



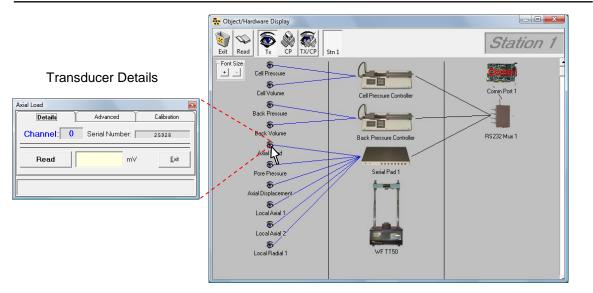
World Leaders in Computer Controlled Testing Systems for Geotechnical Engineers and Geologists

Software

GDS Lab

Editing and Entering New Transducer Calibration Data

1. Introduction



GDSLab allows you to easily change the sensitivity and input other calibration parameters of transducers connected to a system. It also allows you to create point by point manual calibration curves and use these for your transducers. All this information is stored in the x:\GDSLAB\Calibration Files directory.

It also allows for fast and simple switching between pre-entered transducer calibration details if you wish to move transducers between stations, or use different transducers for different test types within a single station.

2. Editing Transducer Calibration Parameters

Axial Load	
Details Advanced Calibration	First open the transducer details box from the
Channel: 0 Serial Number: 25928	object display. This is the box shown on the left.
Read mV Exit	To modify the currently selected transducer use the 'Advanced' and 'Calibration' tabs.
	the Advanced and Cambration tabs.
Axial Load	Axial Load
Details Advanced Calibration	Details Advanced Calibration
This form is the General Transducer Object v 2.1.4 Currently connected to GDS Serial Pad data v V 2.0.1 Device Information mV v V 2.0.1 Raw Units Returned mV v V 2.0.1 Transducer Full Scale 1 mV v Auto Channel Full Scale Used 10 mV v Read Value mV v v v No of Dec Places to be used 0 v v v	Transducer Name: St1 Axial Load Serial Number: 25928 Last Calibrated: Change Tx © Best Fit © Look-up Sensitivity: 1 Calibrate Transducer Adjust Existing Calibration
Upper Safety Limit (0=none set) 0 mV Soft Zero Offset 0 mV Set Zero Exit	<u>Exit</u>

The advanced tab allows you to change the '*raw*' and '*engineering*' units, '*full scale output*', '*no. decimal places*' and upper safety limit relating to the currently selected transducer as well as allowing you to set or remove custom '*zero offsets*' (note, a zero offset of 0 returns the raw calculated value from the transducer). Clicking on the '*set zero*' button will set the current read value as zero. Depending on the device selected different options may be available for these inputs.

The calibration tab is most commonly used to input the transducer sensitivity values for the selected transducer in terms of engineering units per raw unit (eg kPa/mv). This is entered in the blue box shown above. A full explanation of how to calculate these values is given in Helpsheet 125 '*Calculating sensitivity and full scale output*'.

3. Creating New Transducer Calibration Files

New transducer calibration files can be made using the '*New Tx*' button. After clicking the button you must enter in a name and/or serial number for the transducer before clicking OK. You can then enter the sensitivity and other parameters for the new transducer as usual.

Axial Load	2	Axial Load
Details Advanced	Calibration	Details Advanced Calibration
Transducer Name: St1 Axial Load	New Tx	Transducer Name: New Transducer New Tx
Serial Number: 25928	~	Serial Number: 012345
Last Calibrated:	Change Tx	Last Calibrated: Change Tx
Calibration (*.cal) files		C Best Fit C Look-up
Transducer Name: New Transducer		Sensitivity: 1 /
Serial Number: 012345		
Last Calibrated:		Calibrate Transducer Adjust Existing Calibration
2.cal CR AxialDisp_05G01082.cal CR PP_85466.cal Encoder_1.cal Ivdt50mr_3468.cal pressure tx_2850056.cal txducer1.cal txducer10.cal txducer11.cal txducer12.cal txducer13.cal	<u>D</u> K <u>C</u> ancel	
	<u>E</u> xit	Exit

4. Switching Between Transducer Calibration Files

Pore Pressure	1	×
Details A	dvanced	Calibration
Transducer Name: pres	sure tx	New Tx
Serial Number: 2850	1056	🔁 🗌
Last Calibrated:		Chang is Tx
Calibration (*.cal) files		
Transducer Name:		
Serial Number:		
Last Calibrated:		
2.cal CR AxialDisp_05G01082.cal CR PP_85456.cal Encoder_1.cal Ivdt50mm_3458.cal New Transducer_012345.ca pressure tr_2850056.cal trxducer1.cal trxducer10.cal trxducer11.cal		<u>D</u> K Cancel
		<u>E</u> xit

To switch between saved calibration files simply use the '*Change Tx*' button in the calibration tab. This will show a list of all the saved calibration files on your system. Click on the desired file then OK to set it.

This will store the new transducer calibration file as the default one to use in your system *.ini file.

5. Entering Tabulated Calibration Data and Performing Point Calibrations

GDS Lab includes a wizard for entering tabulated calibration data and performing point by point calibrations where a single sensitivity value is not available or where there the relationship between raw output and engineering units is not linear. To use this wizard click on the '*Calibrate Transducer*' button from the calibration tab.

If you wish to store the old calibration details you must first create a new transducer as described earlier in this Helpsheet. The wizard will overwrite the calibration information for the currently selected transducer.

Calibration Wizard	×	🖪, Calibra	ation Wizard		x
	zard will guide you through the tion of your transducer.		Transducer Name:	New Transducer	
	ile will be created and placed in the		Serial Number:	012345	
	AB\Calibration Files\ directory and will be according to the transducers name and umber.		Todays Date:	(Adjust if incorrect.) 05:07:2010	
Simply	follow the process by pressing the 'Next >"		Applied Units:		
	at the bottom of the screen.		Read Units:		
	< Back Next > Cancel			< Back	

The screenshot below left shows the wizard's main window. For tabulated calibration data you input the '*Applied Value*' and '*Read Value*', clicking '*Accept*' after each pair is entered. To perform a point by point calibration you enter the applied value manually, then having selected '*Autoread*' click accept when you have applied the force/displacement etc.

The graph and error values will update with each new data point (see below right). When you have entered sufficient data points click next to continue.

Calibration Wizard	🔁 Calibration Wizard
Row Selected 1 Applied Value:	Row Selected 6 Applied Value:
Num Applied, Read, Error Use? 1 Image: Comparison of the second s	Num Applied, Read, Error Use? 1 1 1.002 0.0002 Yes 2 2 2.003 0.0002 Yes 3 3 3.003 0.0002 Yes 4 4 4.004 0.0002 Yes 5 5 5.004 0.0002 Yes 6
Begression Results (y = mx + c) Slope (m) (c) Max Error On detapoint X F.S. Error Image: Comparison of the state	Read, Fe
< <u>B</u> ack <u>Next></u> <u>C</u> ancel	<back next=""> Cancel</back>

You can then choose whether to use a single best fit line for the calibration or linear interpolation between each data point (Look-up Table). The wizard will remind you of the filename used and what the equivalent sensitivity value is for the entered information.

Calibration Wizard Calibration type Best Fit Straight Line Best Fit Straight Line Cook-up Table Best Fit Straight Line is calculated using a method of least squares across all the data points available. Look-up Table will simply interpolate between available data points.	Calibration Wizard Filename New (transducer name + serial number) Sensitivity 0.3995 /
< <u>B</u> ack <u>Lext</u> > <u>C</u> ancel	< <u>B</u> ack <u>F</u> inish <u>C</u> ancel

Finally the new calibration details will be set and you are returned to the calibration tab.

Axial Load
Details Advanced Calibration
Transducer Name: New Transducer New Tx
Serial Number: 012345
Last Calibrated: Change Tx
Best Fit C Look-up
Sensitivity: 0.9995 /
Calibrate Transducer
$\begin{array}{c} 6\\ 5\\ 4\\ 3\\ 2\\ 1\\ 1\\ 2\\ 3\\ 4\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 1\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 1\\ 1\\ 2\\ 3\\ 4\\ 5\\ 1\\ 1\\ 1\\ 2\\ 3\\ 1\\ 1\\ 1\\ 2\\ 1\\ 1\\ 1\\ 1\\ 1\\ 2\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\$
Exit