# Ludlum 9-4 and 3100 Series Calibration Software Manual

February 2025

Version 2.0.5.0 and above

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# Introduction

# **Getting Started**

# **General Description**

The Model 9-4 and 3100 Series Calibration Software is a useful software tool that allows reading and writing of many important parameters in Ludlum instruments via an FTDI serial port. Compatible Ludlum instruments include the Model 3100 and other instruments in that series and the Model 9-4, and may include others. (For the rest of this manual, when referring to the Model 3100, that will also include others in the Model 3100 series.) Instrument parameters may be loaded or saved to files, and an instrument parameter report may be printed. Current readings or measurements may be streamed from the instrument and viewed.

# **Software Prerequisites**

Microsoft .Net 4.5 comes installed on most machines by default.

# **Minimum Requirements**

- Supported Operating Systems: Windows 7 and higher (32-bit and 64-bit versions)
- Computer with Intel or compatible 1 GHz or faster processor (2 GHz or faster is recommended)
- Minimum of 256 MB of RAM (1 GB or more is recommended)
- 1 GB of free hard disk space.

# Installation

Run the installer MSI from the installation CD and follow the on-screen prompts to install the LMI Model 9-4 and 3100 Calibration Software.

# How to Use Software

# **Instrument Model Selection Screen**

This window is where the user selects an instrument to which to connect. Please select the proper instrument, or else experience errors.

3100 an	d 9-4 cal software	_		×
	Selected			
	Model 3100		`	/
		(	Ok	

# **Instrument Connection Screen**

This window shows currently connected Ludlum instruments plugged into a compatible use dongle, and the Mac address of that dongle.

Select Instrument	Select Instrument
Select Serial Number N/A   Refresh	Select Serial Number AFWJZOD6
No instruments found! Check that the FTDI drivers are installed and that the instrument shows up in the Windows Device Manager under Ports (COM LPT)	
Quit	ОК

If one were to plug in an instrument after getting to this page, the user will have to hit the refresh button.

# Model 9-4

# **Main Screen**

The main screen consists of a tabbed interface separating the general calibration operations from the restore settings operations and a menu bar.

# **Menu Bar**

The menu bar offers quick access to common functions including the File Menu, the Parameters Menu, and the Help Menu.

#### File Menu

- **Disconnect Instrument**: This menu item will disconnect from the instrument and take you back to the device selection screen.
- **Print:** This menu item will send a report of all parameters to a printer.
- **Exit:** This menu item will exit out of the software.

#### **Parameters Menu**

- Update (Ctrl-U): This menu item is the same as clicking on the "Update" button.
- Load from File (Ctrl-O) 9-4 only: This menu item loads in settings from a userdefined text file.
- Save to File (Ctrl-S) 9-4 only: This menu item will save the current settings to a user-defined file.
- **Reload All Data (Ctrl-R):** This menu item will reload all data from the instrument and refresh the restore values.
- **Print Parameters (Ctrl-P):** This menu item will send a report of all parameters to a printer.

# **Calibration Configurations Tab**

The Calibration Configurations Tab is the tab which should have focus during the calibration and configuration of the Model 9-4 Main Board. Using this tab during configuration, the user can configure sampling, delays, and compensations required for proper operation of the Model 9-4. Using this tab during calibration, the user can calibrate the meter face, enter calibration constants for all ranges, and calibrate the pressure sensor.

# Instrument Serial Number

This box is used to enter the six-digit serial number of the instrument being calibrated. This

value is used during print parameters to obtain a printout with the current instrument parameters and the instrument serial number.

# **Battery Calibration Constant**

This value is the calibration constant for determining a low-battery condition. The value range is 1 to 65535.

# Range Calibration Constants (X1 - X10K)

These values are the calibration constants for each range of the meter. The value ranges is 1 to 65535.

# **Calibration Low Pressure**

This number represents the actual low pressure (kPa) that the instrument pressure sensor is exposed to when setting the low-pressure calibration. The range of this value is 0.00 to 115.00 kPa.

# **Calibration High Pressure**

This number represents the actual high pressure (kPa) that the instrument pressure sensor is exposed to when setting the high-pressure calibration. The range of this value is 0.00 to 115.00 kPa.

# **Pressure Calibration Button**

When the value of the calibration low or high-pressure is changed, this button is highlighted and enabled. Calibration low and high values are not sent to the instrument until the button is pressed and all the calibration steps are completed. The highlighted button state simply indicates changes have been made and serves as a reminder to send the information to the instrument. See the calibration section for details on the calibration procedures.

# Temperature Compensation

When selected, the instrument readings will be corrected based on changes in ambient temperature.

# Pressure Compensation

When selected, the instrument readings will be corrected based on changes in ambient pressure.

# Meter Reset

When selected, the meter operates in the normal default mode.

# **Test Meter UCP**

When selected, the meter needle is deflected towards the mark indicating the expected reading when the instrument is calibrated at the Upper Calibration Point.

# **Test Meter LCP**

When selected, the meter needle is deflected towards the mark indicating the expected reading when the instrument is calibrated at the Lower Calibration Point.

# Meter Full Scale

When selected, the meter needle is deflected to full scale and the Up and Down buttons are enabled. The Up and Down buttons are to be used to adjust the meter needle to exactly full scale. The 'Adjust By Value' is the numerical value the ADC value is adjusted by, and a larger number (max of 20) will make the needle move further each time a button is pressed. Fine tuning can be made by setting the 'Adjust By Value' to 1.

# Meter Zero Scale

When selected, the meter needle is deflected to zero on the scale, and the Up and Down buttons are enabled. The Up and Down buttons are used just as they are used for Meter Full Scale; however, now the needle is being moved to exactly 0 on the display.

# **Battery Voltage**

This indicates the instrument's current battery voltage.

# Temperature

This indicates the ambient temperature of the instrument.

# **Uncompensated Pressure**

This indicates the pressure measured by the instrument pressure sensor.

# **Compensated Pressure**

This indicates the pressure measure by the instrument pressure sensor with the value compensated for the ambient temperature.

# **Pressure Sample Period**

This indicates the amount of time, 1 to 36000 (where 1 equals 100 ms), between pressure and temperature samples used to determine the atmospheric pressure.

#### **Electrometer Transient Delay**

This indicates the amount of time 1 to 100 (where 1 equals 100 ms) the electrometer will hold and display the last reading after pressing the reset button in order to reduce transients resulting from the reset action.

#### **Update Button**

When pressed, the instrument is updated with values that have changed. When values have been changed, the Update button will be highlighted until the instrument has been updated with the new changes.

# **Restore Tab**

The Restore Tab is the tab which should have focus if it is necessary to restore previously saved settings into a Model 9-4. Simply hold down the CTRL key and press O and select the file to load. Next, press Restore Parameters to load the previously saved parameters into the Model 9-4. In addition to the calibration constants seen on the Calibration Configurations tab, the restore feature also loads the following values.

# Meter Full Scale DAC Value

This is the digital-to-analog converter numerical value (0 - 4095) that results in a specific analog voltage output to place the meter needle at the full-scale position.

#### Meter Zero Scale DAC Value

This is the digital-to-analog converter numerical value (0 - 4095) that results in a specific voltage output to place the meter needle at the zero scale position.

#### Low Pressure ADC Value

This is the analog-to-digital converter numerical value (0 - 1023) that results from the analog voltage from the pressure sensor, which represents the low-pressure value for the instrument.

#### **High Pressure ADC Value**

This is the analog-to-digital converter numerical value (0 - 1023) that results from the analog voltage from the pressure sensor, which represents the high-pressure value for the instrument.

#### **Restore Low Pressure**

This is the low-pressure value, in kPa, that represents the low-pressure calibration point for the instrument.

# Low Pressure Calibrated

If checked, this indicates that the value stored in the Restore Low Pressure text box is the result of an actual low-pressure calibration reading.

This is the high-pressure value, in kPa, that represents the high-pressure calibration point for the instrument.

# High Pressure Calibrated

If checked, this indicates that the value stored in the Restore High Pressure text box is the result of an actual high-pressure calibration reading.

# **Calibration Temperature**

This is the temperature, in Celsius, during the high-pressure calibration of the instrument.

#### **Restore Parameters Button**

When pressed, this button sends the values present in the Restore tab to the instrument to restore specific calibration values.

# **Model 3100**

# Menu Bar

The menu bar offers quick access to common functions including the File Menu, the Parameters Menu, and the Help Menu.

# File Menu

- **Disconnect Instrument**: This menu item will disconnect from the instrument and take you back to the device selection screen.
- **Print:** This menu item will send a report of all parameters to a printer.
- **Exit:** This menu item will exit out of the software.

# **Parameters Menu**

- Update (Ctrl-U): This menu item is the same as clicking on the "Update" button.
- **Reload All Data (Ctrl-R):** This menu item will reload all data from the instrument and refresh the restore values.
- **Print Parameters (Ctrl-P):** This menu item will send a report of all parameters to a printer.

# **Main Screen**

The main screen consists of a tabbed interface separating the general calibration operations from the restore settings operations and a menu bar.

Model 3100 PC Interface   version: 2.0.5	– 🗆 X
File Parameters	
Calibration Configurations	
Calibration Configurations         Ludium Serial Number       464564         Pressure/Air Flow <sup>3</sup> H Calibration         Airflow Cal Constant       1.30 ♣         Airflow Reference       94.00 ♣         Pressure Calibration         Calibration Slope       82.80 ♣         Calibration Offset       -47.00 ♣	Unit       µCi/m³ ✓         Alert Set Point       2.10 ♀         Check Source Mode       Internal ✓         Check Source Target Reading       60.00 ♀         Accumulated Pump Time       0         Accumulated Pump Time       0         Real Time Control
Save Complete	11:12 AM 10/30/2018 1.0.6.1 Update

# **Calibration Configurations Tab**

The Calibration Configurations Tab is the tab which should have focus during the calibration and configuration of the Model 3100 Main Board. Using this tab during configuration, the user can configure sampling, delays, and compensations required for proper operation of the Model 3100. Using this tab during calibration, the user can calibrate the meter face, enter calibration constants for all ranges, and calibrate the pressure sensor.

# **Instrument Serial Number**

This box is used to enter the six-digit serial number of the instrument being calibrated. This value is used during print parameters to obtain a printout with the current instrument parameters with the instrument serial number included.

# **Update Button**

When pressed, the instrument is updated with values that have changed. When values have been changed, the Update button will be highlighted until the instrument has been updated with the new changes.

# **Pressure and Airflow Calibration**

# Airflow Calibration Constant

This represents the adjustment number to the flow reading to ensure it reads correctly. Default should be approximately 1.3.

#### **Airflow Reference**

This represents the pressure at which the airflow was calibrated. It should be the same number used to calculate the top point of the pressure slope.

#### **Calibration Pressure Slope**

This represents the slope of the line for the pressure calibration. If the pressure reading on the instruments do not seem to line up by different factors on the bottom and the top, then this should be adjusted.

#### **Calibration Pressure Offset**

This number represents the offset to the pressure (kPa) that the instrument pressure sensor reads. If both the top end and the lower end are off by about the same factor, then this should be adjusted.

#### Pressure Calibration Button

This starts the Pressure Calibration Wizard, automatically calculating the values for slope and offset based on the two kPa points you set for reference.

Model 3100 PC Interface   version: 2.0.5	- 🗆 X
File Parameters	
Calibration Configurations	
Ludlum Serial Number 464564	Unit µCi/m³ ~
Pressure/Air Flow <sup>3</sup> H Calibration	Alert Set Point 2.10
	Check Source Mode Internal V
Meter Offset 0.200 🖨 V	Check Source Target Reading 60.00 🖨
Refresh Board ADC Value 2,500 V	Accumulated Pump Time 0 hrs.
Board ADC Offset 0.010  V	Reset Accumulated Pump Time
Electrometer Offset 2.100 V	Real Time Control Raw Data Control
Calibration Constants 1 - 100 μCi/m³ 1000 ⊕ Cal 100 - 1.000 μCi/m³ 1000 ⊕ Cal	
1,000 - 10,000 μCi/m³ 1000 ♥ Cal Range Selection Auto ∨	Celsius kPa L/min Bat V DC V
Single Point Calibrate Calibration Constants	Stream speed Must be set before start
Electrometer Offset Wizard	2     S     Write Stream Speed       Write Stream To File     Start     Stop
ave Complete	11:11 AM 10/30/2018 1.0.6.1 Update

# <sup>3</sup>H calibration

#### **Meter Offset**

This value sets the offset for the meter. It is set in volts.

#### **Board ADC Value**

This button reads the value for the board ADC in volts. Please note to read this and properly ground the alarm potentiometer.

Note: The refresh button will quickly read this value when pressed.

#### **Board ADC Offset**

This value sets the offset for the board ADC in volts.

#### **Electrometer Offset**

This sets the offset for the electrometer ADC in volts.

#### Range Calibration Constants (X1 - X10K)

These values are the calibration constants for each range of the meter. The value range is 1 to 65535.

# **Range Selection**

This selection manually sets which range the instrument should be in. It will reset to Automatic (0) each time the instrument is turned on and off. The manual range selection is used for calibrating the calibration constants.

# **Single Point Calibrate Calibration Constants**

When pressed, this will bring up another window, which will assist in calibrations that use a single point.

#### **Electrometer Offset Wizard**

When pressed, this will bring up another window, which will assist in calibrating the electrometer offset.

# **Miscellaneous**

#### Unit

This selects the unit for the device:

- 1. Micro curie per meter cubed
- 2. Mega becquerel per meter cubed

# **Alert Set Point**

This sets the computer settable alert point for the Model 3100; the unit is the currently selected unit.

# **Check Source Mode**

This sets what check source your instrument expects; it can use either the internal/simulated check source or an external one.

# **Check Source Target Reading**

This sets the target reading for the check source check. The unit is the current one for the instrument.

# Accumulated Pump Time

This number is a measurement in hours of how long the pump has been used. This number is accumulated during the life of the pump, and it may help with maintenance or replacement decisions.

# **Reset Accumulated Pump Time Button**

This button will reset the accumulated pump run time to zero in case the pump is replaced.

# **Real Time Stream**

This displays the contents of the screen, such as temperature in Celsius, pressure in Kpa, airflow in L/min, and battery in raw DC voltages.

# Write Stream Speed

This value sets the current stream speed the instrument outputs in seconds. This must be set before starting the stream.

# Write Stream to File

Checking this will open a new prompt to select a location to save a file of the output data.

# Start

This button starts the streaming of data from the instrument to the computer.

Stop

This button stops the streaming of data from the instrument to the computer.

**Calibration Constant Calibration Wizard Description** 

	ConstCalibri	ationWizar	d	-		×
			t Ca alue in µCi.	alibr	atio	on
	v 🔽		e neaung:	>		
Count Time Reading Histo	10 Seconds	~				
						1
Avera	age Reading			μCi		
Avera Back Calculat	age Reading			μCi		~
Avera Back Calculat Calibrat	age Reading red Cal Const tion Constant			µCi Update		
Avera Back Calculat Calibra Bataka Bas	age Reading red Cal Const tion Constant	Contraction of the second seco		µCi Update		

# **1. Radiation Reference**

This is where the user inputs the radiation the device is currently in for calibration.

# 2. Count Time

This allows you to select the amount of time to take a reading for the next run for the Calibration Constant Calibration Wizard. The longer the time one takes to select, the

more accurate the average will be.

# 3. Take Readings

Clicking this button will start taking Radiation Readings.

# 4. Reading History

This is the history for the Radiation Readings for the current run. The newest reading is always added to the top of the list.

# 5. Percentage Done Progress Bar

This indicates the progress of the current run of the Calibration Constant Calibration Wizard and how far to completion.

# 6. Average Reading

This displays the current average of the Radiation Readings.

# 7. Back Calculated Calibration Constant

This is the estimated Calibration Constant to get the Average Reading to match the Radiation Reference value.

# 8. Calibration Constant

This is the Calibration Constant to send to the device.

# 9. Update Button

Clicking this button will send the value in the Calibration Constant to the device.

# 10. Retake Readings

Clicking this button will clear the history of Radiation Readings and start taking the Radiation Readings again.

# 11. Stop Button

Clicking this button will stop the current run of taking the Radiation Readings.

# 12. Reset Radiation Button

Clicking this button will allow you to change the Radiation Reference value. Note that this will also force you to retake the Radiation Readings.

#### 13. Done Button

Clicking this button will close the Wizard.

# How to Use the Constant Calibration Wizard

- 1. Input the Radiation Reference value.
- 1. Select the count time for which to take the Radiation Readings.
- 2. Click the Taking Readings button to start taking Radiation Readings.
- 3. Wait for the progress bar to fill, indicating that the counting time has elapsed.
- 4. If the Average Reading is close to the Radiation Reference value, go to step 8.
- 5. Copy the Back Calculated Calibration Constant and/or adjust the Calibration Constant as needed increase the Calibration Constant to increase the average or decrease the Calibration Constant to lower the average.
- 6. Click the Update button to send the new value to the device.
- 7. Restart at step 1.
- 8. Click the Done button to close the Wizard.

# How to Stop Taking the Radiation Readings

- 1. Click either the Take Readings button or the Retake Readings button to start taking Radiation Readings.
- 2. Before the progress bar has filled, click the Stop button to stop taking readings.

# How to Change an Incorrect Radiation Reference Value after Taking the Radiation Readings

- 1. Click either the Take Readings button or the Retake Readings button to start taking Radiation Readings.
- 2. After ending the Radiation Readings, either by stopping them or waiting for the Readings to finish being taken, click the Reset Radiation button.

#### How to Retake the Radiation Readings

- 1. Click the Take Readings button to start taking Radiation Readings.
- 2. Before the progress bar has filled, click the Stop button to stop taking readings.
- 3. Click the Retake Readings button.

# **Electrometer Offset Wizard Description**

🔟 Electrometer Of	fset Wizard		—		×
ADC History					
					$\sim$
Count Time 1 Minu	te 🗸				
Raw Average ADC	F	iltered Aver	age ADC		
Electrometer Offset	2.100 🛫	Update			
Start	Stop			Done	•

# **1. ADC History**

This is the history of all readings for the current run of the Electrometer Offset Wizard. The newest reading is always added to the top of the list.

#### 2. Percentage Done Progress Bar

This indicates the progress of the current run of the Electrometer Offset Wizard and how far to completion.

# 3. Count Time

This allows the user to select the amount of time to take reading for the next run for the Electrometer Offset Wizard. The longer the time taken in selecting, the more accurate the Filtered Average will be.

# 4. Raw Average ADC

This displays the current average of the ADC readings.

#### 5. Filtered Average ADC

This displays the current well filtered average of the ADC readings.

#### 6. Electrometer Offset

This is the Electrometer Offset to send to the device.

#### 7. Update Button

Clicking this button will send the value in the Electrometer Offset to the device.

#### 8. Start Button

Clicking this button will start taking the ADC values.

#### 9. Stop Button

Clicking this button will stop the wizard from taking more ADC Readings.

#### **10. Done Button**

Clicking this button will close the Wizard.

# How to Use the Electrometer Offset Wizard

- 1. Select the count time for which you would take the ADC value.
- 2. Click the Start button to start taking ADC values.
- 3. Wait for the progress bar to fill, indicating that the counting time has elapsed.
- 4. If the Filtered Average ADC is close to zero, go to step 8.
- 5. Adjust the Electrometer Offset as needed increase the Electrometer Offset to increase the average or decrease the Electrometer Offset to lower the average.
- 6. Click the Update button to send the new value to the device.
- 7. Restart at step 1.
- 8. Click the Done button to close the Wizard.

# How to Stop the Electrometer Offset Wizard While it is Running

- 1. Click the Start button to start taking ADC values.
- 2. Before the progress bar has filled, click the Stop button to stop taking readings.

# **Pressure Calibration Wizard Description**

M3100 Pres	sure Calib	oration	-	_		$\times$
Low Please enter th	Pre he Low Pre		SU	r <b>e</b> e valu	e in kPa.	
	0.00	kPa	Take	Volta	ge Readi	ngs
Pressure Voltag	je History					
Average Voltag	e					
Retake Volta	ge			Reset	Pressum Accept	e

# 1. Step Description

This shows which Pressure Calibration Window you are currently in.

# 2. Pressure Reference

This is where you input the pressure the device is currently in for calibration.

# 3. Take Voltage Readings

Clicking this button will start taking the Voltage Readings.

# 4. Pressure Voltage History

This is the history for the Voltage Readings for the current run. The newest reading is always added to the top of the list.

# 5. Percentage Done Progress Bar

This indicates the progress of the current run of the Pressure Calibration Wizard and how long until completion.

# 6. Average Voltage

This displays the current average of the Voltage readings.

# 7. Retake Voltage Button

Clicking this button will clear the history of Voltage Readings and start taking the Voltage Readings again.

# 8. Stop Button

Clicking this button will stop the current run of taking the Voltage Readings.

# 9. Reset Pressure Button

Clicking this button will allow you to change the Pressure Reference value. Note that this will also force you to retake the Voltage Readings.

# 10. Cancel Button

Clicking this button will cancel the Pressure Calibration Wizard in its entirety, making no changes to the Pressure Calibration Slope and Pressure Calibration Offset fields as a result.

# **11. Accept Button**

Clicking this button will either continue to the High Pressure Window (if you are in the Low Pressure Window) or calculate the Pressure Calibration Slope and Pressure Calibration Offset and close the High Pressure Window.

# How to Use the Pressure Calibration Wizard

- 1. Input the Low Pressure reference value.
- 2. Click the Take Voltage Readings button.
- 3. Wait for the progress bar to fill, indicating that all of the Voltage Readings have been gathered.
- 4. Click the Accept button.
- 5. The Low Pressure Window will now close, and the High Pressure Window will open.
- 6. Input the High Pressure reference value.
- 7. Click the Take Voltage Readings button.
- 8. Wait for the progress bar to fill, indicating that all of the Voltage Readings have been gathered.
- 9. Click the Accept button.
- 10. The new values will be placed into the Pressure Calibration Slope and Pressure Calibration Offset fields. Remember to click the Update button to send these new values to the device.

# How to Stop Taking the Voltage Readings

- 1. Click either the Take Voltage Readings button or the Retake Voltage button to start taking Voltage Readings.
- 2. Before the progress bar has filled, click the Stop button to stop taking readings.

# How to Change an Incorrect Pressure Reference Value after Taking the Pressure Voltage Readings

- 1. Click either the Take Voltage Readings button or the Retake Voltage button to start taking Voltage Readings.
- 2. After ending the Voltage Readings, either by stopping them or waiting for the Readings to finish being taken, click the Reset Pressure button.

# How to Retake the Voltage Readings

- 1. Click the Take Voltage Readings button to start taking Voltage Readings.
- 2. Before the progress bar has filled, click the Stop button to stop taking readings.
- 3. Click the Retake Voltage button.

# **Version History**

# Version 2.0.13.0

Model 9-4

- Fixed bug where the Low Pressure Status and High Pressure Status were no longer being read at start up.
- Fixed error in saving the parameters to a file where it did not put each value on its own line.
- Fixed error in saving the parameters to a file where the Low Pressure Calibration Status and the High Pressure Calibration Status were the wrong values.
- Fixed error where the ADC Samples value was not being read (to be shown on the Print and Save to a file Parameters).
- Fixed bug where Load Parameters from File would read the parameters from the device instead.

# Version 2.0.12.0

• Unreleased due to change in plan for 3100.

# Version 2.0.11.0

Model 3100

• Changed the Board ADC field to only allow values from 5 to -5 to match the device.

# Version 2.0.10.0

Model 9-4

• Fixed bug where the Pressure Calibration would fail if the Low Pressure Calibration Status checkbox and/or the Low Pressure Calibration Status checkbox are unchecked.

# **Version 2.0.9.1**

Model 9-4

• Removed unnecessary spacing in the Print Page.

# **Version 2.0.9.0**

Model 9-4

- Fixed bug where the Print would not print the correct values for Temperature, Low Pressure Status, and High Pressure Status.
- Fixed bug where the Temperature Compensated value would be sent as the opposite value.

# **Version 2.0.8.0**

Model 9-4

- Fixed bug where the Meter Zero Scale DAC and Meter Full Scale DAC values was claimed to not be sent when they were.
- Fixed bug where the software would claim the connection was lost when it was not.

# **Version 2.0.7.0**

Model 3100

- Fixed issue where the Calibration Wizards and Electrometer Wizard would take longer than indicated to run.
- Changed the Calibration Wizards to indicate what range the user was Calibrating.

# **Version 2.0.6.0**

Model 3100

- Fixed bug where the Air Flow Reference would not be updated by the Pressure Calibration Wizard.
- Fixed bug where the Pressure Calibration Wizard did not load the original Cal Const value.
- Fixed bug where the Pressure Calibration Wizard did not copy the calculated Cal Const value to the main screen.
- Added a specialized Single Point Calibration Constant Wizard.
- Fixed bug where the user could click the Update button of the Calibration Wizards at any time rather than when it has completed.
- Fixed issue where the Calibration Wizards would always show the units as μCi, even if the device was in MBq.
- Fixed issue where the Main Window would not re-read the Alarm Set Point and Check Source Target Reading after changing the Units.
- Fixed issue where the Wizards would freeze whenever the window is being moved around.

Model 9-4

• Fixed bug where setting the Restore Meter Zero Scale value, it would set the restore Meter Full Scale value instead.

Version 2.0.5.0

Initial Release.

# Troubleshooting

# Missing .Net (DotNet) Framework

DotNet Framework comes with most standard Windows desktops. However, if for some reason while installing or after installation you are still missing the .Net Framework, please go to the MSDN (Microsoft Developer Network) website and download 4.5 Framework for your machine.

# **No Devices Showing Up**

- 1. Check to make sure everything is properly connected.
- 2. Make sure FTDI drives included on the CD are downloaded and installed properly.
- 3. If the drivers are correctly downloaded, check to see if Microsoft Windows is still installing the drivers for the instrument. This may take a few moments. (If you have multiple new instruments on a daily basis, FAQ question, "Calibration on different devices," may speed this up.)
- 4. Make sure the instrument is on, and if it is, try turning it off and then on again.
- 5. Change cable.
- 6. Check dongle. Sometimes while installing the driver, you may run into an issue, i.e. power shuts off, instrument unplugged, Windows update, etc. This may cause your driver to become corrupt, and the instrument will no longer show in the software. To check for this issue, follow these steps.

If none of the above solves your issue, please feel free to call Ludlum Measurements.

# Calibration on Different Devices - first plug in

If your computer is running Windows 7 or higher, when a new device is connected to your computer, Windows may spend up to 15 minutes searching for the drivers through Windows Update. This is unnecessary and time consuming if you are plugging in different new instruments. In order to avoid this, you need to change some system settings on handling drivers:

# Windows 7

- Click Start, right-click Computer, and choose Properties.
- In the Tasks list, click Advanced System Settings.
- On the System Properties dialog box, click the Hardware tab, and then click Windows Update Driver Settings.
- Finally, select "only if not found on local machine."

# Windows 8 and 10

For Windows 8 (and higher), you only get the choice of using Windows Update always or never.

- Search for "Change device install" in the Windows 8 Start menu and select "change device installation settings."
- In answer to the question "do you want Windows to download driver software," choose "no, let me choose what to do," and then select "never" and save changes.

# Cables

LMI wiring on the Model 3100 9-pin D connector has the two required relay connections - one for sampling and one for alarm – which makes it non-standard, so when Ludlum Measurements supplies a software kit, it has an adapter cable (LMI part # 8303-1038). This cable can be used in conjunction with cables a user already has. Cable 8303-1038 has a phone connector at one end and a 9-pin D connector at the other end. At the computer, this adapter can connect the Model 3100 directly to a USB adapter. If the user has a long cable stretching over to a gamma calibration range, an easily obtained RJ12 phone coupler may be needed to join the two cables (shown below, left).



*In the above, top-right figure, the phone plug is shown up close. The lower-right figure above is the 9-pin D connector portion of the cable depicted up close.* 

Ludlum Measurements also makes a one-piece cable that goes directly from a USB connection (from a PC) to a 9-pin D connector (Model 3100), skipping the phone coupler. LMI can supply this cable as needed. The part # for this cable is 8520-159. Again, this cable is custom made because of the non-standard wiring on the 9-pin D connector. See the following figures.





The left figure shows the RS-232 to USB cable for direct connection to a PC. The above figure depicts the 9-pin D connector portion of the cable up close.