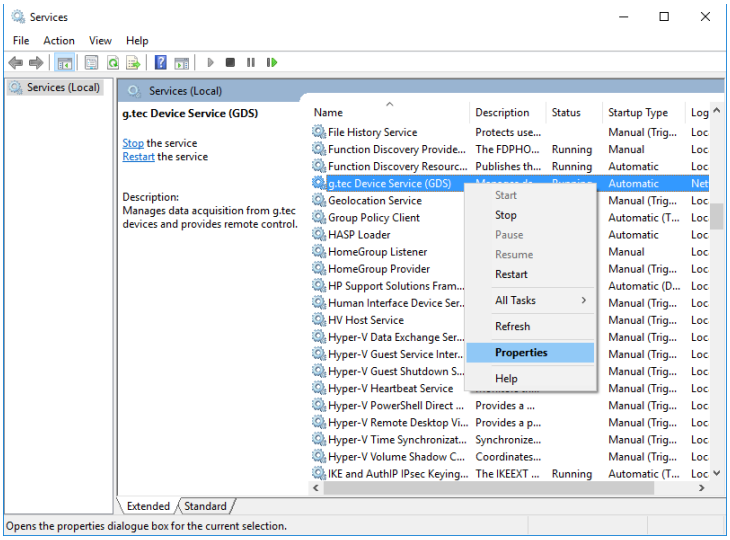
Please note that the service is configured to start automatically on system startup. To disable automatic startup and configure the service for manual start, refer to the following section.

Disable Automatic Start and Configure the Server Service for Manual Start

Open the *Task Manager* (usually by pressing the key combination CTRL+ALT+DEL or right-clicking the Windows *Start* button and selecting *Task Manager*), go to the *Services* tab and click the *Open Services* button.

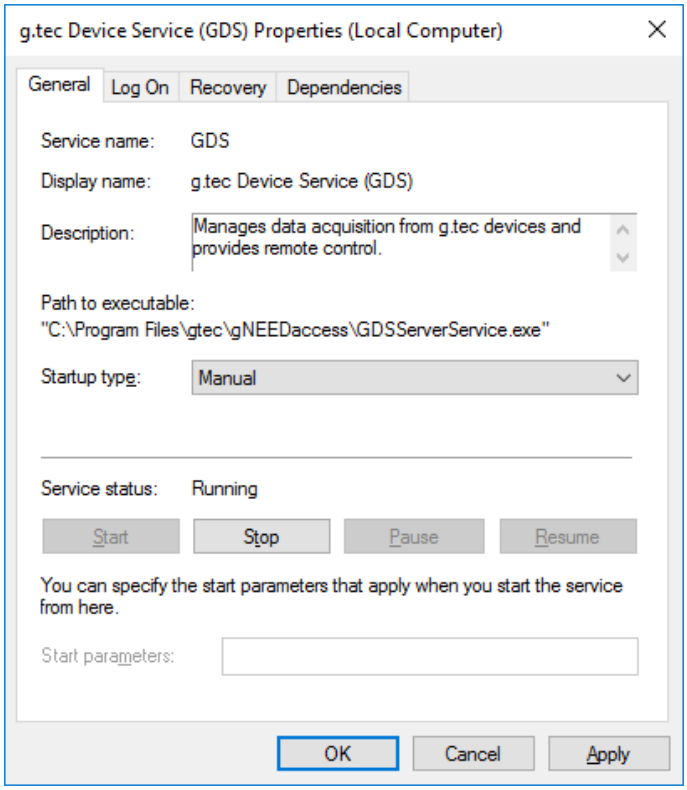
Find the server service named *g.tec Device Service (GDS)* (it is possible to arrange the service names alphabetically by clicking on the column header *Name*) and right-click for the context menu. Select *Properties*.

The following figure shows how to configure the server service for manual startup.



In the properties window, change the *Startup type* to *Manual* and click OK.

The following figure shows how to configure the server service for manual startup.



The server now does not start automatically on system startup. It has to be started manually via the Windows *Task Manager*.

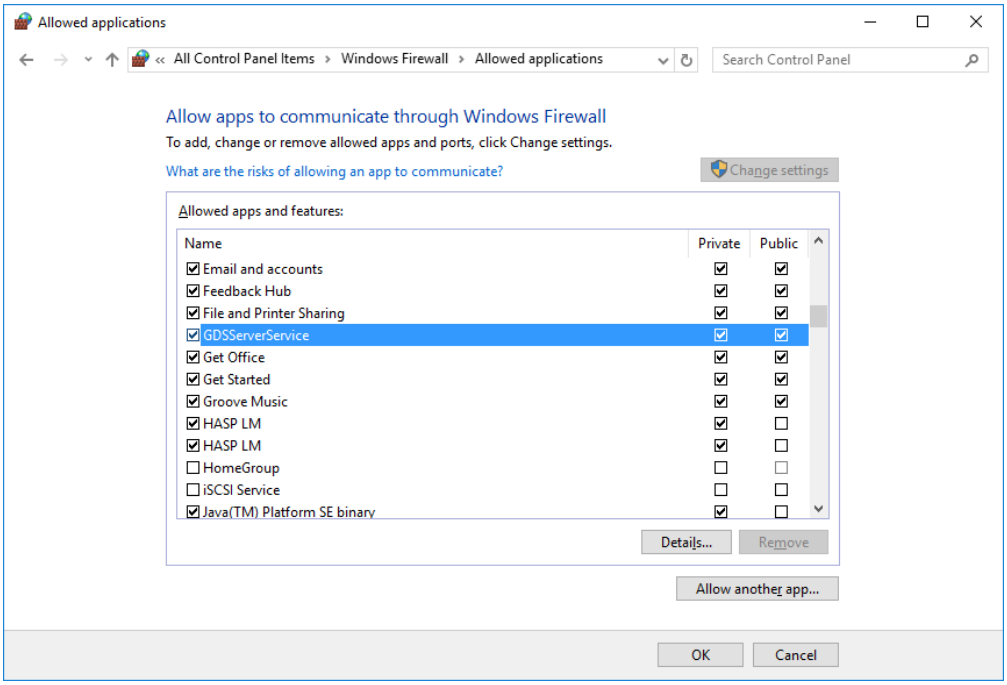
7.2 g.NEEDACCESS AND THE WINDOWS FIREWALL CONFIGURATION

To allow remote users to access the server service over the network, your firewall must be configured to permit incoming connections for the program `GDSServerService.exe` in the selected installation folder.

The installer attempts to add such a rule to the Windows Firewall automatically. If you're using a firewall other than the Windows Firewall, you have to configure it manually.

To check whether the installer succeeded in creating and adding the rule to the Windows Firewall, open the *Windows Firewall* configuration from the Control Panel and select *Allow an app or feature through Windows Firewall*.

The following figure shows how to allow the server service through the firewall to access the server service over network from a different machine.



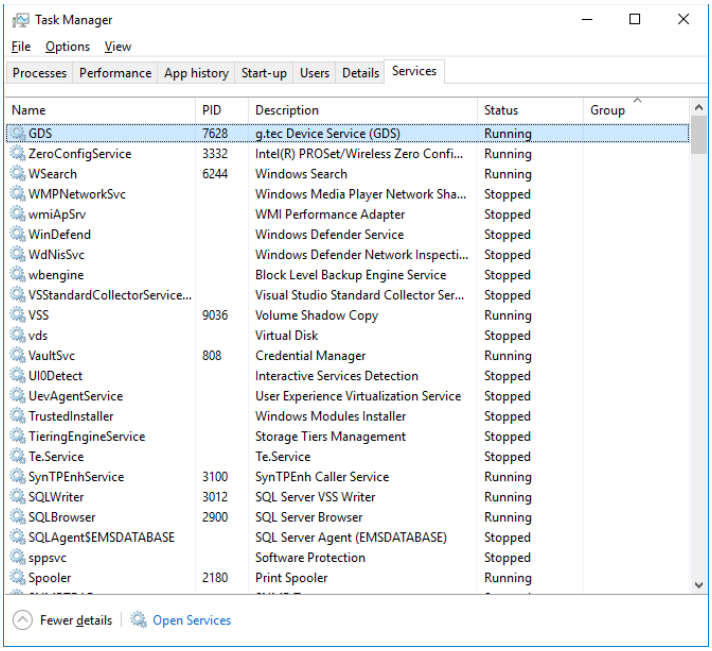
A list of firewall rules is presented. Find the rule named *GDSServerService* and verify that all checkboxes are checked. If the dialog denies modification of the current settings, click the *Change settings* button before. If the service has not been enlisted automatically, you can add it manually by clicking *Allow another program…*.

This rule will be removed on uninstallation automatically again.

7.3 CHECK IF SERVER SERVICE IS RUNNING CORRECTLY

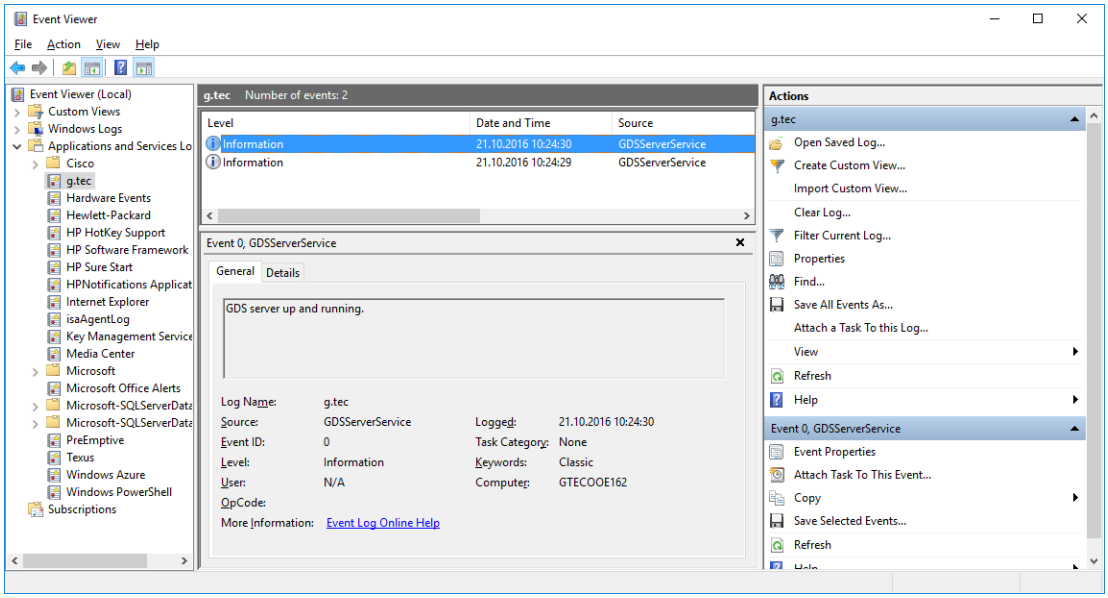
To verify that the server is running, check the *Services* tab of the Task Manager.

The following figure shows the server service named *GDS* and that it is listed in *Windows Task Manager – Services*.



You can use the *Event Viewer* from the Administrative Tools of the OS to check for log messages. Navigate to *Applications and Services Logs* and double click *g.tec* in the center frame, or select *g.tec* in the tree view:

The following figure shows that the events of the server are listed in the *g.tec* log of the Event Viewer's *Applications and Services Logs*.



7.4 CONNECTING WITH THE SERVER

If the *client application* that wants to acquire data from g.NEEDaccess Server runs on a different machine than g.NEEDaccess Server, the two machines must be connected peer-to-peer by a gigabit Ethernet connection. Ensure that firewalls on both sides permit incoming and outgoing connections between the client application and g.NEEDaccess server (see section *g.NEEDaccess and the Windows Firewall Configuration*).

g.NEEDaccess Server listens for incoming connections at port **50223**.

Applications that want to acquire data from g.NEEDaccess Server must be configured to connect to the server at this port and a valid IP address. If the application runs on the same machine as the server, the loopback address (127.0.0.1) can be used.

8 TRADEMARK NOTICE

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g.tec