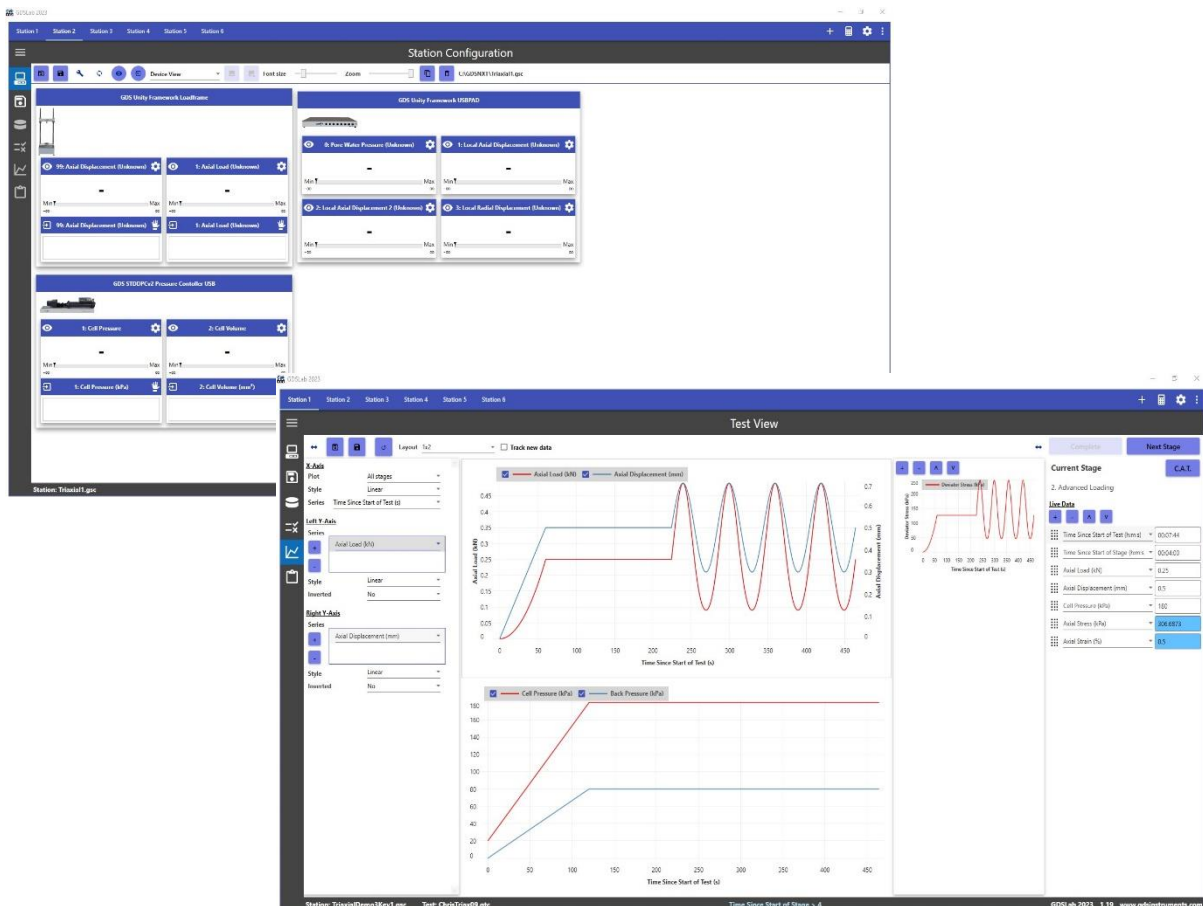


World Leaders in Computer Controlled Testing Systems for Geotechnical Engineers and Geologists

GDSLAB Software Handbook



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INTRODUCTION

How to use this handbook

This handbook is designed to be used in conjunction with the GDSLAB Video Guides and additional technical information found on the GDSLAB Video Handbook Overview page found on the GDS website <https://www.gdsinstruments.com/gdslab-video-handbook.html> which provide more detailed information on each section introduced in this handbook.

1. INSTALLATION

The latest version of the GDSLAB installation package can be downloaded from <http://www.gdsinstruments.com/information/software-downloads>

For further information see the video guide https://www.gdsinstruments.com/video-handbook/1_1.mp4

1.1 GDSLAB PC Requirements

	Minimum	Recommended
OS (64-bit)	Windows 10	Windows 10
CPU/Processor	Intel i3 or AMD Ryzen 3	Intel i5 or AMD Ryzen 5
GPU/Graphics	Internal graphics acceleration	Dedicated graphics card
Screen Resolution	1080p (1920x1080)	1080p (1920x1080)
Memory RAM	8GB	16GB
Available Disk Storage	256GB SSD	512GB SSD
USB Ports*	USB v2.0 or above	USB v2.0 or above

1.2 How do I register my GDSLAB licence for use

GDSLAB is licenced for use via a licence file which will be sent to you by GDS. This licence file is linked to a specific PC for which there is a unique Hardware ID which GDS will require to generate your licence file.

Install GDSLAB and in the top right corner click on the three dots then select **About**. On the About window expand the Licence arrow at the bottom. Copy the Hardware ID shown and email this ID to GDS who will send you a corresponding licence file.



Once you have received the licence file from GDS click on Upgrade and then on Load Licence to load your licence file into GDSLAB to enable the purchased functionality.

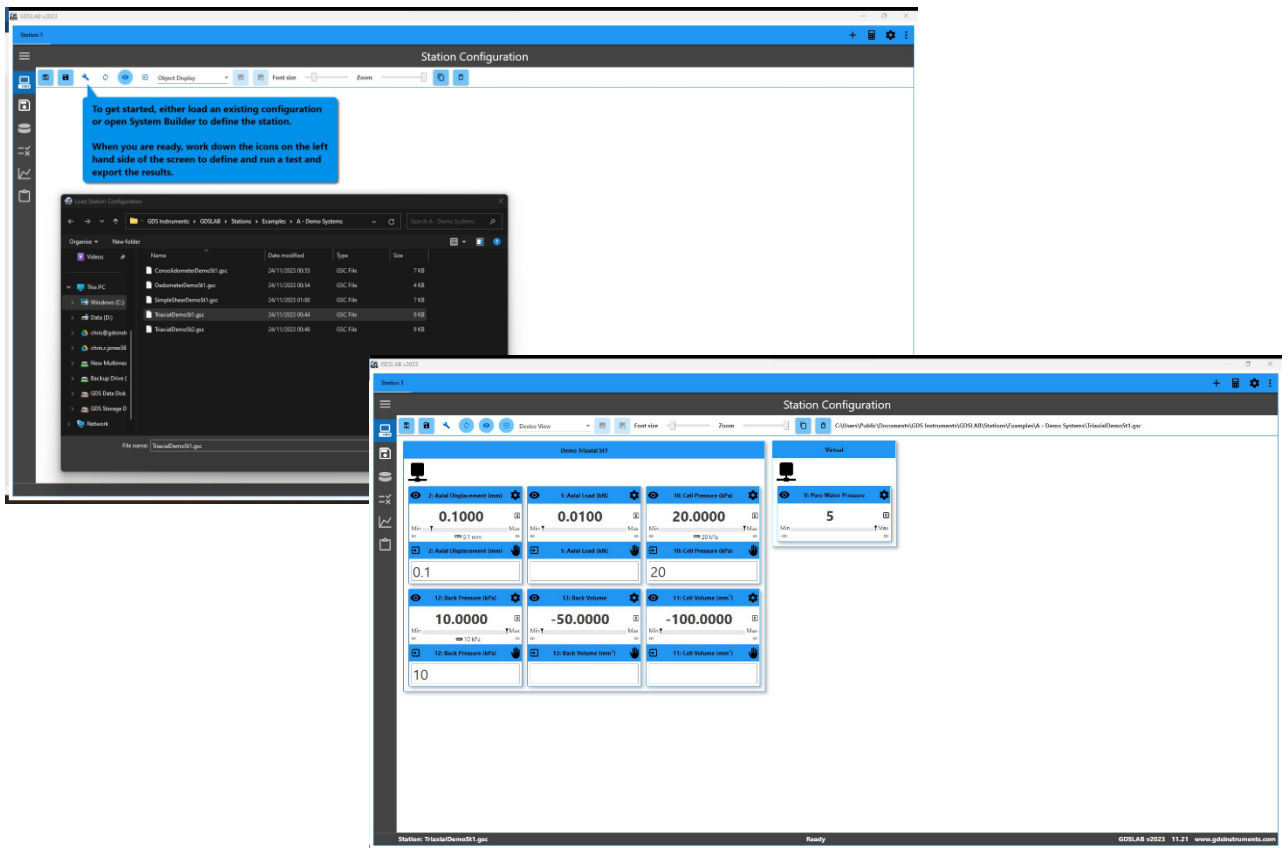
For further information see the video guide https://www.gdsinstruments.com/video-handbook/1_2.mp4

1.3 Software Demo

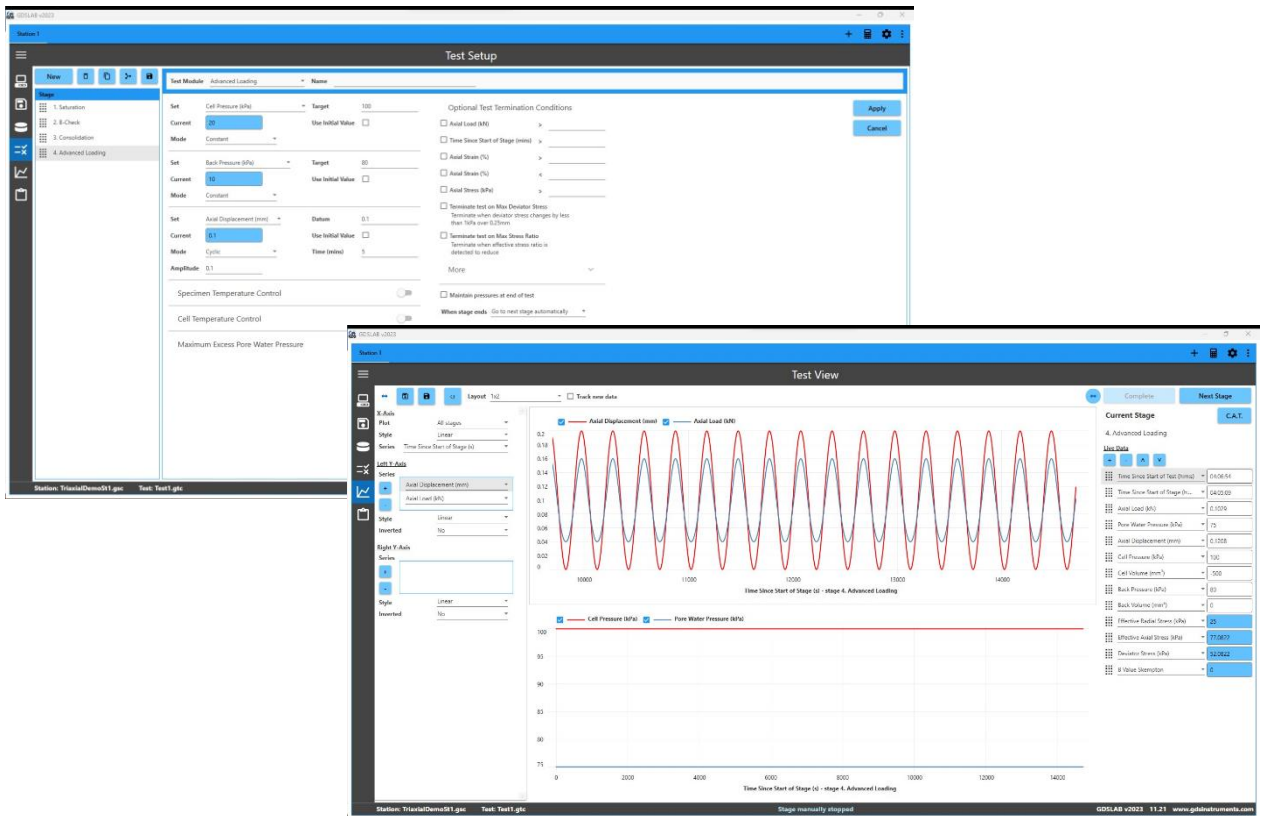
Users are able to demo GDSLAB without needing a licence. New users are able to review all of the functionality of GDSLAB and existing GDSLAB users are able to review functionality that is not included in their licence. The only thing that a user is not able to do in demo mode is to control and acquire data from a test using real hardware.

To make the experience of demoing the software more realistic GDSLAB provides a number of demo station configurations for typical test types utilising 'dummy' control and acquisition parameters to simulate test control and acquisition.

When you first open GDSLAB it will open on the System Configuration page. To load in a Demo configuration click on the Load icon on the left. The Demo configurations are located in C:\Users\Public\Documents\GDS Instruments\GDSLAB\Stations\Examples\A - Demo Systems\



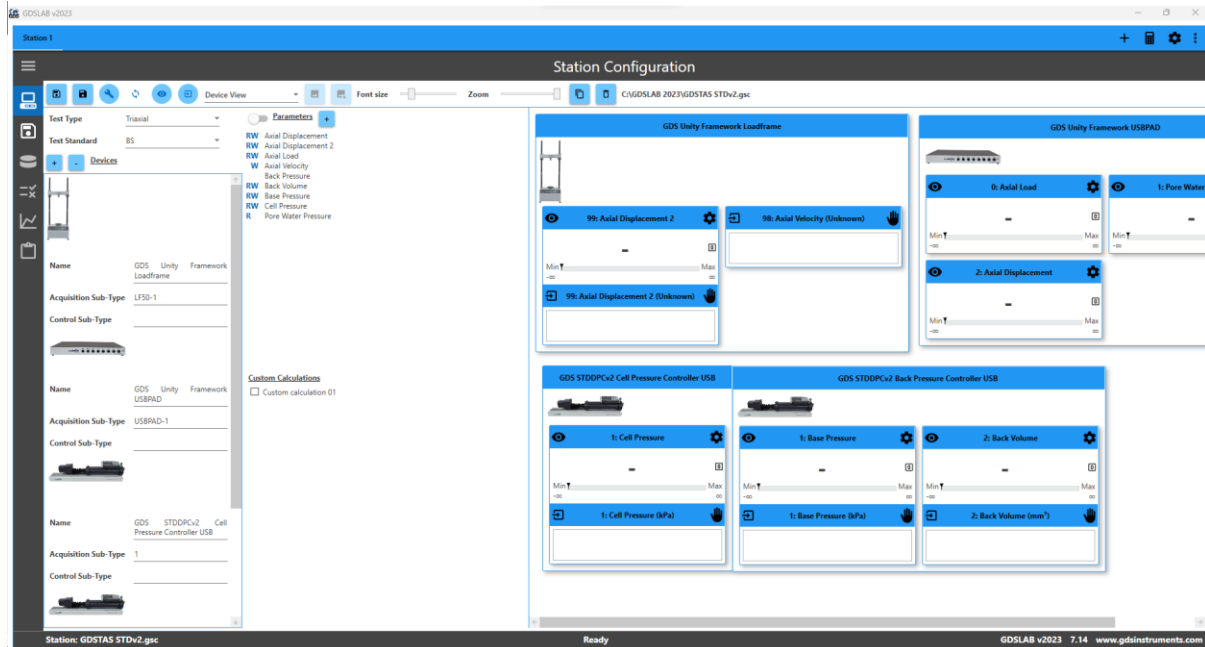
With the Demo configuration you can set and read parameter values and go through all the steps of defining and running a list of test stages and exporting an output datafile.



2. QUICK START

2.1.1. How do I create a Station Configuration

GDSLAB provides the user with a System Builder which is a graphical method for the user to build up their Station Configuration to match the system hardware.



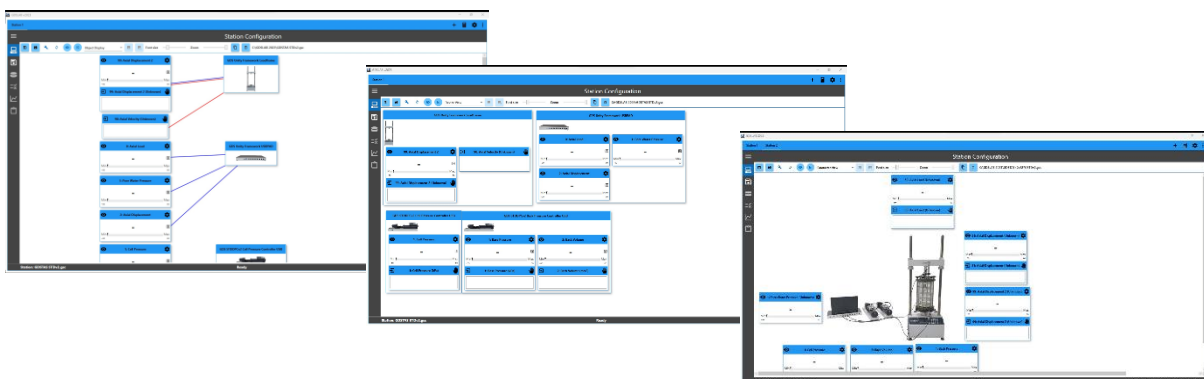
When the software is first run the user will be presented with a series of hints taking the user through the process of selecting a Test Type, adding Devices and selecting and configuring the relevant Acquisition and Control Parameters.

For further information guiding the user through this process see the video guide

https://www.gdsinstruments.com/video-handbook/2_1.mp4

2.1.2. How can I visualise my system

GDSLAB presents the user with three option to visualise the system configuration on the Station Configuration page.



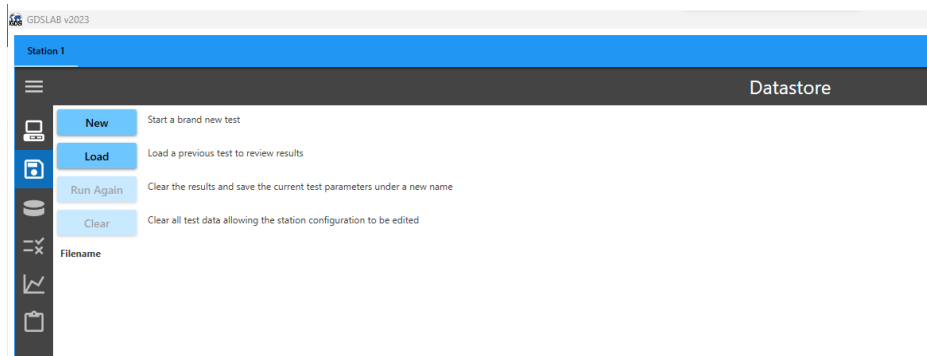
1. Object Display View – for those existing user familiar with GSLABv2
2. Device View – Acquisition and Control Parameters are grouped by the Device that they are associated with. User is able to re-arrange the layout on the page by dragging Device boxes

- Parameter View – Acquisition and Control Parameters are grouped together and can be dragged around the page to the desired configuration. The user can also load an image file around which to group the Parameters

For further information see the video guide https://www.gdsinstruments.com/video-handbook/2_2.mp4

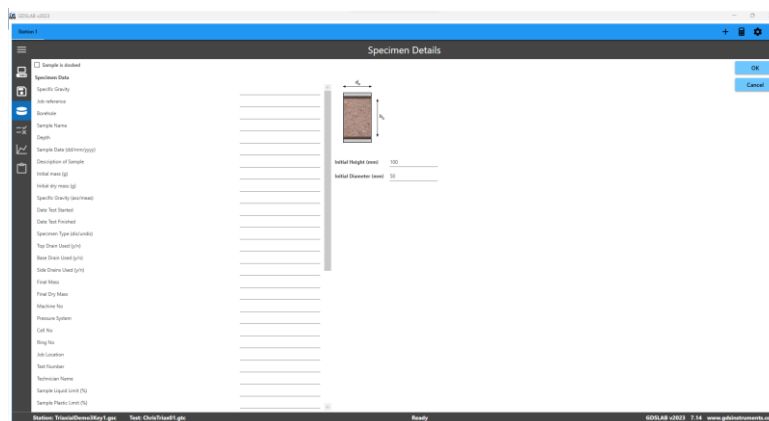
2.1.3. How do I input the specimen detail (Datastore)

To start a test the first step is to specify a Datastore file for all test information to be saved in. This is accessed by clicking on the Datastore icon on the hamburger menu on the left of the screen. GDSLAB stores all information to do with the specified test stages and acquired transducer data in this Datastore file, which is a complete record of the test. The Datastore file can be reopened in GDSLAB after the test at a later date to review the test stage settings and view the test results on the graphs.



An output CSV file containing the test results can be exported at any point during or after the test has been completed from the information contained in the Datastore file.

Once the Datastore file has been created the Specimen Details icon is enabled on the Hamburger menu. Click on this page and enter the Specimen dimensions. You can also record any relevant sample information in the optional fields on the left of the screen.

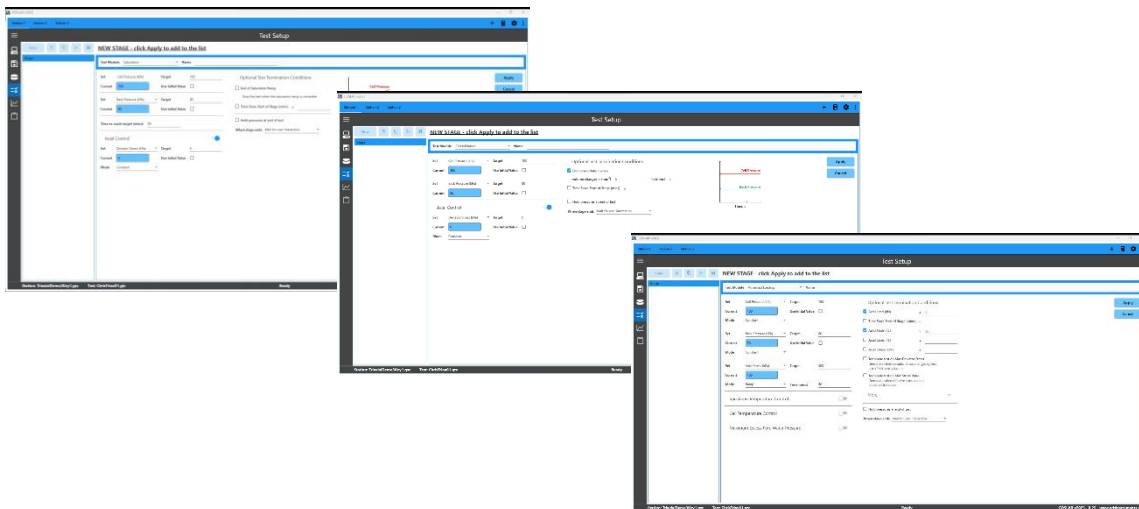


For further information see the video guide https://www.gdsinstruments.com/video-handbook/2_3.mp4

2.1.4. How do I setup and run a test

Once the specimen details have been entered the Test Setup icon is enabled on the Hamburger menu. Click on this page to specify the desired test control by adding one or more test stages to the test list, selecting from the available test modules relevant to the selected Test Type.

Test modules typically comprise a set of Set Blocks to define the values of the parameters to be controlled eg. The target Cell Pressure and target Back Pressure for a Consolidation stage, and a set of Termination Conditions which will cause the test stage to terminate if triggered, eg. if a certain load has been reached, and can automatically start the next stage in the list if defined.



For further information see the video guide https://www.gdsinstruments.com/video-handbook/2_4.mp4

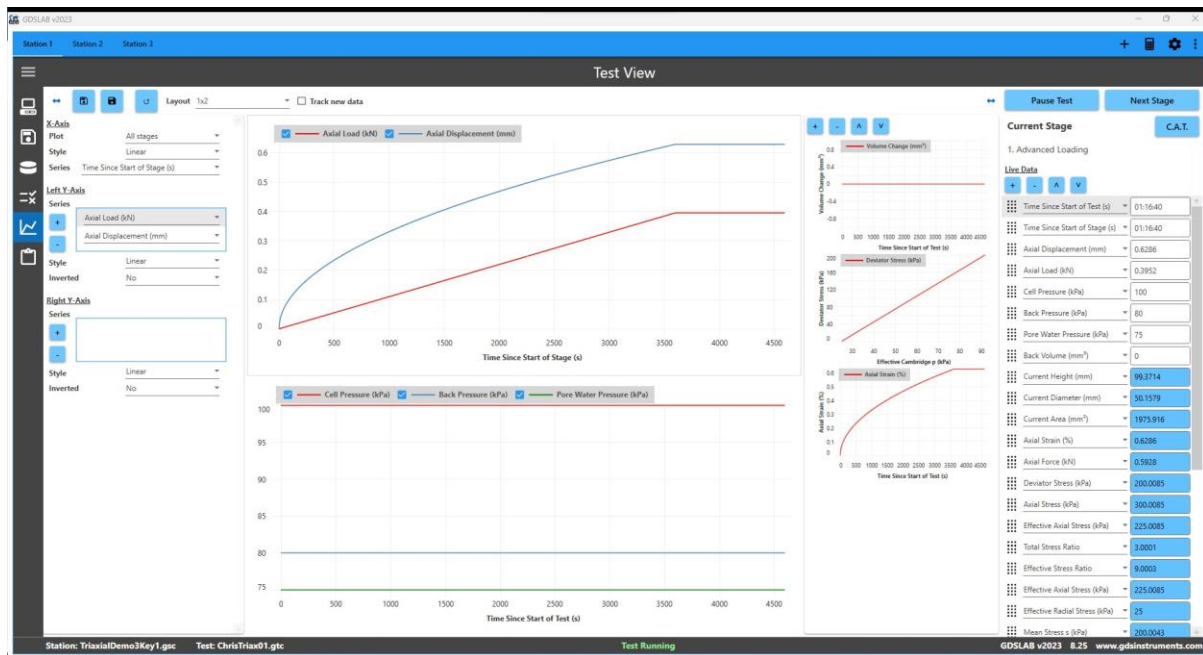
2.1.5. How do I view test data and graphs during a test

Once one or more test stages have been added to the test list the Test Setup icon is enabled on the Hamburger menu.

The Test Setup page allows the user to Start, Stop and Pause test stages, move to the next test stage, and to view the progress of the test via a set of user defined graphs and current values for specified raw and calculated parameters.

The test display graphs give the user a high degree of customisation to visualise the progress of the test. Customisation options include:

- Selecting between a display layout of 1, 2 or 4 graphs on the page
- Defining any number of graphs and drag and drop those currently of interest into focus on the current display layout
- The ability to save and load different graph and current value configurations
- Plot any number of parameters on a single graph, using a single or multiple Y axes
- Easy zoom and scroll, and the ability for a zoomed graph to track new data
- Plot data for the current, all, or a selected test stage



On the right of the Test Display screen is the Live Data list where the user can select any number of raw or calculated parameters to display, in addition to the parameters plotted on the graphs.

For further information see the video guide https://www.gdsinstruments.com/video-handbook/2_5.mp4

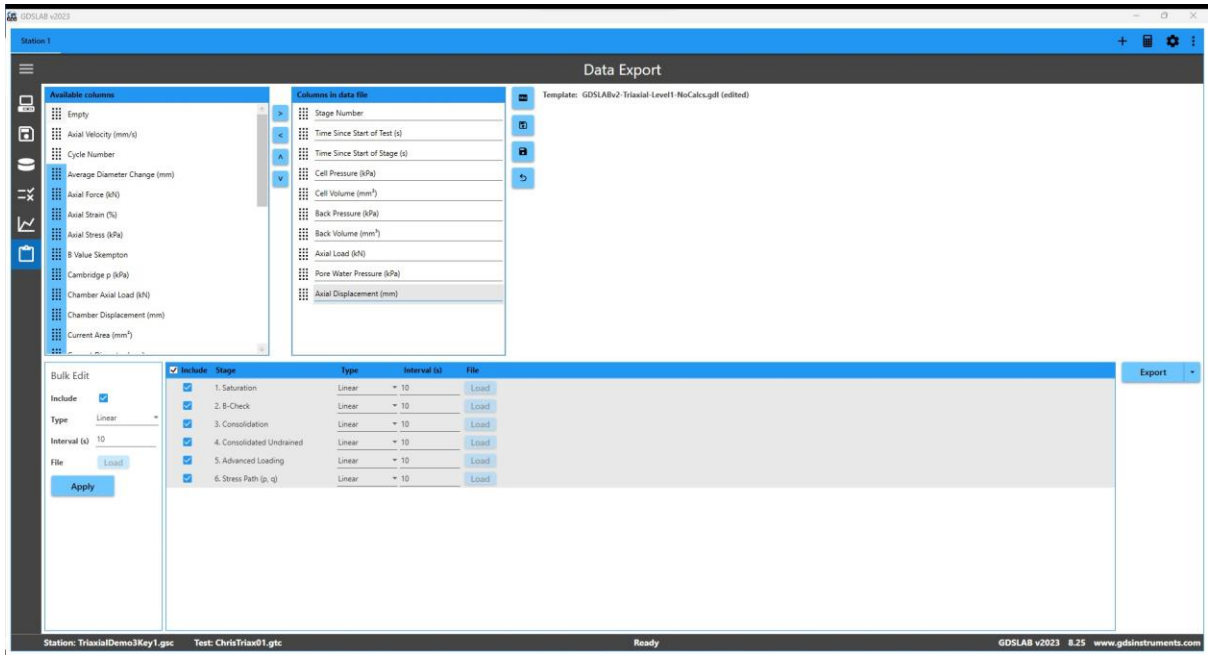
2.1.6. How do I get a csv data export

An output datafile containing the test results can be exported at any time during the test, or after the test has been completed by reloading the test datastore file by clicking on the Data Export icon on the Hamburger menu.

The user can select which data columns to export by dragging them across from the Available columns list to the Columns in data file list and can order them in that box as desired via drag and drop. Columns in data file list templates can be saved for re-use and imported when needed.

The user can select which test stages to include in the output datafile and set the desired data saving interval for each test stage. For convenience there is also a bulk edit feature to the set data saving for all selected test stages.

Output datafiles can be export in .gds format (Comma separated text file with .gds file extension), .csv format (Comma separated text file), and as an Excel Workbook file.



For further information see the video guide https://www.gdsinstruments.com/video-handbook/2_6.mp4

3. ADDITIONAL FUNCTIONALITY

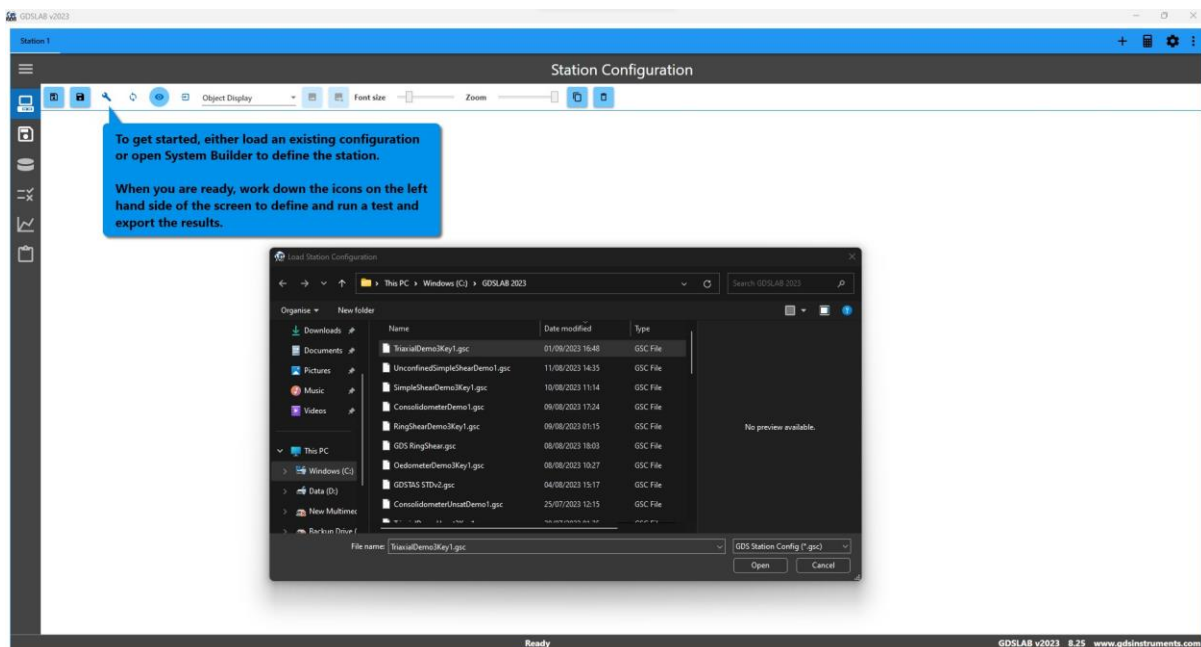
3.1 Station Configuration

3.1.1. How do I load a Station Configuration

When the software is first started or a new station is created using the + icon at the top right of the screen the user has the option to either configure the Station using the graphical System Builder or to load in a previously configured test Station file. A new station will automatically open the System Configuration option on the Hamburger menu.

To load in a previously configured test station file click on the Load icon on the Station Configuration page. This will open a file dialog box for the user to select a GDS Station Config (.gsc) file.

GDSLAB installs a list of example Station Configurations for standard systems in C:\Users\Public\Documents\GDS Instruments\GDSLAb\Stations\Examples



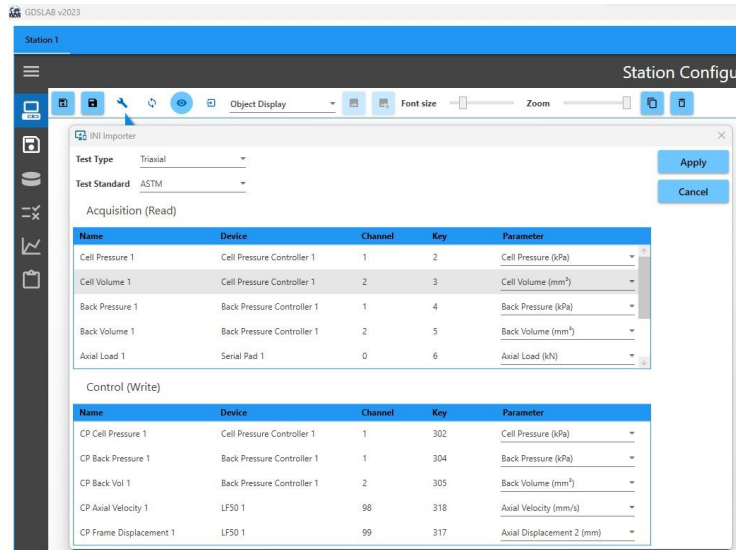
For further information see the video guide https://www.gdsinstruments.com/video-handbook/3_1_1.mp4

3.1.2. How do I create a Station from an existing GDSLAV2 ini file

The current version of GDSLAB has the ability to import and convert station ini files from the previous GDSLAV2 to a Station Configuration. To load in an ini file change the file type in the file dialog shown in section 3.1.1 to GDSLAV2 INI file (*.ini) and select the desired ini file to import.

This will open the INI Importer window. The INI Importer will automatically map the configuration in the ini file to the appropriate GDSLAB Test Type and will map the transducers defined in the ini file to the appropriate GDSLAB transducer Parameter type. In the INI Importer the user is able to change the mapped Test Type and Parameter type if necessary before the Station Configuration is created.

Any GDSLAV2 calibration files found by the INI Importer referred to in the selected ini file will have their settings imported to the Station Configuration.

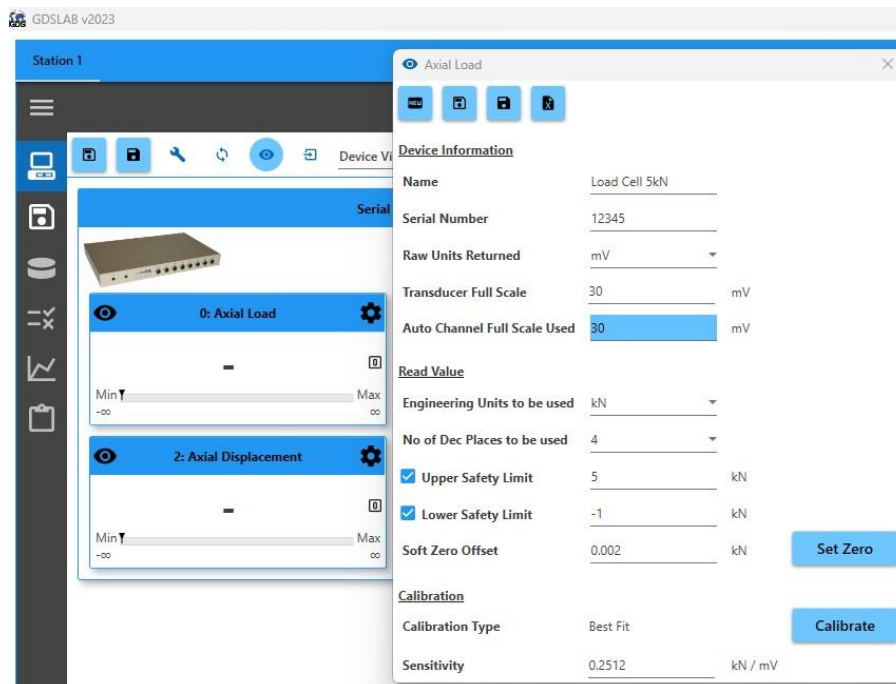


3.1.3. How do I setup my transducers to read correctly

For devices that do not return values directly in engineering units, such as a datalogger, the transducer needs to be setup with the correct parameters to return correctly calibrated value in Engineering Units.

To setup these parameters click on the Settings Cog on the Transducer card. This will open the Transducer Setting page for that Transducer. Appropriate settings to use for the transducer can be derived from the transducer calibration certificate supplied with the transducer.

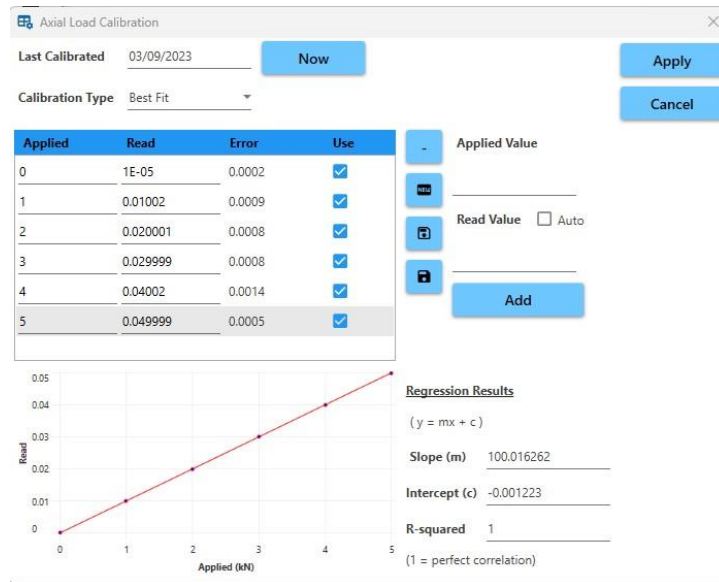
Alternatively the users may want to perform their own calibration of the transducer which is dealt with in section 3.1.4.



For further information see the video guide https://www.gdsinstruments.com/video-handbook/3_1_2.mp4

3.1.4. How do I calibrate my transducers

To perform a transducer calibration click on the Calibrate button on the Transducer Settings page shown in section 3.1.3. This will open the Transducer Calibration page which allows the user to perform a manual calibration of the transducer, building up a table of applied versus measured values, to derive a calibration which can be utilised in GDSLAB either as a Best Fit sensitivity value or as a Lookup Table interpolating the sensitivity between point on the calibration table.



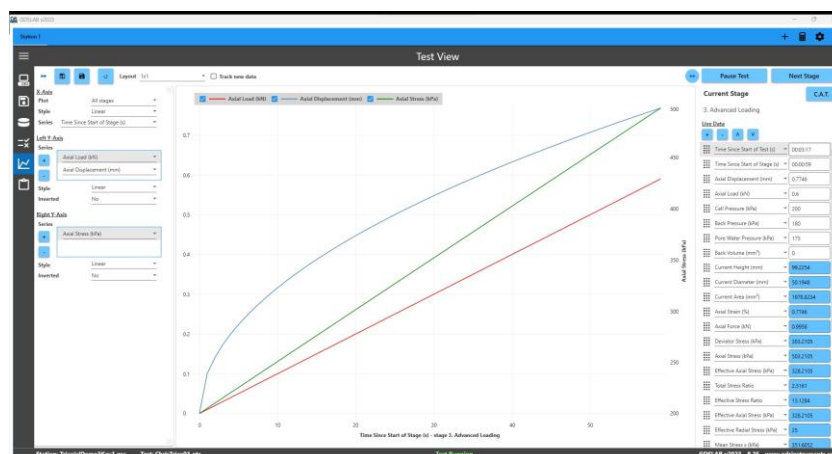
For further information see the video guide https://www.gdsinstruments.com/video-handbook/3_1_3.mp4

3.2 Test View

3.2.1. How to display multiple axes on a graph during a test

The GDSLAB graphs give the user great flexibility in displaying test data. In addition to being able to display multiple graphs, it is also possible to plot multiple parameters on the axes of a single graph. For parameters plotted on the Y axis the user can choose to either:

- Plot all the parameters on a single Y axis (useful for parameter of similar range)
- Plot one or more parameters on a second Y axis (useful for parameters whose ranges differ considerably)



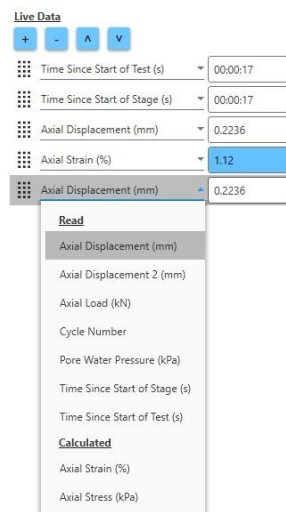
Other options include:

- plot data for the whole test, current test stage or a selected test stage
- Change one or more axes to plot on a logarithmic scale
- Invert one or more Y axes

For further information see the video guide https://www.gdsinstruments.com/video-handbook/3_4_1.mp4

3.2.2. How to adjust the live data that is displayed during a test

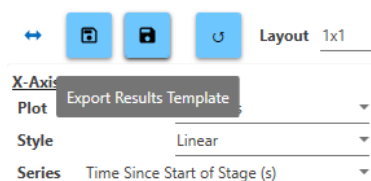
The Live Data section on the Test Display page displays the current value of the selected raw or calculated parameters. The user can display as many parameters as desired in this Live Data list. To add a new parameter to the list click on the + icon under the Live Data label, and to remove a parameter click on the – icon. The user can change the displayed raw or calculated parameter of a live data row by selecting from the drop-down list. Parameters can be reordered in the list via drag-and-drop.



For further information see the video guide https://www.gdsinstruments.com/video-handbook/3_4_2.mp4

3.2.3. How to save and re-load graphs and live data templates

GDSLAB allows the user to save and re-load graph and Live Data settings templates which can be useful to have a predefined view that can be loaded for a specific section of a test. To save the current graph and Live Data settings click on the Export Results Template icon above the graph axes settings (the right-hand disk icon). To re-load a previously saved template click on the Import Results Template icon, and then select the saved template using the File Open dialog window.

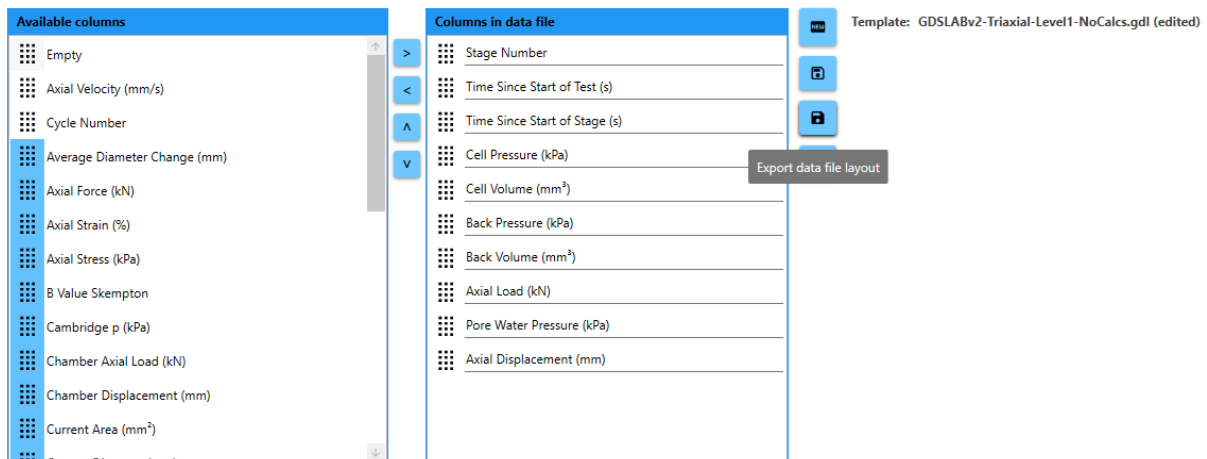


For further information see the video guide https://www.gdsinstruments.com/video-handbook/3_4_3.mp4

3.3 Test View

3.3.1. How to create a data export template for consistent results exporting

Once a .csv datafile export column layout has been defined on the Data Export page as described in section 2.1.6, it is possible to save that layout as a Data Export template for future use. To save the current layout as a Data Export template click on the Export data file layout icon (the lower disk icon). To re-load a previously saved template click on the Import data file layout icon (the upper disk icon), and then select the saved template using the File Import Open window.



For further information see the video guide https://www.gdsinstruments.com/video-handbook/3_5_1.mp4

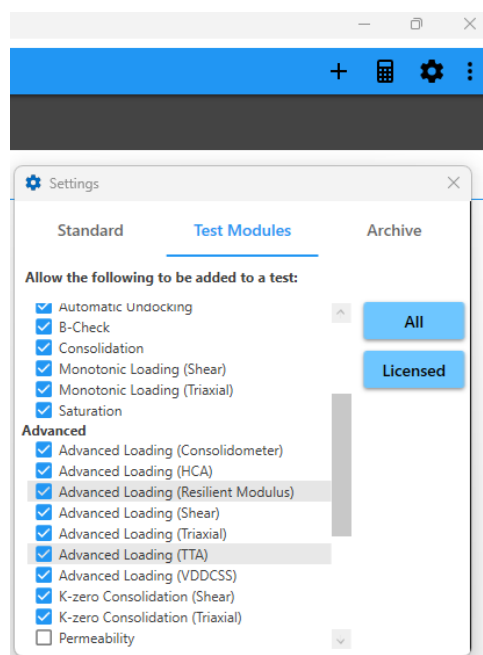
4. ADVANCED SETUP

4.1 How to hide test modules on a station that are not used or registered

As default GDSLAB will display all licenced test modules relevant to a Test Type in the Test Module list on the Test Setup page. If desired the user can hide those that they do not intend to use. This is done by clicking on the Test Modules tab on the Settings page, accessed by clicking on the Setting cog on the top right of the screen. Untick all test modules that are not required.

Alternatively, if a user wants to have a look at an unlicensed test module this can be ticked and will appear in the Test Module list. Test control will not be possible if the module is not licenced.

The All button on the right will allow all relevant test modules to be displayed in the Test Module list irrespective of whether it is licenced. The Licenced button on the right will only show those test modules which are licenced.

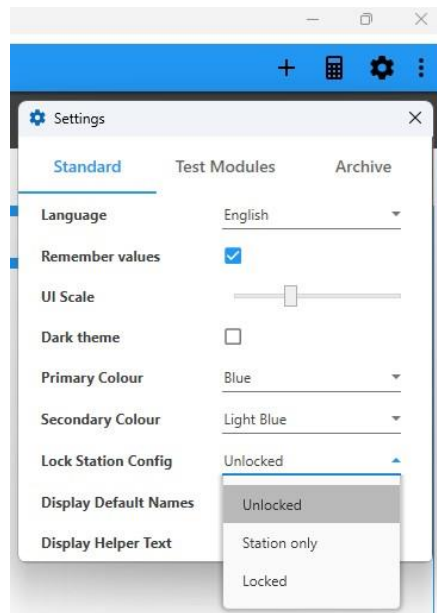


For further information see the video guide https://www.gdsinstruments.com/video-handbook/4_1.mp4

4.2 How to lock a station to stop accidental or unauthorised changes

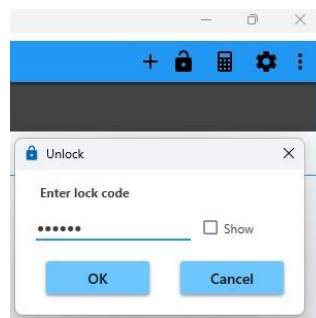
GDSLAB can be locked to prevent unintentional modification of the Station Configuration and transducer settings. This is done by clicking on the Settings page, accessed by clicking on the Setting cog on the top right of the screen, and changing the Lock Station Config setting. There are three options:

- Unlocked – the user has the ability to modify the Station Config and transducer settings
- Station Only – this locks the Station Configuration but allows the user to modify the transducer settings
- Locked – this locks both the Station Configuration and the transducer settings (apart from the ability to apply a zero offset to the transducer)



If the station is set to anything other than unlocked the user will be prompted to select a password with which to unlock the station.

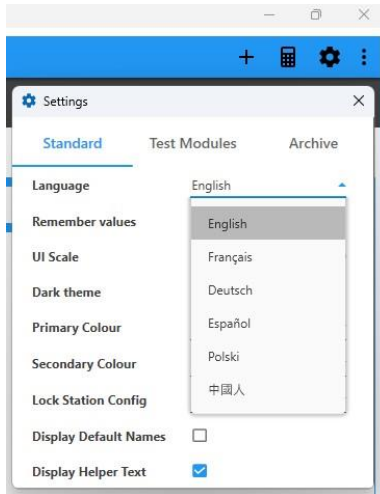
When the station is locked at either level an unlock icon will appear at the top right of the screen. To unlock the station click on this icon. The user will then be prompted to enter the password to unlock the station.



For further information see the video guide https://www.gdsinstruments.com/video-handbook/4_2.mp4

4.3 How to change the user language

The display language of the GDSLAB user interface can be changed at any point. This is done by clicking on the Settings page, accessed by clicking on the Setting cog on the top right of the screen, and selecting the desired language.



For further information see the video guide https://www.gdsinstruments.com/video-handbook/4_3.mp4