

# **Model 240 Floor Cart Series**

## **Software Manual**

**August 2020**

**Version 1.0.0.0 and above**

# Model 240 Software Manual

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*August 2020*

*Version 1.0.0.0*



## Table of Contents

Software License Agreement .....	i
Getting Started.....	1
How to use software .....	1
Supervisor Selection Screen.....	3
Operate Screen .....	4
Detector Detail Screen .....	6
Calibration and Settings Screen .....	7
Radiological Screen .....	8
Operational Setup Screen .....	18
Detector Setup Screen .....	22
Voltage Calibration Wizard .....	27
Source Check Screen.....	30
False Alarm Screen.....	32
Variance/Mean Screen .....	35
Scaler Screen.....	37
Calibration-Plateau HV Screen.....	38
Calibration-Efficiency Screen .....	43
View Log Screen .....	46



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# Getting Started

## General Description

The Model 240 Supervisor Software interfaces to the Ludlum Model 240, a 12-detector floor cart, which is built for scanning flat surfaces for radiation contamination. The main purpose of the software is to alert the user whenever any of the detectors encounter high levels of radiation. The software also comes with routines to calibrate and check the functionality of the system. The software will log the background radiation data and the scan information (either the scanned data every one second or optionally just the scan that caused an alarm). If the computer has a GPS sensor, it can communicate via USB to the software to store the coordinates of the background and the scan's location.

## How to use software

### On Startup (Normal Operation)

1. Click the Calibration and Settings button.
2. Enter the Level 1 password (1111 by default).
3. Click the Operational Setup button.
4. Go to the Com tab.
5. Click the Test button.
6. If the message indicates that it failed to connect, check to ensure the Model 240 is connected to the laptop.

### On Startup (On first Startup or the First Attempt Fails)

1. Click the Calibration and Settings button.
2. Enter the Level 2 password (2222 by default).
3. Click the Operational Setup button.
4. Go to the Com tab.
5. Click the Test button.
6. If the message indicates that it failed to connect, try a different Com Port.

### Normal Operation

1. Click the Operate button.
2. Wait for the Background to finish (and the Status to change to Ready).

3. Click the Run button.
4. Sweep the floor or wall at a slow speed.
5. If the Update Background notice appears, stop in a safe or designated place and click the Update Background button. Repeat the last three steps.

#### When a Failure Happens

1. After updating the Background, a failure may occur.
2. Click on any Detector to open the Detector Detail.
3. The reason for the failure will be displayed in the text box on the right.
4. Follow any instructions given, or if no instructions are given, attempt the Background again.

#### When an Alarm Happens

1. After updating the Background or running the Model 240, an alarm may occur.
2. If more information is desired, click on any Detector to open the Detector Detail. The description of the alarm will be displayed in the text box on the right. Exit the Detector Detail screen when done.
3. Click the Acknowledge button to clear the Alarm.

#### How to Change the Passwords

**Note:** This is recommended since the default passwords are shown throughout this manual.

1. Click the Calibration and Settings button.
2. Enter the Level 2 password (2222 by default).
3. Click the Operational button.
4. On the General tab, change the Passwords to some number from 1000 to 9999.
5. Click the OK button.

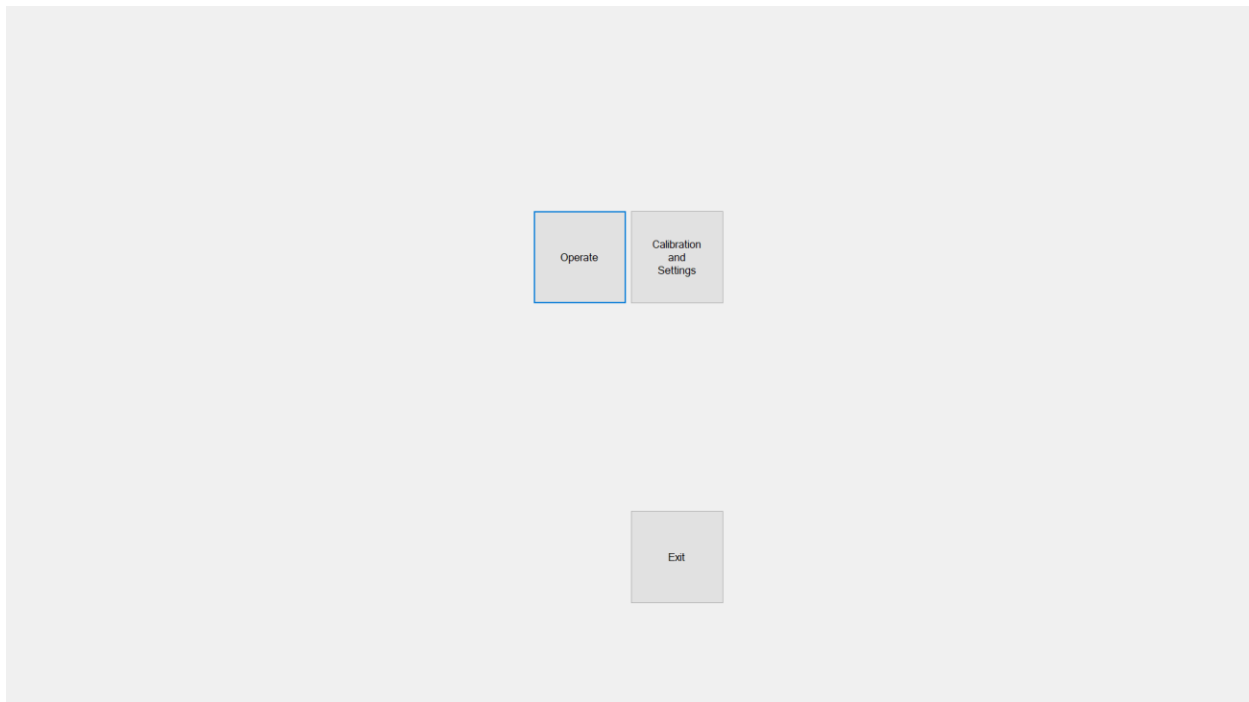
#### How to Change the Background Count Time

1. Click the Calibration and Settings button.
2. Enter the Level 2 password (2222 by default).
3. Click the Radiological button.
4. On the Mode tab, change the Background Count Time to the desired count time in seconds.
5. Click the OK button.

## How to Change the Scan Window Time

1. Click the Calibration and Settings button.
2. Enter the Level 2 password (2222 by default).
3. Click the Radiological button.
4. On the Settings tab, change the Count Time to the desired Scan Window Tim in seconds.
5. Click the OK button.

## Supervisor Selection Screen



### Operate Button

Clicking this button will open the Operate screen.

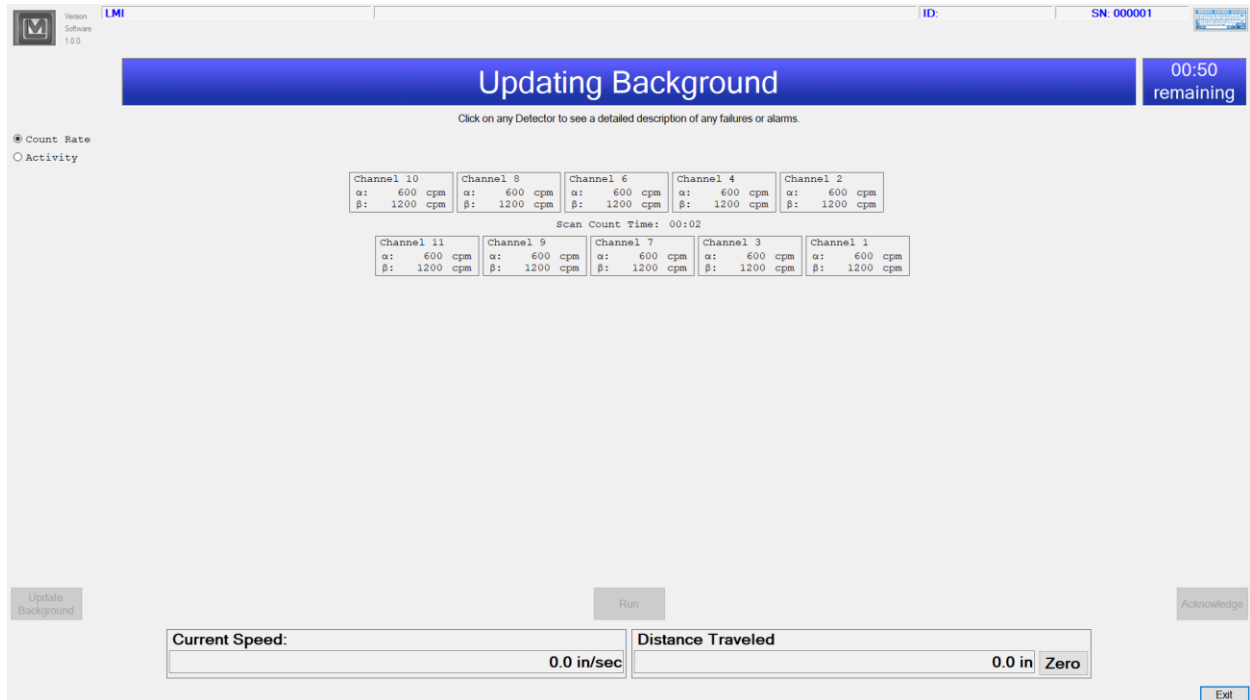
### Calibration and Settings Button

Clicking this button will open the Calibration and Settings screen. You will need to enter either the Level 1 or Level 2 password to access this screen. The Level 1 password will limit what you are allowed to do.

### Exit Button

Clicking this button will close the software.

# Operate Screen



## Description

These fields are user-defined values that show the site, location, device ID, as well as the serial number of the Model 240.

## Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

## Background Update Reminder

If the Automatic Background Update Reminder option has been chosen, a notice will appear here once the time has elapsed while scanning.

## Status

This displays the current status of the Model 240, such as "Updating Background," "Ready," "Counting," "Paused," "Fail," and "Alarm."

## Background Countdown

This displays the countdown until the background is done.

## Unit Selection

This allows the user to choose which unit to display the readings.

### Detectors

This displays the current readings of the detectors. Please note that the Counting readings are displayed in net-above-background.

### Update Background Button

Clicking this button allows the user to take a new background.

### Run Button

Clicking this button starts (or continues if paused) the Scan.

### Pause Button

Clicking this button pauses the current Scan.

### Acknowledge Button

Clicking this button acknowledges the alarm and clears it.

### GPS Display

If the GPS is enabled, this displays the current connection with the GPS device as well as the Latitude and Longitude.

### Current Speed

If Speed is enabled, this displays the current speed of the Model 240. If a Maximum Speed is tracked, this will warn you when you are going too fast.

### Distance Traveled

If Speed is enabled, this displays the distance traveled. This can be negative if you move backwards (or if the tracked wheel otherwise rotates backwards, such as turning in place).

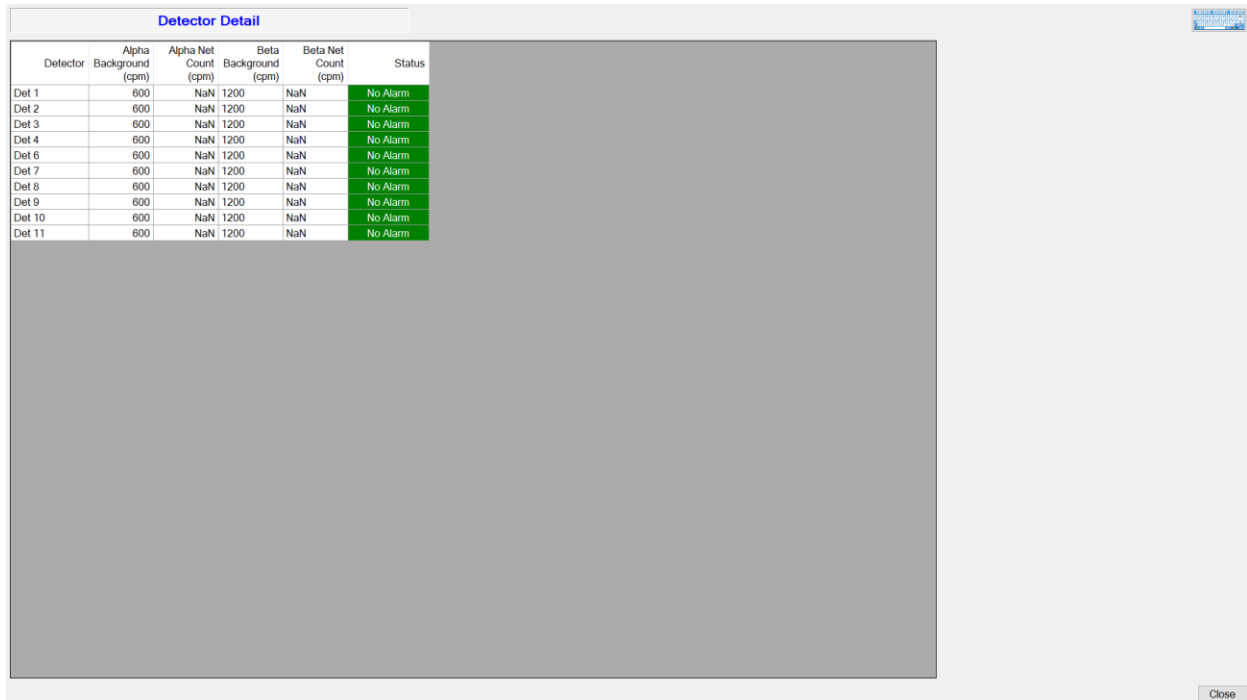
### Zero Button

If Speed is enabled, clicking this button sets the distance traveled to zero.

### Exit Button

Clicking this button closes the Operate screen.

## Detector Detail Screen



The screenshot shows a window titled "Detector Detail" with a table of detector data. The table has six columns: "Detector", "Alpha Background (cpm)", "Alpha Net Count (cpm)", "Beta Background (cpm)", "Beta Net Count (cpm)", and "Status". There are 11 rows of data, all showing "No Alarm" in the status column. A "Close" button is located in the bottom right corner of the window.

Detector	Alpha Background (cpm)	Alpha Net Count (cpm)	Beta Background (cpm)	Beta Net Count (cpm)	Status
Det 1	600	NaN	1200	NaN	No Alarm
Det 2	600	NaN	1200	NaN	No Alarm
Det 3	600	NaN	1200	NaN	No Alarm
Det 4	600	NaN	1200	NaN	No Alarm
Det 6	600	NaN	1200	NaN	No Alarm
Det 7	600	NaN	1200	NaN	No Alarm
Det 8	600	NaN	1200	NaN	No Alarm
Det 9	600	NaN	1200	NaN	No Alarm
Det 10	600	NaN	1200	NaN	No Alarm
Det 11	600	NaN	1200	NaN	No Alarm

### Detectors

This shows a summary of the detector's status.

### Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

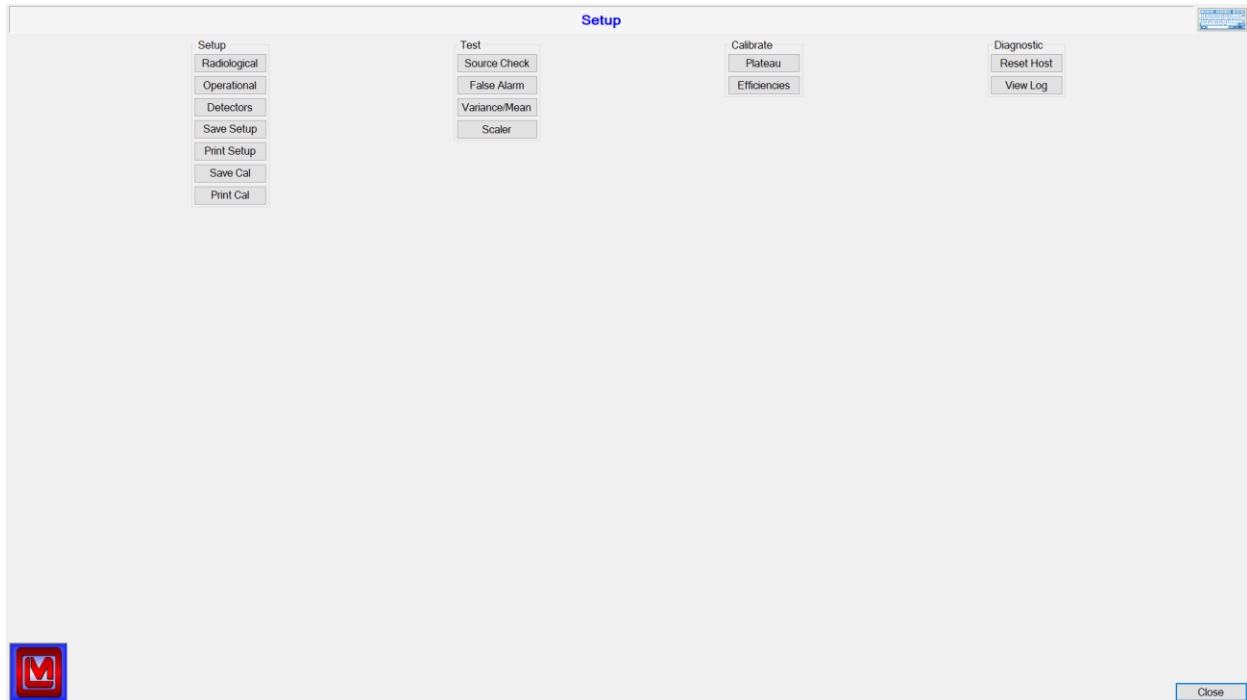
### Status

If an alarm or failure occurred when this screen is opened, then the description will go here. Please note that this description will not update or change. Errata: as of version 1.0.0.1, a known bug is causing this text to word wrap rather than have a scroll bar at the bottom, so data columns are misaligned.

### Close Button

Clicking this button will close the Detector Detail Screen.

## Calibration and Settings Screen



### Keyboard button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

### Radiological Button \*

Clicking this button opens the Setup Radiological screen.

### Operational Button

Clicking this button opens the Setup Operation screen.

### Detectors Button \*

Clicking this button opens the Detectors screen.

### Save Setup Button

Clicking this button allows the user to save the Setup data to a file.

### Print Setup Button

Clicking this button allows the user to print the Setup data.

### Save Cal Button

Clicking this button allows the user to save the Calibration data to a file.

### Print Cal Button

Clicking this button allows the user to print the Calibration data.



### Source Check Button

Clicking this button opens the Source Check screen.

### False Alarm Button \*

Clicking this button opens the False Alarm screen.

### Variance/Mean Button \*

Clicking this button opens the Variance/Mean screen.

### Scaler Button

Clicking this button opens the Scaler screen.

### Plateau Button \*

Clicking this button opens the Plateau screen.

### Efficiencies Button \*

Clicking this button opens the Efficiencies screen.

### Reset Host Button \*

Clicking this button resets the Host Board of the Model 240. This should only be used if one or more detectors seem to not be responding or working.

### View Log Button

Clicking this button opens the View Log screen.

### Close Button

Clicking this button closes the Calibration and Settings screen.

\* This button is not displayed when accessed with a Level 1 password.

## Radiological Screen

### All Tabs

#### Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

#### Get Background Button

Clicking this button starts taking a background reading to update the Calculations tabs with realistic data (if it is needed).

#### Background Countdown

This displays the countdown for the current background being taken.

#### OK Button

Clicking this button saves any changes and closes the Radiological screen.

Cancel Button

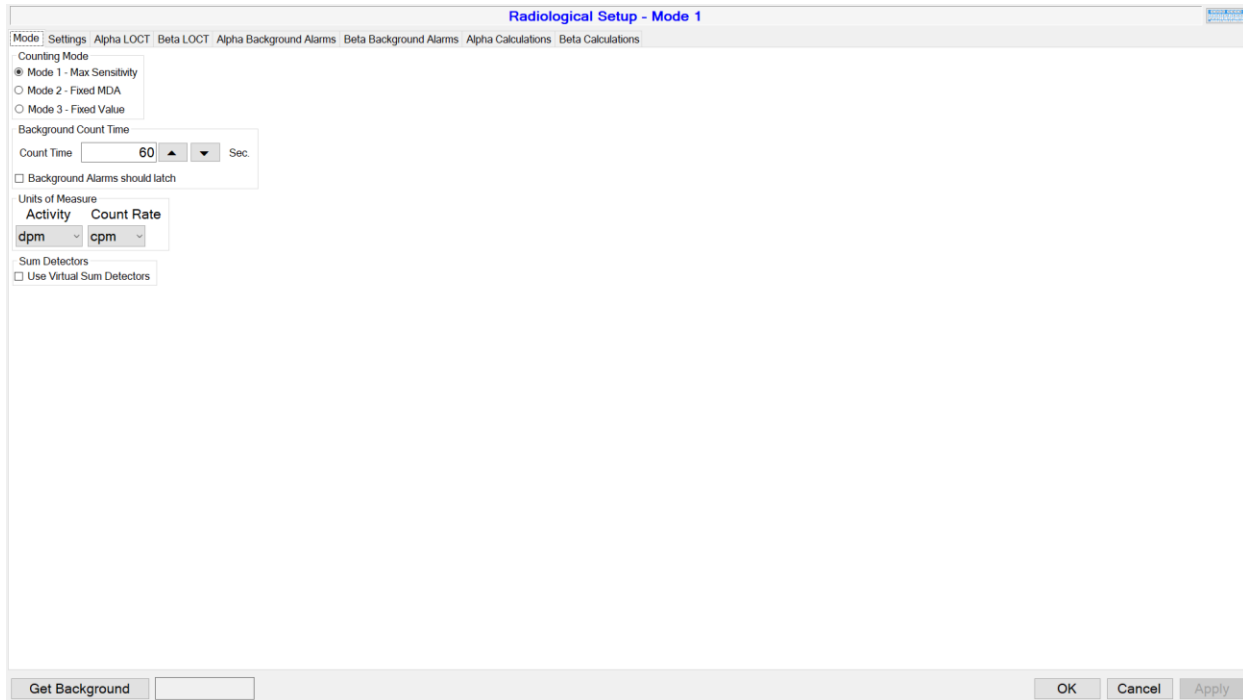
Clicking this button closes the Radiological screen.

Apply Button

Clicking this button saves any changes.

## Mode Tab

### Counting Mode



#### *Mode 1 – Max Sensitivity*

This mode is to ensure that a calculated Minimum Detectable Activity (MDA) is less than a user-given maximum based on the Background Count Time, Scan Count Time, Max MDA, False Alarm Probability, Detection Probability, and the Background Reading. The Radiation Alarm Set Point is automatically calculated based on the Background Count Time, Scan Count Time, False Alarm Probability, and Background Reading.

#### *Mode 2 – Fixed MDA*

This mode is to ensure a use- given Minimum Detectable Activity (MDA) can be reached given a maximum False Alarm Probability, based on the Background Count Time, Scan Count Time, MDA, Max False Alarm Probability, Detection Probability, and the Background Reading. The Radiation Alarm Set Point is automatically calculated based on the Background Count Time, Scan Count Time, MDA, Detection Probability, Background Reading, and Efficiency.

#### *Mode 3 – Fixed Value*

This mode is just a simple Alarm Set Point above the Background Reading.

## Background Count Time

### *Count Time*

This is the number of seconds needed to take the background. The longer this is, the closer to the average background radiation levels it will be.

### *Background Alarms Should Latch*

An option, if chosen, where Background Alarms (indicated as failures on the Operate Screen) and Mode Failures should not clear themselves once they happen.

## Units of Measure

### *Activity*

The unit in which to display the Activity data ('dpx' is short for "Disintegration per Count Time"). This will also change the units of any applicable settings, but will not convert the value. Please update these values as needed.

### *Count Rate*

The unit in which to display the Count Rate data ('cpX' is short for "Counts per Count Time"). This will also change the units of any applicable settings, but will not convert the value. Please update these values as needed.

## Sum Detectors

### *Use Virtual Sum Detectors*

An option to have virtual detectors that are a skewed sum  $((a + b) / \sqrt{2})$  of paired Detectors (1 & 2, 2 & 3, 3 & 4, etc.).

## Settings Tab (Mode 1)

**Radiological Setup - Mode 1**

Mode Settings Alpha LOCT Beta LOCT Alpha Background Alarms Beta Background Alarms Alpha Calculations Beta Calculations

Max  $\alpha$  MDA (dpm) 6,000 ▲ ▼

Max  $\beta$  MDA (dpm) 11,000 ▲ ▼

$\alpha$  High Alarm Activity Level (dpm) 7,000 ▲ ▼

$\beta$  High Alarm Activity Level (dpm) 12,000 ▲ ▼

Count Time (secs) 2 ▲ ▼

Detection Probability % 95.00 ▲ ▼

False Alarm Probability % 0.100 ▲ ▼

Get Background  OK Cancel Apply

### Max $\alpha$ MDA

This is the maximum MDA for Alpha. A detector will fail if it is calculated  $\alpha$  MDA exceeds this value.

### Max $\beta$ MDA

This is the maximum MDA for Beta. A detector will fail if it is calculated  $\beta$  MDA exceeds this value.

### $\alpha$ High Alarm Activity Level

This is the user-set High Alarm Activity for Alpha. This is a flat alarm set point that should be higher than any calculated Alarm Set Point (See the Alpha Calculations Tab).

### $\beta$ High Alarm Activity Level

This is the user-set High Alarm Activity for Beta. This is a flat alarm set point that should be higher than any calculated Alarm Set Point (See the Beta Calculations Tab).

### Count Time

This is the window of time to use while counting. The longer this is, the less erratic the counting readings will be, but the slower you will need to move the cart to ensure radiation hot spots are detected.

### Detection Probability

The higher this is, the stricter the failure for this mode will be.

### False Alarm Probability

The lower this is, the higher the Alarm Set Points will be.

## Settings Tab (Mode 2)

**Radiological Setup - Mode 2**

Mode Settings Alpha LOCT Beta LOCT Alpha Background Alarms Beta Background Alarms Alpha Calculations Beta Calculations

$\alpha$  MDA (dpm) 1,434 ▲ ▼

$\beta$  MDA (dpm) 4,290 ▲ ▼

$\alpha$  High Alarm Activity Level (dpm) 7,000 ▲ ▼

$\beta$  High Alarm Activity Level (dpm) 12,000 ▲ ▼

Count Time (secs) 2 ▲ ▼

Detection Probability % 95.00 ▲ ▼

Max False Alarm Probability % 0.100 ▲ ▼

Highest calculated false alarm probability: 0.0000%

Get Background  OK Cancel Apply

### $\alpha$ MDA

This is the target MDA for Alpha.

### $\beta$ MDA

This is the target MDA for Beta.

### $\alpha$ High Alarm Activity Level

See the Mode 1  $\alpha$  High Alarm Activity Level.

### $\beta$ High Alarm Activity Level

See the Mode 1  $\beta$  High Alarm Activity Level.

### Count Time

See the Mode 1 Count Time.

### Detection Probability

See the Mode 1 Detection Probability.

### Max False Alarm Probability

This is the maximum False Alarm Probably allowed.

### Highest Calculated False Alarm Probability

This is the highest calculated False Alarm Probability from the Alpha and Beta Calculation Tabs (take a background to get accurate data).

## Settings Tab (Model 3)

**Radiological Setup - Mode 3**

Mode Settings Alpha LOCT Beta LOCT Alpha Background Alarms Beta Background Alarms Alpha Calculations Beta Calculations

Fixed  $\alpha$  Alarm (cpm) 100 ▲ ▼

Fixed  $\beta$  Alarm (cpm) 700 ▲ ▼

Count Time (secs) 2 ▲ ▼

Get Background

OK Cancel Apply

### Fixed $\alpha$ Alarm

This is the fixed net count rate for  $\alpha$  to alarm upon.

### Fixed $\beta$ Alarm

This is the fixed net count rate for  $\beta$  to alarm upon.

### Count Time

See the Mode 1 Count Time.

## Alpha and Beta LOCT Tabs

The screenshot shows the 'Radiological Setup - Mode 3' window with the 'Alpha LOCT' tab selected. The window title bar includes 'Mode Settings Alpha LOCT Beta LOCT Alpha Background Alarms Beta Background Alarms Alpha Calculations Beta Calculations'. The main area is titled 'Loss Of Count Time (Mins.)' and contains 11 rows of input fields. Each row has a numeric field (1-11) and a spin control set to 0.00. At the bottom, there is a 'Set All' button with a numeric field set to 10.00, and a 'Get Background' button. The bottom right corner has 'OK', 'Cancel', and 'Apply' buttons.

Field Number	Value
1	0.00
2	0.00
3	0.00
4	0.00
6	0.00
7	0.00
8	0.00
9	0.00
10	0.00
11	0.00

At the bottom of the window, there is a 'Set All' button with a numeric field set to 10.00, and a 'Get Background' button.

### Loss of Count Time Fields

This sets the number of minutes to wait for to indicate that no counts have been received from the detector. Setting this value to 0 (zero) will disable the check.

### Set All Button

This sets all displayed (enabled) detector's Loss of Count Time fields to the given value.

## Alpha and Beta Background Alarm Tabs

The screenshot shows the 'Radiological Setup - Mode 3' window. The 'Alpha Background Alarms' tab is active. The interface displays 11 rows of settings for detectors 1 through 11. Each row contains a detector ID, a 'Low' alarm threshold (set to 0), and a 'High' alarm threshold (set to 5,000). At the bottom, there are 'Get Background', 'Set All', 'OK', 'Cancel', and 'Apply' buttons.

Detector	Alpha Background Low (cpm)	Alpha Background High (cpm)
1	0	5,000
2	0	5,000
3	0	5,000
4	0	5,000
6	0	5,000
7	0	5,000
8	0	5,000
9	0	5,000
10	0	5,000
11	0	5,000

### Background Low Fields

This sets the Count Rate to Alarm on (marked as a Failure in the Operate Screen) if it gets too low. Setting this value to 0 (zero) will (effectively) disable the check.

### Background High Fields

This sets the Count Rate to Alarm On (marked as a Failure in the Operate Screen) if it gets too high.

### Set All Button

This sets all displayed (enabled) detector's Background Low and Background High Fields to the given values.



## Alpha and Beta Calculations Tab (Mode 1)

**Radiological Setup - Mode 1**

Mode	Settings	Alpha LOCT	Beta LOCT	Alpha Background Alarms	Beta Background Alarms	Alpha Calculations	Beta Calculations
		Background (cpm)	Background Counts	Efficiency	Set Point	Calculated MDA (dpm)	
1		0 cpm	0	23.51%	219 cpm	5423 dpm	
2		0 cpm	0	22.44%	219 cpm	5899 dpm	
3		0 cpm	0	25.22%	219 cpm	4781 dpm	
4		0 cpm	0	23.04%	219 cpm	5628 dpm	
6		0 cpm	0	23.85%	219 cpm	5286 dpm	
7		0 cpm	0	23.25%	219 cpm	5535 dpm	
8		0 cpm	0	24.87%	219 cpm	4903 dpm	
9		0 cpm	0	23.54%	219 cpm	5413 dpm	
10		0 cpm	0	24.18%	219 cpm	5157 dpm	
11		0 cpm	0	22.68%	219 cpm	5790 dpm	

Get Background  OK Cancel Apply

### Background

This is the Count Rate of the Detector.

### Background Counts

This is the raw counts the detector received.

### Efficiency

This is the calibrated efficiency of the Detector.

### Set Point

This is the calculated Alarm Set Point.

### Calculated MDA

This is the calculated MDA.

## Alpha and Beta Calculations Tab (Mode 2)

Radiological Setup - Mode 2							
Mode	Settings	Alpha LOCT	Beta LOCT	Alpha Background Alarms	Beta Background Alarms	Alpha Calculations	Beta Calculations
		Background (cpm)	Background Counts	Efficiency	Set Point	False Alarm Percentage	
1		0 cpm	0	23.51%	135 cpm	0.0000%	
2		0 cpm	0	22.44%	123 cpm	0.0000%	
3		0 cpm	0	25.22%	154 cpm	0.0000%	
4		0 cpm	0	23.04%	129 cpm	0.0000%	
6		0 cpm	0	23.85%	139 cpm	0.0000%	
7		0 cpm	0	23.25%	132 cpm	0.0000%	
8		0 cpm	0	24.87%	150 cpm	0.0000%	
9		0 cpm	0	23.54%	135 cpm	0.0000%	
10		0 cpm	0	24.18%	142 cpm	0.0000%	
11		0 cpm	0	22.68%	125 cpm	0.0000%	

Get Background

Background

See the Mode 1 Background.

Background Counts

See the Mode 1 Background Counts.

Efficiency

See the Mode 1 Efficiency.

Set Point

See the Mode 1 Set Point.

False Alarm Percentage

This is the calculated False Alarm Percentage.

## Alpha and Beta Calculations Tabs (Mode 3)

Background

See the Mode 1 Background.

Background Counts

See the Mode 1 Background Counts.

Efficiency

See the Mode 1 Efficiency.

Set Point

This is the user-set Alarm Set Point.

# Operational Setup Screen

## All Tabs

### Keyboard button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

### OK Button

Clicking this button saves any changes and closes the Operational Setup screen.

### Cancel Button

Clicking this button closes the Operational Setup screen.

### Apply Button

Clicking this button saves any changes.

**\*Note:** Starting with the following section General Tab, any Fields marked with an asterisk cannot be edited if you logged in with a Level 1 password.

**\*\*Note:** Starting with the following section General Tab, any Fields marked with two asterisks are invisible if you logged in with a Level 1 password.

## General Tab

The screenshot shows a software window titled "Operational Setup" with a tabbed interface. The "General" tab is selected. The window contains the following fields and controls:

- Serial Number:
- Site:
- Location:
- Customer ID:
- Password section:
  - Level 1:  with up and down arrow buttons.
  - Level 2:  with up and down arrow buttons.

At the bottom right of the window, there are three buttons: "OK", "Cancel", and "Apply".

### Serial Number

This is the serial number of the unit.

Site \*

This is the site of the current location for documentation purposes.

Location \*

This is the location of the current location for documentation purposes.

Customer ID \*

This is the customer ID.

Password

Level 1 \*

This is the password for the Level 1 log-in.

Level 2 \*\*

This is the password for the Level 2 log-in.

## Options Tab

The screenshot shows the 'Operational Setup' dialog box with the 'Options' tab selected. The dialog has a title bar with 'Operational Setup' and a 'Help' button. Below the title bar are tabs for 'General', 'Options', 'Logging', and 'Com'. The 'Options' tab contains several sections:

- Automatic Background Update Reminder:** A radio button for 'Yes' is selected. Below it is a spin box for 'Once every' set to '5' with 'Mins.' to its right. A radio button for 'No' is unselected.
- Track Max Speed:** A radio button for 'Yes' is unselected. Below it is a spin box for 'Max Speed' set to '0' with 'in/sec' to its right. A radio button for 'No' is selected.
- Speed Calibration Constant:** A spin box is set to '499.31'.
- GPS Settings:** A radio button for 'Use GPS' is unselected. Below it is a 'Com Port' dropdown menu set to 'COM1'. A radio button for 'Yes' is unselected. Below it is a spin box for 'Reading timeout' set to '12' with 'Sec.' to its right. A radio button for 'No' is selected. Below that is a 'Display Type' dropdown menu set to 'Decimal Degrees'.
- Main Window Display:** A spin box for 'Font Size' is set to '12'.

At the bottom right of the dialog are three buttons: 'OK', 'Cancel', and 'Apply'.

Automatic Background Update Reminder

Yes/No \*

This allows you to choose whether or not to use the Automatic Background Update Reminder.

Once Every (value) Mins. \*

This is the number of minutes to wait to indicate it is time to update the background.

## Track Max Speed

*Yes/No \**

This allows you to choose whether or not to indicate that the user is moving too quickly.

*Max Speed \**

This is the maximum speed to allow.

*Speed Calibration Constant \**

This is the calibration constant to calibrate the pulses from the wheel into distance/speed. The user should not need to change this.

## GPS Settings

*Use GPS \**

This allows you to choose whether or not to use GPS (must be plugged into a USB port).

*Com Port \**

This is the (USB) com port that the GPS is plugged into.

*Reading Timeout (value) Sec. \**

This is the number of seconds to wait before indicating that the connection to the GPS device has been lost. Set to 0 (zero) to disable the check, although this is not recommended, as the scan data could end up with incorrect coordinates.

*Display Type \**

This is the way to display the GPS data. NMEA is the National Marine Electronics Association style (Degrees Minutes Direction, "XX° XX.XXXX' N/S/E/W") or Degrees only (Degrees Minutes Direction, "XX.XXXXXX N/S/E/W").

## Main Window Display

*Font Size \**

This adjusts the size of certain elements in the Operate screen to compensate for a variable number of screen sizes.

## Logging Tab

Operational Setup

General Options | Logging | Com

Enabled

Yes

No

Scan Logging

Log Scan Alarms only

Data Directory

C:\ProgramData\LudlumMeasurements\Model240\Data

Browse

OK Cancel Apply

### Enabled \*

This allows you to choose whether or not Background and Scan Readings are logged to a file.

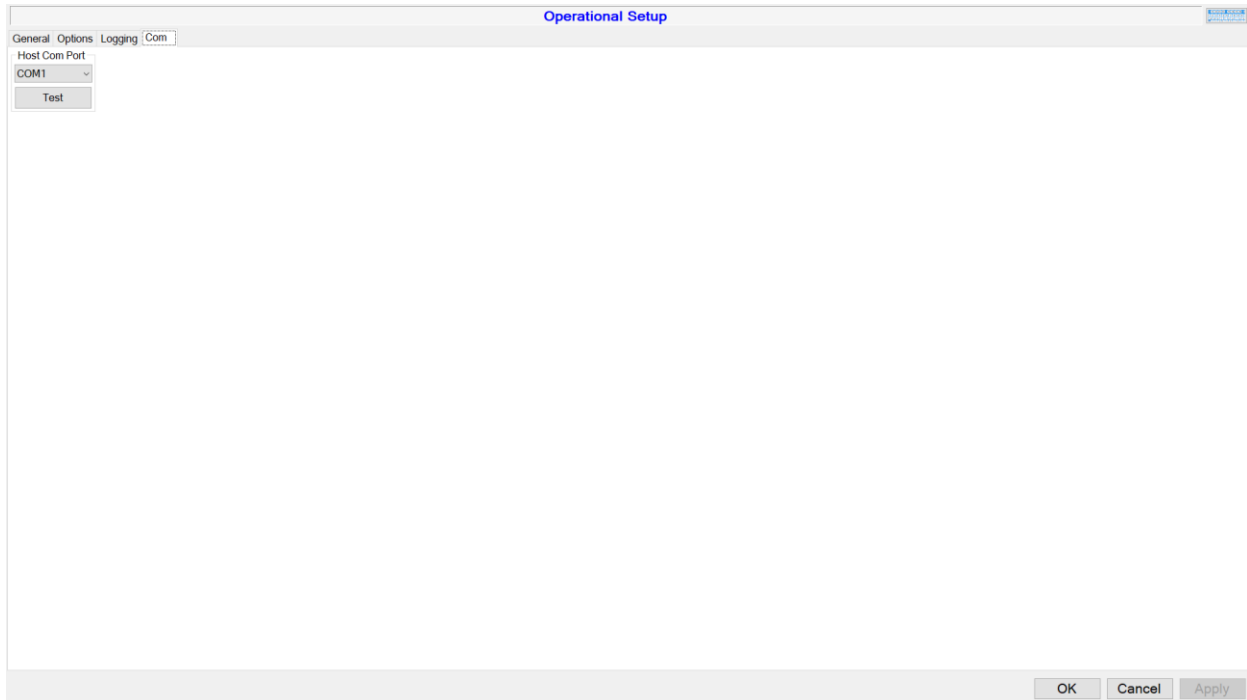
### Scan Logging

**Log Scan Alarms Only \***: This allows you to choose whether or not to only log the Scan Data when an alarm happens (as compared to logging it once every second).

### Data Directory \*

This is the directory to save all logs, reports, and settings. Note: it is advised against changing this as many files are stored here.

## Com Tab



Host Com Port \*

This is the (USB) port for the Model 240 connection.

Test Button

Clicking this button will test the currently selected Com Port to see if it is the Model 240.

## Detector Setup Screen

### All Tabs

Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

Refresh Button

Clicking this button refreshes all Voltage readings from the detectors.

Full Voltage Cal Button

Clicking this button opens the Voltage Calibration Wizard and will run through all Voltage Calibrations (HV Set Point, HV Readback,  $\alpha$  LLD,  $\beta$  ULD, and  $\beta$  LLD).

Save Button

Clicking this button saves any changes to the Detectors or locally as appropriate.

Close Button

Clicking this button closes the Detector Setup screen.

## Live Tab

Live	HV	$\alpha$ LLD	$\beta$ ULD	$\beta$ LLD S/N	Enabled	$\alpha$ 1 Sec	$\alpha$ Reading (cpm)	$\beta$ 1 Sec	$\beta$ Reading (cpm)
1		10	600	20	1200				
2		10	600	20	1200				
3		10	600	20	1200				
4		10	600	20	1200				
5		10	600	20	1200				
6		10	600	20	1200				
7		10	600	20	1200				
8		10	600	20	1200				
9		10	600	20	1200				
10		10	600	20	1200				
11		10	600	20	1200				
12		10	600	20	1200				

Count Time Window: 60 Sec.

### Readings

This is Live Readings from the detectors, in both the per-second readings and Count Rate.

### Count Time Window

This is the rolling window for the displayed readings on the screen.

### Reset Readings Button

Clicking this button will clear the Count Rate history for this screen.



## HV Tab

Live	HV	$\alpha$ LLD	$\beta$ ULD	$\beta$ LLD	S/N	Enabled	Set Point (V)	Readback	Actual CC	Readback CC
	1						0		+0.0	+0.0
	2						0		+0.0	+0.0
	3						0		+0.0	+0.0
	4						0		+0.0	+0.0
	5						0		+0.0	+0.0
	6						0		+0.0	+0.0
	7						0		+0.0	+0.0
	8						0		+0.0	+0.0
	9						0		+0.0	+0.0
	10						0		+0.0	+0.0
	11						0		+0.0	+0.0
	12						0		+0.0	+0.0

At the bottom of the interface, there is a 'Set All' button with a numeric input field containing '0'. Below this is a 'Calibration' button. At the very bottom, there are 'Refresh', 'Full Voltage Cal', 'Save', and 'Close' buttons.

### Set Point (V)

This is the High Voltage the detector is set to.

### Readback

This is the value readback from the detector.

### Actual CC

This is the calibration constant to ensure the High Voltage sent to the detector is what is read on the detector itself.

### Readback CC

This is the calibration constant to ensure that the High Voltage readback from the detector is accurate.

### Set All Button

This sets all Detectors' High Voltage to the given value.

### Calibration Button

Clicking this button opens the Voltage Calibration Wizard and will run through HV Set Point and HV Readback Voltage Calibrations.

## $\alpha$ LLD, $\beta$ ULD, and $\beta$ LLD Tabs

The screenshot shows a software interface titled "Detectors" with a table of 12 detector channels. Each channel has a "Set Point (mV)", "Readback", and "Actual CC" field. The "Set Point (mV)" field is a numeric input with up and down arrows, currently set to 0. The "Readback" field is a numeric input, currently set to 0. The "Actual CC" field is a numeric input with a dropdown arrow, currently set to +0.0. Below the table is a "Set All" button with a dropdown menu set to 0. At the bottom of the interface are buttons for "Refresh", "Full Voltage Cal", "Calibration", "Save", and "Close".

Live	HV	$\alpha$ LLD	$\beta$ ULD	$\beta$ LLD	S/N	Enabled
		Set Point (mV)			Readback	Actual CC
	1	0			0	+0.0
	2	0			0	+0.0
	3	0			0	+0.0
	4	0			0	+0.0
	5	0			0	+0.0
	6	0			0	+0.0
	7	0			0	+0.0
	8	0			0	+0.0
	9	0			0	+0.0
	10	0			0	+0.0
	11	0			0	+0.0
	12	0			0	+0.0

Below the table, there is a "Set All" button with a dropdown menu set to 0. At the bottom of the interface, there are buttons for "Refresh", "Full Voltage Cal", "Calibration", "Save", and "Close".

### Set Point (mV)

This is the appropriate Discriminator Voltage set for the detector before the amplifier. Measure mV after the amplifier and multiply by 8.

### Readback

This is the value readback from the detector.

### Actual CC

This is the calibration constant to ensure the Discriminator Voltage sent to the detector is what is read on the detector itself.

### Set All Button

This sets all detectors' appropriate Discriminator Voltage to the given value.

### Calibration Button

Clicking this button opens the Voltage Calibration Wizard and will run through the appropriate Voltage Calibration ( $\alpha$  LLD,  $\beta$  ULD, or  $\beta$  LLD).

## S/N Tab

	Live	HV	α LLD	β ULD	β LLD	S/N	Enabled
1						Test	
2						Foo	
3						Bar	
4							
5							
6							
7							
8							
9							
10							
11							
12							

## Serial Number

This is the serial number of the detector. The user should not need to change this value.

## Enabled Tab

	Live	HV	α LLD	β ULD	β LLD	S/N	Enabled
<input checked="" type="checkbox"/> Enable							
<input checked="" type="checkbox"/> Enable							
<input checked="" type="checkbox"/> Enable							
<input checked="" type="checkbox"/> Enable							
<input type="checkbox"/> Enable							
<input checked="" type="checkbox"/> Enable							
<input checked="" type="checkbox"/> Enable							
<input checked="" type="checkbox"/> Enable							
<input checked="" type="checkbox"/> Enable							
<input checked="" type="checkbox"/> Enable							
<input checked="" type="checkbox"/> Enable							
<input type="checkbox"/> Enable							

Uncheck a detector to disable the detector. This will stop the detector from showing up on any other screen except this one. This is useful if a detector is having a problem but repairs cannot be done at the

time or is otherwise unneeded, like when only using one wing of the Model 240 and none of the others need to be watched.

Note: when disabled, using the “Set All” buttons will not set the values for disabled detectors.

## Voltage Calibration Wizard

### All Steps

#### Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

#### Cancel Button

Clicking this button stops the wizard and closes it.

#### Back Button

Clicking this button returns to the previous step of the wizard.

#### Next Button

Clicking this button moves to the next step of the wizard.

#### Close Button

Clicking this button closes the wizard.

### HV Step

	Set Point	Measured	Resulting Cal Constant %		
Zero Values	0	0	+0.0	Send Cal Const	Zero HV
Zero Values	0	0	+0.0	Send Cal Const	Zero HV
Zero Values	0	0	+0.0	Send Cal Const	Zero HV
Zero Values	0	0	+0.0	Send Cal Const	Zero HV
Zero Values	0	0	+0.0	Send Cal Const	Zero HV
Zero Values	0	0	+0.0	Send Cal Const	Zero HV
Zero Values	0	0	+0.0	Send Cal Const	Zero HV
Zero Values	0	0	+0.0	Send Cal Const	Zero HV
Zero Values	0	0	+0.0	Send Cal Const	Zero HV
Zero Values	0	0	+0.0	Send Cal Const	Zero HV
Zero Values	0	0	+0.0	Send Cal Const	Zero HV
Zero Values	0	0	+0.0	Send Cal Const	Zero HV

This step will calibrate the HV measured from the detector connector.

1. Click the Zero Values button on the detector you wish to calibrate. This will zero both the Calibration Constant and the HV (to allow you to safely disconnect the detector).
2. Connect the voltmeter to the detector.
3. Click the ok button in the pop up.
4. Fill in the measured HV of the detector. The software will calculate the correct calibration constant automatically.
5. Click the Send Cal Const button.
6. Click the Zero HV button.
7. Disconnect the voltmeter from the detector.
8. Click the ok button in the pop up.
9. Repeat for each detector you wish to calibrate.

When finished, click Next to continue or Cancel to exit.

Cancel Next

### Zero Values Button

Clicking this button will send a zero as the Calibration Constant to allow for an accurate reading on the detector. It will also send a zero the HV to allow you to connect the voltmeter to the detector without sparking the hardware. The user must click this button to edit the Measured Field.

### Set Point

This is the Set Point the user has set for the detector.

### Measured

This is the value read by on the detector's High Voltage line.

### Send Cal Const Button

Clicking this button will send the automatically calculated Calibration Constant to the detector.

### Zero HV Button

Clicking this button will zero the HV to allow you to disconnect the voltmeter and reconnect the detector.

## Reload Step

	Set Point	Measured	Resulting Cal Constant %
Zero Cal Const	1 <input type="text" value="0"/>	0	+0.0 Send Cal Const
Zero Cal Const	2 <input type="text" value="0"/>	0	+0.0 Send Cal Const
Zero Cal Const	3 <input type="text" value="0"/>	0	+0.0 Send Cal Const
Zero Cal Const	4 <input type="text" value="0"/>	0	+0.0 Send Cal Const
Zero Cal Const	5 <input type="text" value="0"/>	0	+0.0 Send Cal Const
Zero Cal Const	6 <input type="text" value="0"/>	0	+0.0 Send Cal Const
Zero Cal Const	7 <input type="text" value="0"/>	0	+0.0 Send Cal Const
Zero Cal Const	8 <input type="text" value="0"/>	0	+0.0 Send Cal Const
Zero Cal Const	9 <input type="text" value="0"/>	0	+0.0 Send Cal Const
Zero Cal Const	10 <input type="text" value="0"/>	0	+0.0 Send Cal Const
Zero Cal Const	11 <input type="text" value="0"/>	0	+0.0 Send Cal Const
Zero Cal Const	12 <input type="text" value="0"/>	0	+0.0 Send Cal Const

Zero All Cal Consts      Send All Cal Consts

Reload

Back      Close

### Zero Cal Const Button

Clicking this button will send a zero as the Readback Calibration Constant to allow for an accurate reading from the detector. The user must click this button to update the Calibration Constant.

### Set Point

This is the Set Point the user has set for the detector.

Measured

This is the value readback from the detector.

Send Cal Const Button

Clicking this button will send the automatically calculated Calibration Constant to the detector.

Zero All Cal Consts Button

Clicking this button will send a zero as the Calibration Constant to all detectors to allow for an accurate reading on each detector. The user should only use this if ALL detectors will be calibrated.

Send All Cal Consts Button

Clicking this button will send the automatically calculated Calibration Constants to each detector. This can only be clicked if the Zero All Cal Consts Button had been clicked.

Reload Button

Clicking this button will read all detectors' values to help calculate the Calibration Constants.

## Discriminator Step

	Live (cpm)	Set Point	Measured	Resulting Cal Constant %		
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV
Zero Values	1200	0	0.0	+0.0	Send Cal Const	Restore HV

This step will calibrate the Beta LLD measured from a pulser's output.

1. Click the Zero Values button on the detector you wish to calibrate. This will zero both the Calibration Constant and the HV (to allow you to safely disconnect the detector).
2. Connect the pulser to the detector.
3. Adjust The pulser's count rate to a specific value (400 kcpm, for example) and its voltage to the target value.
4. Adjust the voltage until the Live reading is 80% of the count rate value (320 kcpm to continue the example).
5. Fill in the measured millivoltage - this is read after an amplifier, so expect this to be about 1/8th to 1/10th of the expected set point, the software will correct this for you. The software will calculate the correct calibration constant automatically.
6. Click Send Cal Const button.
7. Disconnect the pulser from the detector.
8. Click the Restore HV button.
9. Repeat for each detector you wish to calibrate.

When finished, click Next to continue or Cancel to exit.

Cancel Back Next

Zero Values Button

Clicking this button will send a zero as the Calibration Constant to allow for an accurate reading on the detector and zero the HV to allow you to connect the pulser to the detector without sparking the hardware. The user must click this button to edit the Measured Field.

Live

This is the current one-second live reading of the detector (rendered in the selected count rate).

Set Point

This is the Set Point the user has set for the detector.

Measured

This is the value readback from the detector.

Send Cal Const Button

Clicking this button will send the automatically calculated Calibration Constant to the detector.

Restore HV Button

Clicking this button will restore the HV after you are done. You need to disconnect the pulser and reconnect the detector.

## Source Check Screen

The screenshot shows the 'Source Check' interface. At the top, there are tabs for 'Alpha' and 'Beta'. Below the tabs, there are input fields for 'Source Activity' (set to 6.00 dpm) and 'Required Pass Percentage' (set to 90%). A 'Start' button is visible. Below these fields is a table with columns: Detector, Stored Efficiency, Background, Net Reading, Highest Net Reading, and Status. The table lists 11 detectors, all with a status of 'NOT PASSED'. On the right side, there are instructions for the user, including '1. Position source.' and '2. Click the start button. This will start a continuous count cycle.' At the bottom, there are buttons for 'Save Report', 'Save Report as CSV', 'Print Report', and 'Close'.

Detector	Stored Efficiency	Background	Net Reading	Highest Net Reading	Status
Det 1	23.51%	0	0	0	NOT PASSED
Det 2	22.44%	0	0	0	NOT PASSED
Det 3	25.22%	0	0	0	NOT PASSED
Det 4	23.04%	0	0	0	NOT PASSED
Det 6	23.85%	0	0	0	NOT PASSED
Det 7	23.25%	0	0	0	NOT PASSED
Det 8	24.87%	0	0	0	NOT PASSED
Det 9	23.54%	0	0	0	NOT PASSED
Det 10	24.18%	0	0	0	NOT PASSED
Det 11	22.68%	0	0	0	NOT PASSED

## All Tabs

Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

Save Report Button

Clicking this button will allow you to save the current Source Check data as a report so that it can be viewed later in the Log Viewer. This can be accessed only after attempting a source check.

Save Report as CSV Button

Clicking this button will allow you to save the current Source Check data as a CSV file, so that it can be opened in programs such as Excel. This can be accessed only after attempting a source check.

Print Report Button

Clicking this button prints the Source Check data. This can be accessed only after attempting a source check.

Close Button

Clicking this button closes the Source Check screen.

Alpha/Beta Tab

Source Activity

This is the activity of the Source to check for.

Required Pass Percentage

This is the percent of the Source Activity reading to count the detector as passed. For example, if the Source Activity is 10 dpm and the Required Pass Percentage is 90%, then a detector would need to read at least 9 dpm above the background to be counted as Passed.

Start Button

Clicking this button will start the Source Check.

Cancel Button

Clicking this button will cancel the currently running Source Check.

Detector Column

This is for the detector.

Stored Efficiency Column

This is the efficiency of the detector.

Background Column

This is the background reading.

Net Reading Column

This is the reading above background.

Highest Net Reading Column

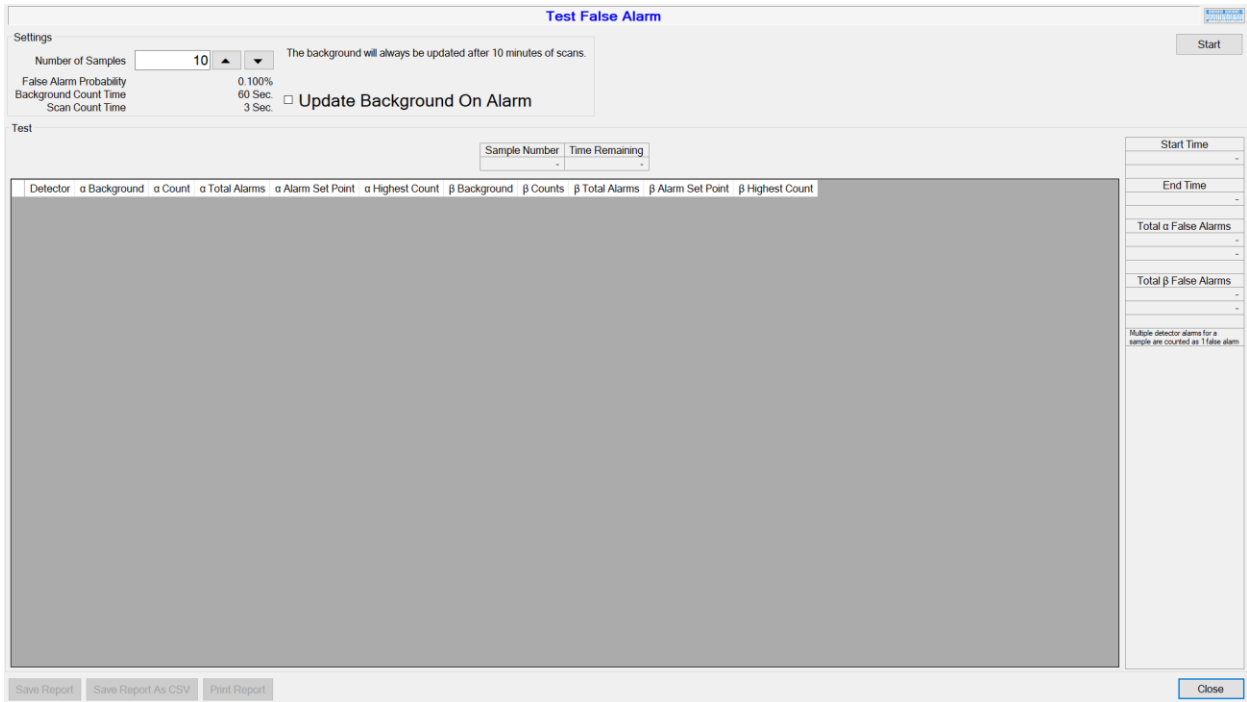
This is the highest reading above background.

Status Column

This shows whether the detector has passed the Source Check or not.



# False Alarm Screen



## Source Check Screen

### Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

### Start Button

Clicking this button will start the Source Check.

### Cancel Button

Clicking this button will cancel the currently running Source Check.

## Settings

### Number of Samples

This is the number of samples to take.

### False Alarm Probability

This indicates the false alarm probability.

### Background Count Time

This indicates the background count time.

### Scan Count Time

This indicates the scan count time.

Updated Background on Alarm

Checking this box will force a background reading when an alarm occurs.

Test

Sample Number

This is the current sample number.

Time Remaining

This is the amount of time remaining for the current reading.

Detector Column

This is for the detector.

$\alpha$  Background Column

This is the current alpha background reading.

$\alpha$  Count Column

This is the current alpha scan reading.

$\alpha$  Total Alarms Column

This is the total number of alpha alarms so far.

$\alpha$  Alarm Set Point Column

This is the current Alpha Alarm Set Point.

$\alpha$  Highest Count Column

This is the highest alpha reading so far.

$\beta$  Background Column

This is the current beta background reading.

$\beta$  Count Column

This is the current beta scan reading.

$\beta$  Total Alarms Column

This is the total of beta alarms so far.

$\beta$  Alarm Set Point Column

This is the current Beta Alarm Set Point.

$\beta$  Highest Count Column

This is the highest beta reading so far.

Start Time

This is the time the False Alarm Test was started.

#### End Time

This is the projected time the False Alarm Test will end. This will be updated if Update Background on Alarm was checked and an unplanned background (due to an alarm) is taken.

#### Total $\alpha$ False Alarms

This is the total number of alpha alarms per scan (so that multiple alarms on the same scan are still counted as a single false alarm), as well as the percentage of the total scans.

#### Total $\beta$ False Alarms

This is the total number of beta alarms per scan (so that multiple alarms on the same scan are still counted as a single false alarm), as well as the percentage of the total scans.

### Buttons

#### Save Report Button

Clicking this button will allow you to save the current False Alarm data as a report so that it can be viewed later in the Log Viewer. This can be accessed only after attempting a false alarm check.

#### Save Report as CSV Button

Clicking this button will allow you to save the current False Alarm data as a CSV file, so that it can be opened in programs such as Excel. This can be accessed only after attempting a false alarm check.

#### Print Report Button

Clicking this button prints the False Alarm data. This can be accessed only after attempting a false alarm check.

#### Close Button

Clicking this button closes the False Alarm screen.

## Variance/Mean Screen

The screenshot shows a software window titled "Test Variance/Mean". The interface is divided into several sections:

- Settings:** Contains two spinners. "Number Of Samples" is set to 100, and "Count Time" is set to 10 seconds. A "Start" button is located to the right of these settings.
- Test:** Contains four input fields: "Sample Number", "Time Remaining", "Start Time", and "End Time".
- Data Table:** A large table area with a header row containing "Detector", "Counts", "Mean", "Variance", and "VM Ratio". The table body is currently empty.
- Footer:** Contains four buttons: "Save Report", "Save Report as CSV", "Print Report", and "Close".

### General

#### Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

#### Start Button

Clicking this button will start the Variance/Mean test.

#### Cancel Button

Clicking this button will cancel the currently running Variance/Mean test.

### Settings

#### Number of Samples

This is the number of samples to take.

#### Count Time

This is the amount of time to count per sample.

### Test

#### Sample Number

This is the current sample being taken.

#### Time Remaining

This is the amount of time remaining for the current sample.

Start Time

This is the time the Variance/Mean test was started.

End Time

This is the time the Variance/Mean test is expected to end.

Detector Column

This is the detector column (with Alpha and Beta split into rows).

Counts Column

This is the current number of counts.

Mean Column

This is the average of the previous samples.

Variance Column

This is the variance of the previous samples.

V/M Ratio Column

This is the ratio of the Variance over the Mean of the previous samples.

## Buttons

Save Report Button

Clicking this button will allow you to save the current Variance/Mean data as a report so that it can be viewed later in the Log Viewer. This can be accessed only after attempting a Variance/Mean test.

Save Report as CSV Button

Clicking this button will allow you to save the current Variance/Mean data as a CSV file, so that it can be opened in programs such as Excel. This can be accessed only after attempting a Variance/Mean test.

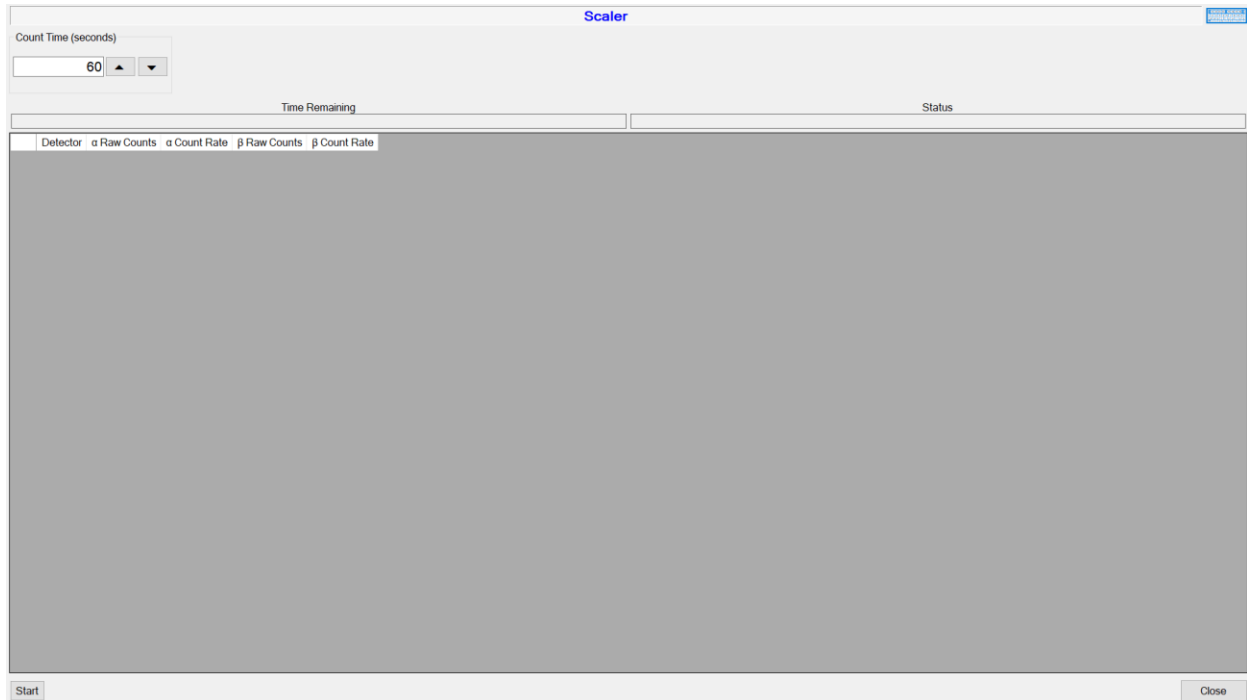
Print Report Button

Clicking this button prints the Variance/Mean data. This can be accessed only after attempting a Variance/Mean test.

Close Button

Clicking this button closes the Variance/Mean screen.

## Scaler Screen



### General

#### Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

#### Count Time

The amount of time taken for the Scaler count.

#### Test

#### Time Remaining

This is the amount of time remaining for the Scaler count.

#### Status

This is the current status of the Scaler count.

#### Detector Count Column

This column notes the detector.

#### $\alpha$ Raw Counts Column

This is the current alpha count.

#### $\alpha$ Count Rate

This is the current alpha count rate.

$\beta$  Row Counts Column

This is the current beta count.

$\beta$  Count Rate

This is the current beta count rate.

## Buttons

Start Button

Clicking this button will start the Scaler count.

Cancel Button

Clicking this button will cancel the currently running the Scaler count.

Close Button

Clicking this button closes the Scaler screen.

## Calibration-Plateau HV Screen

### General

Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

### Settings Tab

Source	Name	Reading	Unit
$\alpha$	Pu-239	358	Bq
$\beta$	Tc-99	35,100	dpm

HV Settings

Start: 700 V  
End: 900 V  
Increment: 25 V

Count Time Settings (seconds)

Background: 60  
 $\alpha$  Source: 30  
 $\beta$  Source: 10

Select Detectors for HV Plateau

- All
- Det 1
- Det 2
- Det 3
- Det 4
- Det 6
- Det 7
- Det 8
- Det 9
- Det 10
- Det 11

Start | Print Report | Save Report | Save Report as CSV | Close

Sources

Name: This is the name of the source.

Reading: This is the source size.

### HV Settings

Start

This is the voltage at which to start.

End

This is the voltage at which to end. This must be higher than the Starting voltage.

Increment

This is the number of volts to increment per step. This needs to be divisible by the difference of the Ending and Starting Voltage. For example, if the Starting voltage is 700 and the Ending voltage is 900 (thus the difference is 200), then 25 is a valid Increment, but 30 is not.

### Count Time Settings

Background

This is the amount of time to count for the background.

$\alpha$  Source

This is the amount of time to count when taking an alpha reading.

$\beta$  Source

This is the amount of time to count when taking a beta reading.

### Select Detectors for HV Plateau

All Check Box

Checking or un-checking this check box will select or deselect all of the detectors.

Detector Check Box

Check the check boxes of the detectors you wish to calibrate here.



## Plateau Tab

The screenshot shows the 'Calibrate Plateau-HV' software interface. At the top, there's a 'Settings Plateau' tab. Below it, the 'Status' is '???' and 'Time Remaining' is '???'.

There are step numbers 1 through 11. A 'Graph' button is present. Below that, there are two checked checkboxes: 'Show Alpha Data' and 'Show Beta Data'. The 'Current Operating Voltage' is set to 0, and the 'Selected Operating Voltage' is set to 700. A 'Set HV' button and a 'Save' button are also visible.

	α LLD	β ULD	β LLD	Mode 1 False Alarm %	Mode 2 Detection Prob %	α Mode 2 MDA	β Mode 2 MDA	Bg Time	α Time	β Time
Current	0	0	0	0.100%	95.00%	500 dpm	2000 dpm			
Plateau	1,800	1,200	75	0.100%	95.00%	0 dpm	0 dpm	60 Sec	30 Sec	10 Sec

HV	α Bkg	α Net	α Eff	α Net X Talk	α X Talk	α M1 MDA	α M2 Alm	β Bkg	β Net	β Eff	β Net X Talk	β X Talk	β M1 MDA	β M2 Alm
700	0 cpm	0 cpm	21.56%	0 cpm	4.51%	NaN dpm	NaN cpm	0 cpm	0 cpm	10.49%	0 cpm	0.00%	NaN dpm	NaN cpm
725	0 cpm	0 cpm	22.73%	0 cpm	4.19%	NaN dpm	NaN cpm	0 cpm	0 cpm	13.69%	0 cpm	0.28%	NaN dpm	NaN cpm
750	0 cpm	0 cpm	22.73%	0 cpm	4.39%	NaN dpm	NaN cpm	0 cpm	0 cpm	17.34%	0 cpm	0.00%	NaN dpm	NaN cpm
775	0 cpm	0 cpm	22.97%	0 cpm	2.18%	NaN dpm	NaN cpm	0 cpm	0 cpm	17.68%	0 cpm	0.00%	NaN dpm	NaN cpm
800	0 cpm	0 cpm	23.51%	0 cpm	5.62%	NaN dpm	NaN cpm	0 cpm	0 cpm	19.80%	0 cpm	0.00%	NaN dpm	NaN cpm
825	0 cpm	0 cpm	23.28%	0 cpm	12.16%	NaN dpm	NaN cpm	0 cpm	0 cpm	21.87%	0 cpm	0.02%	NaN dpm	NaN cpm
850	0 cpm	0 cpm	23.40%	0 cpm	43.36%	NaN dpm	NaN cpm	0 cpm	0 cpm	26.03%	0 cpm	0.14%	NaN dpm	NaN cpm
875	0 cpm	0 cpm	23.49%	0 cpm	160.30%	NaN dpm	NaN cpm	0 cpm	0 cpm	25.85%	0 cpm	0.23%	NaN dpm	NaN cpm
900	0 cpm	0 cpm	24.15%	0 cpm	462.34%	NaN dpm	NaN cpm	0 cpm	0 cpm	28.01%	0 cpm	2.96%	NaN dpm	NaN cpm

At the bottom, there are buttons for 'Start', 'Print Report', 'Save Report', 'Save Report as CSV', and 'Close'.

## All Tabs

### Status

This is the current status of the plateau.

### Time Remaining

This is the time remaining of the current step.

## Detector Tab

### Graph/Grid Button

Clicking this button will switch the display of the data to either a grid or a simple graph with the Alpha and Beta Background and Net Counts.

### Show Alpha Data Check Box

Checking this will display the alpha data.

### Show Beta Data Check Box

Checking this will display the beta data.

### Current Operating Voltage

This is the current voltage of the detector. Typically it is either its normal voltage or the current voltage of the step.

### Selected Operating Voltage

This is the voltage of the currently selected step. This defaults to the first step in the list if available.

#### Set HV Button

Clicking this button will send the currently Selected Operating Voltage to the detector. This will also update the efficiencies to what was calculated during the plateau.

#### Save Button

Clicking this button will save the current plateau data so that it can be retrieved next time this screen is opened.

#### Plateau Data

This is here so that the user can ensure that the plateau data is still valid for the current setup.

#### HV Column

This is the high voltage of the step.

#### $\alpha$ Bkg Column

This is the alpha background reading of the step.

#### $\alpha$ Net Column

This is the alpha net reading of the step.

#### $\alpha$ Eff Column

This is the alpha efficiency of the step.

#### $\alpha$ Net X Talk Column

This is the alpha net cross talk of the beta reading.

#### $\alpha$ X Talk Column

This is the alpha cross talk percentage of the beta reading.

#### $\alpha$ M1 MDA Column

This is the Alpha Mode 1 calculated MDA.

#### $\alpha$ M2 Alm Column

This is the Alpha Mode 2 calculated Alarm Set Point.

#### $\beta$ Bkg Column

This is the beta background reading of the step.

#### $\beta$ Net Column

This is the beta net reading of the step.

#### $\beta$ Eff Column

This is the beta efficiency of the step.

#### $\beta$ Net X Talk Column

This is the beta net cross talk of the alpha reading.

#### $\beta$ X Talk Column

This is the beta cross talk percentage of the alpha reading.

β M1 MDA Column

This is the Beta Mode 1 calculated MDA.

β M2 Alm Column

This is the Beta Mode 2 calculated Alarm Set Point.

## Buttons

Start Button

Clicking this button will start the Plateau.

Cancel Button

Clicking this button will cancel the currently running Plateau.

Print Report Button

Clicking this button prints the Plateau data.

Save Report Button

Clicking this button will allow you to save the current Plateau data as a report so that it can be viewed later in the Log Viewer.

Save Report as CSV Button

Clicking this button will allow you to save the current Plateau data as a CSV file, so that it can be opened in programs such as Excel.

Close Button

Clicking this button closes the Calibration Plateau HV screen.

# Calibration-Efficiency Screen

## General

### Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

## Configuration Tab

Calibrate Efficiencies

Configuration Auto Alpha Efficiencies Auto Beta Efficiencies Manual Efficiencies

Count Time Settings (seconds)

Background 60 ▲ ▼

Source 60 ▲ ▼

Source Data

	Name	Size	
α	Foo	10 ▲ ▼	dpm ▼ Save
β	Bar	187,193 ▲ ▼	pCi ▼

Select Detectors

- All
- Det 1
- Det 2
- Det 3
- Det 4
- Det 6
- Det 7
- Det 8
- Det 9
- Det 10
- Det 11

Save Report Save Report as CSV Print Report Close

## Count Time Settings

### Background

This is the number of seconds to count for background.

### Source

This is the number of seconds to count for checking a source.

## Source Data

### Alpha

This is the data for the alpha source.

Beta

This is the data for the beta source.

Save Button

Clicking this button will save the alpha and beta source data to be used the next time.

### Select Detectors for Auto Alpha/Beta Efficiency

All Check Box

Checking or un-checking this check box will select or deselect all of the detectors.

Detector Check Box

Check the check boxes of the detectors here that you wish to calibrate.

### Auto Efficiencies Tabs

Detector	Background	Gross Count	Net Count	Efficiency
Det 1	0	0	0	23.51%
Det 2	0	0	0	22.44%
Det 3	0	0	0	25.22%
Det 4	0	0	0	23.04%
Det 6	0	0	0	23.85%
Det 7	0	0	0	23.25%
Det 8	0	0	0	24.87%
Det 9	0	0	0	23.54%
Det 10	0	0	0	24.18%
Det 11	0	0	0	22.68%

Start Button

Clicking this button will start the efficiency calibration.

Cancel Button

Clicking this button will cancel the currently running efficiency calibration.

Time Remaining

This is the time remaining for the current step.

Detector Column

This indicates the detector.

### Background Column

This is the current background reading of the detector.

### Gross Count Column

This is the current gross count of the detector.

### Net Count Column

This is the current net count (above background) of the detector.

### Efficiency Column

This is the current efficiency of the detector.

## Manual Efficiencies Tab

The screenshot shows a software window titled "Calibrate Efficiencies" with a tabbed interface. The "Manual Efficiencies" tab is active, displaying a table of efficiency values for 11 detectors. The table is organized into two columns: "Alpha Efficiencies" and "Beta Efficiencies". Each detector row contains a label (Det 1 to Det 11), a numerical value, and a percentage sign. The values are: Det 1 (23.51), Det 2 (22.44), Det 3 (25.22), Det 4 (23.04), Det 6 (23.85), Det 7 (23.25), Det 8 (24.87), Det 9 (23.54), Det 10 (24.18), and Det 11 (22.68). The Beta Efficiencies column shows values of 23.24, 22.00, 22.00, 22.00, 22.00, 22.00, 22.00, 22.00, 22.00, 22.00, and 22.00. At the bottom of the window, there are input fields for "0.00" and "0.00" with "Set All" and "Save" buttons. The bottom bar includes "Save Report", "Save Report as CSV", "Print Report", and "Close" buttons.

Detector	Alpha Efficiency (%)	Beta Efficiency (%)
Det 1	23.51	23.24
Det 2	22.44	22.00
Det 3	25.22	22.00
Det 4	23.04	22.00
Det 6	23.85	22.00
Det 7	23.25	22.00
Det 8	24.87	22.00
Det 9	23.54	22.00
Det 10	24.18	22.00
Det 11	22.68	22.00

### Alpha Efficiencies

This is the manually set alpha efficiency for the detector.

### Beta Efficiencies

This is the manually set beta efficiency for the detector.

### Set All Alpha Efficiencies

This value sets all alpha efficiency for each detector.

### Set All Beta Efficiencies

This value sets all beta efficiency for each detector.

### Set All Button

Clicking this button will set all detectors' alpha and beta efficiencies to the given values.

Save Button

Clicking this button will set all detectors' currently entered alpha and beta efficiencies to the given values.

## Buttons

Save Report Button

Clicking this button will allow you to save the current Auto Efficiency data as a report so that it can be viewed later in the Log Viewer.

Save Report as CSV Button

Clicking this button will allow you to save the current Auto Efficiency data as a CSV file, so that it can be opened in programs such as Excel.

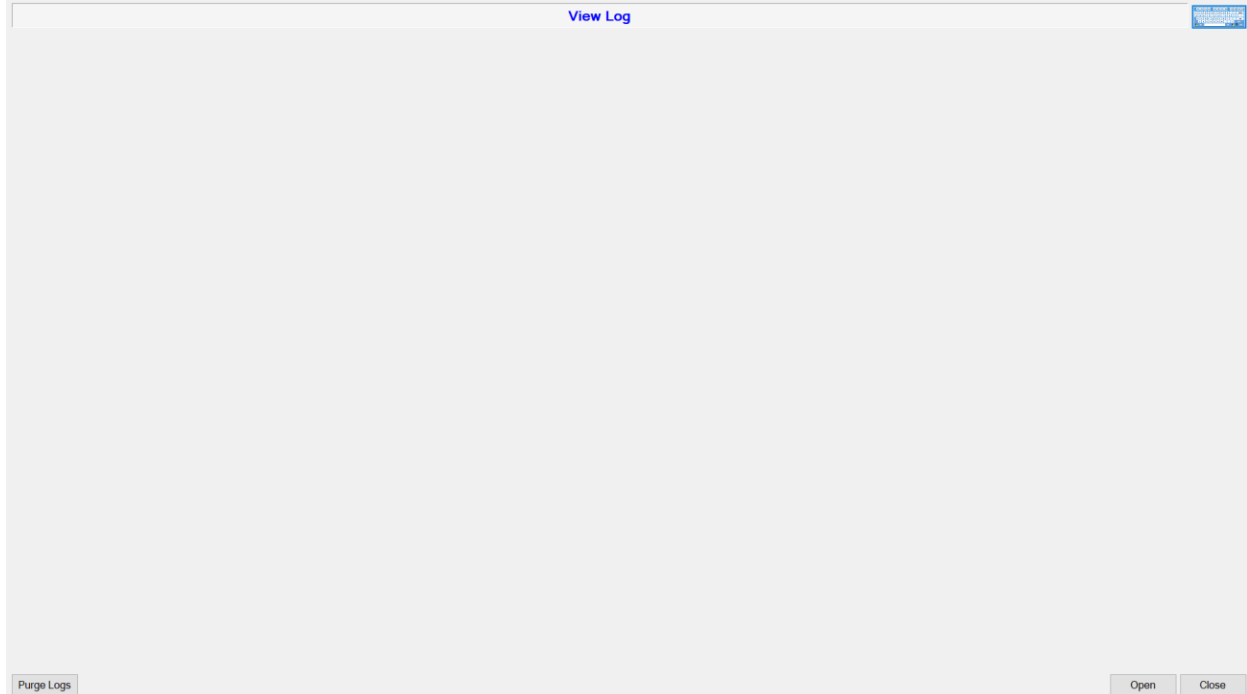
Print Report Button

Clicking this button prints the Auto Efficiency data.

Close Button

Clicking this button closes the Efficiency screen.

## View Log Screen



Keyboard Button

Clicking this button opens a Windows provided virtual keyboard. This is only needed if the device onto which the software is installed does not come with a keyboard.

#### Display

This is where the selected log or report is displayed. The Background, Scan, and System logs are displayed as tabular data, and all other files (such as the Report files) are displayed as text.

#### Purge Logs Button

Clicking this button will allow the user to erase any log files older than a month, as of the current day. For example, if the current day is June 14th, it will erase all logs older than May 14th.

#### Open Button

Clicking this button will allow the user to open a file, such as a Background Log or Report, for viewing.

#### Close Button

Clicking this button will close the View Log screen.