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Software

General

Calibrating a GDS USB Device using the Field Cal tool

Available for download at: https://www.gdsinstruments.com/information/software-downloads

- 1) Connect the controller to the PC and turn on. If GDSLab is running close close it to allow a new connection to the controller.
- 2) On the file sent to you (if not done already) delete the part of the name 'remove his' leaving only FieldCalTool.exe
- 3) Open the application.
- 4) The following box will appear on your PC, select 'Connect'.

Connect Device	
Connect	
Disconnect	
Begin Calibration	

5) Select the device you wish to calibrate from the drop down list. If your device does not appear, make sure all connections are firm and that the device is switched on, then press the refresh button. Click "Select" to choose the device.

GDS USB Controller Selection Tool	GDS USB Controller Selection Tool
Available USB Controllers Cancel Select I Refresh There is 1 GDS Controller currently available on this PC	Available USB Controllers Cancel Select GDS AOS (Dipsy= lasue A rev. 0) ##GDS16779#2 Refresh Device description: GDS AOS (Dipsy+ lasue A rev. 0) Senal Number: GDS16779 Location ID: 11344 Device (D: 4036001 Device (D: 4036001 Device (D: 4036001 Device is currently closed and available for connection. Device (D: 403601)

6) The connect device start box will now allow you to click the "Begin Calibration" button. Click here to open up the calibration window. The "FieldCal" window shows the current calibration sensitivity in terms of units/count, the offset in raw counts and the current transducer reading in Engineering units.

	FieldCal	Z
Connect Device	Transducer Calibration Quanta: 1.601341E-06 k/ct	Current Transducer Reading: 0.05812867 k
Connect Disconnect	Offset: 3636 Least Squares Calculator	Store Calibration Permanently
Begin Calibration		Open RFM Calibration

7) To start a calibration, click the "Least Squares Calculator" button. Another pop up window will appear that allows you to perform a calibration on the internal transducer.

Least Squares Calcula	ator	×
Calibrate from Refere	ance:	Calculate
References (k)	Counts	Least Squares Fit
		Insert
		Load
		Save
		Clear
Reference (k)	Counts (LT Av)	Remove
0	39658	Add
Calculated Paramet	ters	
Sensitivity (k/ct)	Offset (Counts)	
Correlation Coefficie	ent Cancel	Use

- 8) The purpose of this box is to record the known pressure applied to the transducer against raw counts read. It is generally recommended to work up and back down through the working range in order to take account of hysteresis that may be present in the transducer. Eg for a 1MPa pressure controller test at 0, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 900, 800, 700, 600, 500, 400, 300, 200, 100 & 0kPa.
- 9) Type the applied value into the "Reference" input box then press the "Add" button before moving onto the next reference.

Least Squares Calculat	or		Least Squares Calcu	lator	×
Calibrate from Referen	ce:	Calculate	Calibrate from Refe	rence:	Calculate
References (k)	Counts ^	Least	References (k)	Counts 🔺	Least
0	4202	Squares Fit	0	4202	Squares Fit
0.2	148155	Insert	0.2	148155 _	Insert
2	1612109		2	1612109	
4	3235443	Load	4	3235443	Load
6	4874928	Caus	6	4874928	Caus
8	6511764	Jave	8	6511764	Jave
10	8150132	Clear	10	8150132	Clear
8	6521434 👻		8	6521434 👻	
Reference (k)	Counts (LT Av)	Remove	Reference (k)	Counts (LT Av)	Remove
0	39720	Add		0 39708	Add
Calculated Paramete	rs		Calculated Param	eters	
Sensitivity (k/ct)	Offset (Counts)		Sensitivity (k/ct)	Offset (Counts)	
			1.227565E-06	-3204.88862883	3998
Correlation Coefficien	t		Correlation Coeffic	ient	
	Cancel	Use	0.999982	Cancel	Use

10) When all the known pressures have been recorded, select 'Calculate Least Squares fit' making sure the 'Correlation Coefficient' is as close to 1 as possible. It is also possible to save to and load the raw values from a *.csv file using the "Save" and "Load" buttons.

- 11) If you are happy with the calibration values select 'Use'. The "Least Squares Calculator" window will close automatically. The new calibration values will now be shown in the FieldCal window. To store these values in the device permanently click the "Store Calibration Permanently" button.
- 12) The following dialogue box will appear. When you click "OK" the device will be automatically restarted, updating the calibration in the permanent memory.



- 13) Close the FieldCalTool application. First click the "Disconnect" button, then close the "Connect Device" window using the x in the top right corner.
- 14) Check the calibration data has been stored on the device (on the Smart Keypad press CMD Menu 0 (system menu) System Calibration.)

Note: It is also possible to **Calibrate an RFM** connected to the USB device using this tool. The process is very similar to that for the parent device, but you must first click on the "Open RFM Calibration" button in the FieldCal window. From there you can follow steps 7 to 13 as with the main device.

Transducer Calibration Current Transducer Reading: Quarta: 1.601341E-06 k/ct 0.0579621: Offset: 3636 Least Squares Calculator Store Calibration Permanently Offset:	FieldCal]				
Guanta: 1.601341E-06 k/ct 0.0579621: k Transducer Calibration Current Transducer Calibration Offset: 3636 Guanta: units Offset: Least Squares Calculator Store Calibration Offset: Store Calibration	Transduc	cer Calibration	Curr	rent Transducer Reading:	RF	M0 Calibration			
Least Squares Calculator Store Calibration Permanently Offset: Store Cal	Quanta: Offset:	1.601341E-06 I	k/ct	0.05796211 k		Transducer Calibration Quanta:	units	Current Transducer R	eading: units
Onen REM Calibration Perman		Least Squares Calcu		Store Calibration Permanently		Offset: Least Squa	res Calculator	Store Calibrati Permanently	on