

*Southwest Microwave, Inc.*

Security Systems Division

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# **INTREPID™**

## Universal Installation Service Tool II Technical Manual

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## 1.0 Introduction

The Universal Installation Tool II (UIST II) is software used with INTREPID™ Series II family of products. Its function is to configure the detection parameters of the MicroPoint™ II, MicroTrack™ II and Microwave 330 sensors. It is provided on a CD.

The UIST II is an application program designed to run on a standard PC or laptop running Windows XP™ (with \*.NET Framework 3.5 or higher, SP3), Windows Vista™ or Windows 7™ operating system.

Currently the UIST II has five (5) languages available in its program. The languages are: English, Spanish, Chinese, Russian and Korean.

This manual is divided into three (3) sections. These sections cover the MicroPoint II Fence Detection System, MicroTrack II Buried Cable System and Model 330 Microwave Intrusion Detection System.

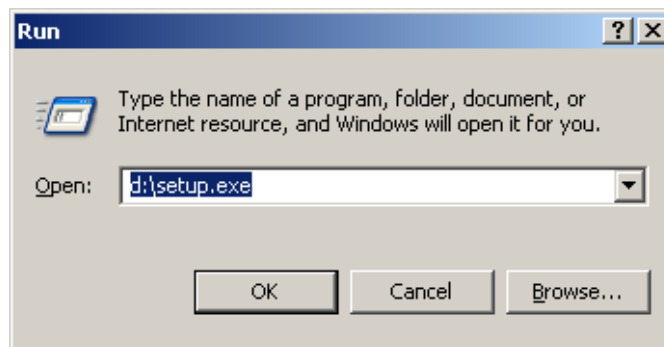
## 2.0 Software Installation

Prior to the software installation all programs must be exited or closed or the software may not load correctly. If using a Windows XP machine be sure that it has the \*.NET Framework (version 3.5 or higher) installed with service pack 3.

**2.1** Insert CD into the proper drive and choose run from the start menu.

**2.2** Type d:\setup.exe and click OK (or appropriate drive).

**2.3** The “Run” dialog box as shown in Figure 2.1 will open.



*Figure 2.1 – Run Program Screen*

**2.4** The “License Agreement” dialog box will open as shown in Figure 2.2. This dialog box will only show if the .NET Framework is not currently installed on the PC. Select “Accept” to continue loading the software. The setup will initialize and configure components. This function may take several minutes to complete.

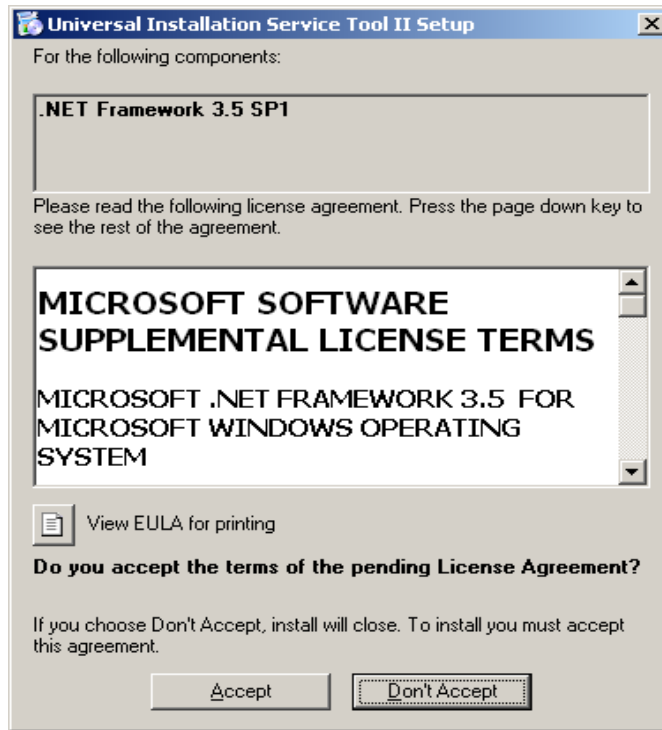


Figure 2.2 – License Agreement

- 2.5 After all components have been configured the UIST II splash screen as shown in Figure 2.3 will open. Select “Next” to continue the installation process or select “Cancel” to end the installation.

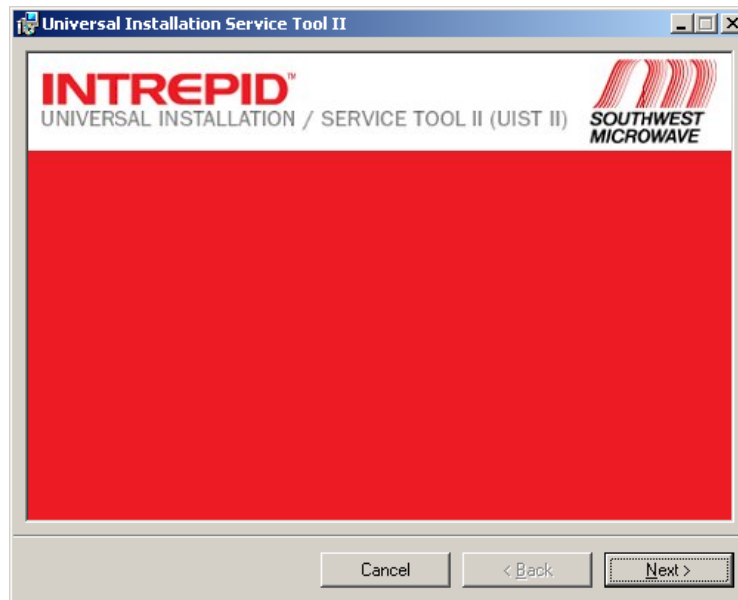


Figure 2.3 – Splash Screen

- 2.6 Selecting “Next” from the splash screen will open the “UIST II Setup Wizard” as shown in Figure 2.4. Select “Next” to continue the setup or “Back” to step back to the previous Wizard screen or “Cancel” to stop the installation.

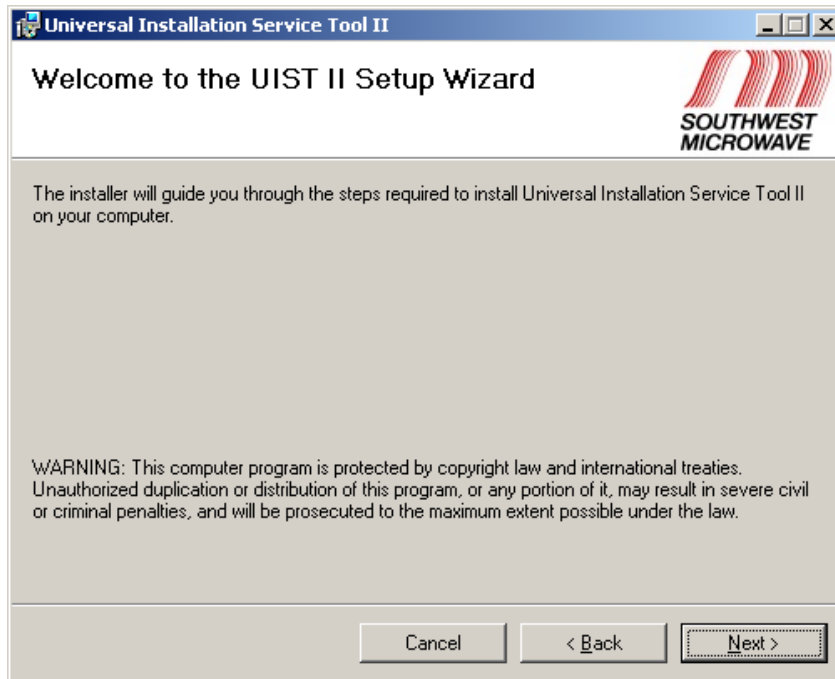


Figure 2.4 – UIST II Setup Wizard

- 2.7 Selecting “Next” from the Setup Wizard will open the “Select Installation Folder” screen as shown in Figure 2.5. It is recommended to install the software to the default “Program Files” folder on the PC.

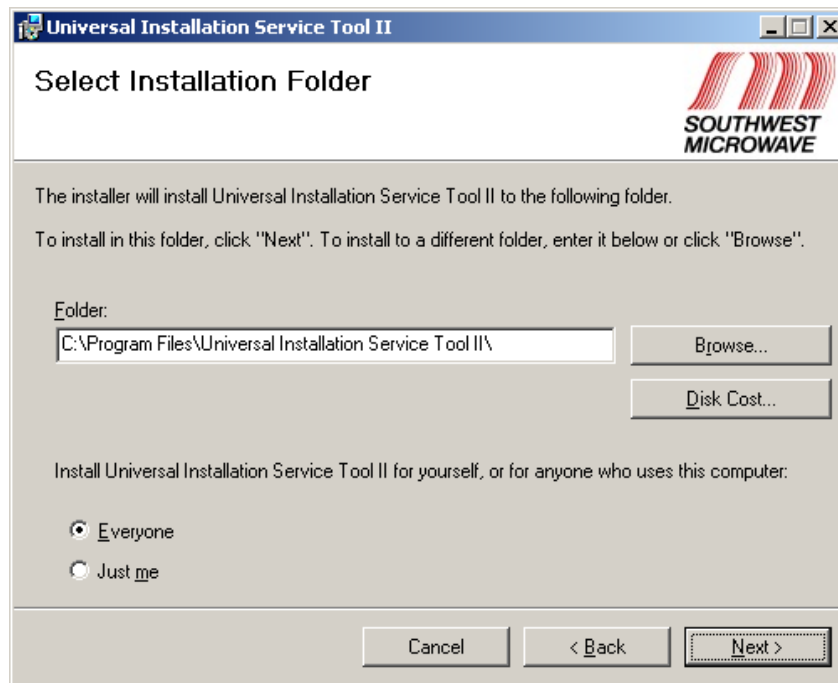
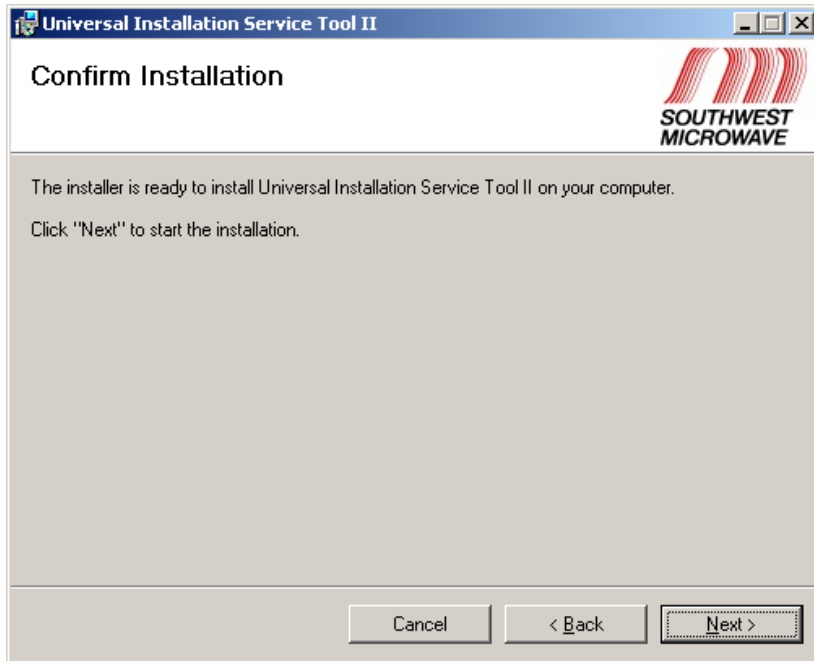


Figure 2.5 – Installation Folder Options

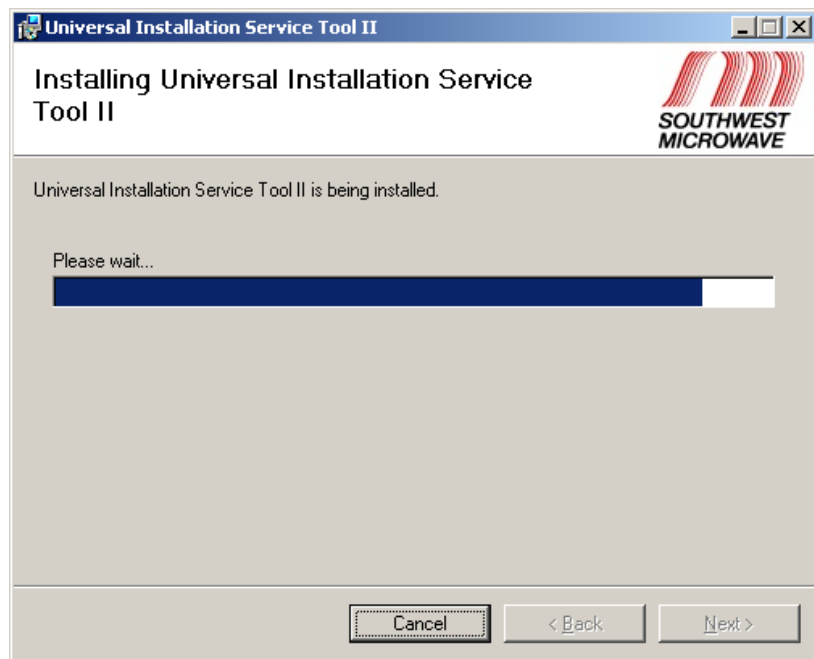
If a different destination is required, type in the location or select the “Browse” button to locate the destination. Selecting “Disk Cost” will show the file size to be installed and available hard drive space. “Everyone” and “Just me” are permissions to use the program on the PC with the loaded software.

**2.8** Selecting “Next” from the Select Installation Folder will open the “Confirm Installation” screen as shown in Figure 2.6. This will confirm that the UIST II is ready to be installed on the PC.



*Figure 2.6 – Confirm Installation*

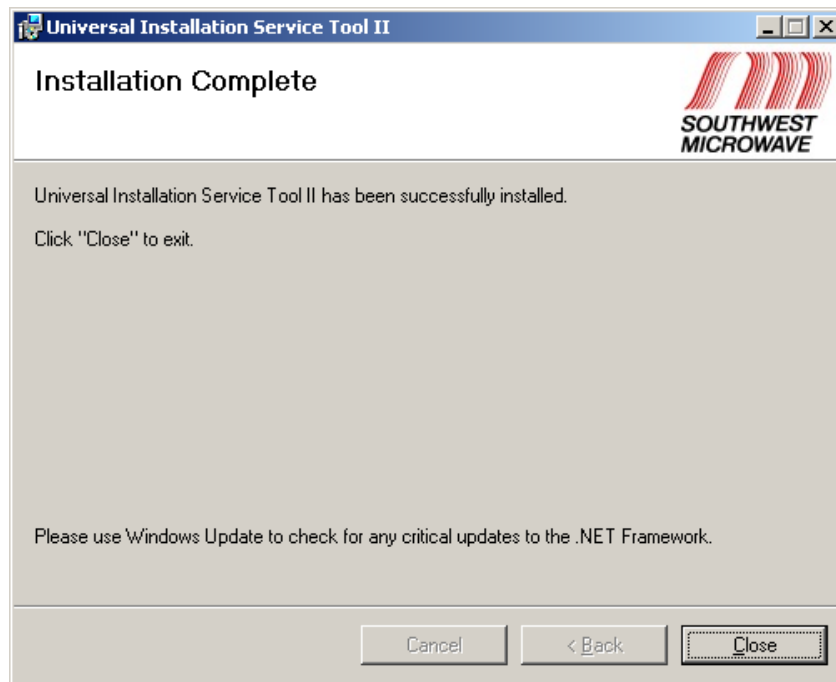
**2.9** Selecting “Next” from the Confirm Installation will open the “Installing Universal Installation Service Tool II” screen as shown in Figure 2.7. The blue progress bar will increase showing the progress of the software installation. Once completed, select “Next” to continue the setup or “Back” to step back to the previous screen or “Cancel” to stop the installation.



*Figure 2.7 – Installing Universal Installation Service Tool II*



**2.10** Once the “Next” button is selected from the Installing Universal Installation Service Tool II, the “Installation Complete” screen as shown in Figure 2.8 will open. This will be the indication that the software has been successfully installed. Select “Close” to exit the installation.



*Figure 2.8 – Installation Complete*

### 3.0 Universal Installation Service Tool II

To start the Universal Installation Service Tool II (UIST II) program, double click the shortcut icon that has been created on the desktop or use the Start/All Programs menu to open the main screen as shown in Figure 3.1.

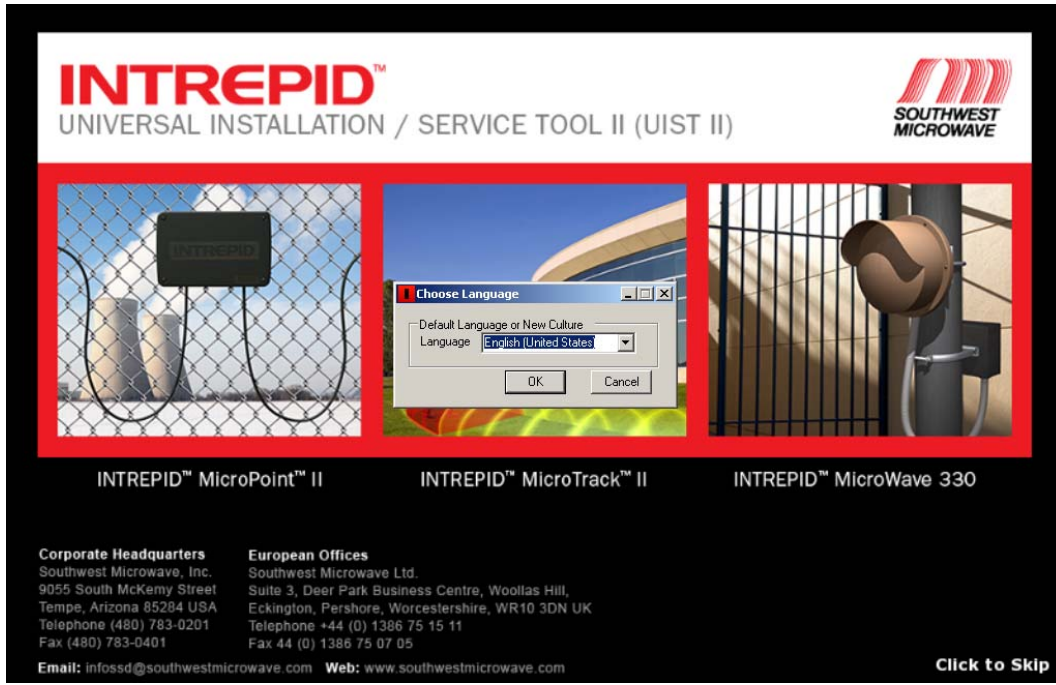


Figure 3.1 – UIST II Main Screen

A “Choose Language” dialog box will open for default language selection as shown in Figure 3.1. Available languages are: English, Spanish, Chinese, Russian and Korean. Select the language that will be used to operate the software. Selecting “OK” will open the “Connect” screen as shown in Figure 3.2. Note: Clicking the screen will skip the delay time for opening Figure 3.2.

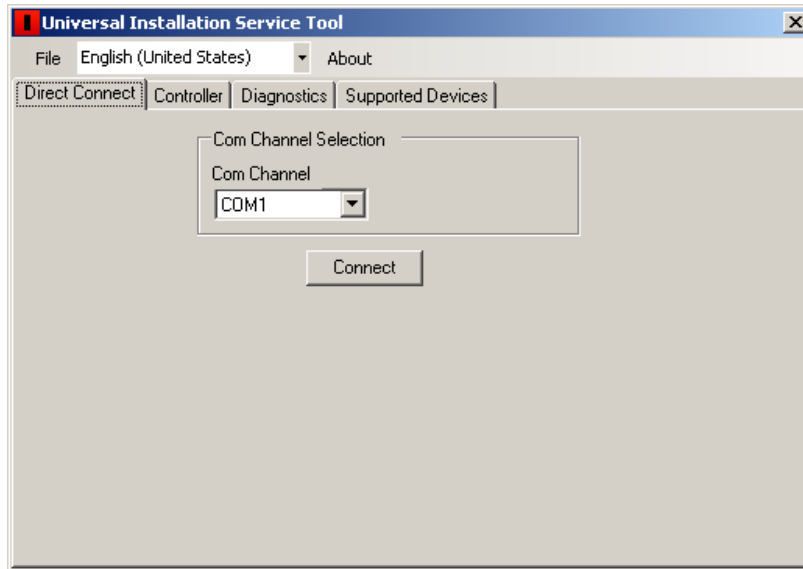


Figure 3.2 – Connect Screen

### 3.1 Connection Screen

The “Connect” screen as shown in Figure 3.2 will be used to set the way the computer communicates to the MicroPoint™ II, MicroTrack™ II or Model 330 Microwave Link by either a direct connection or through the GCM II “Controller”. There is also a “Diagnostics Tab” and a “Supported Devices” tab. The language can also be changed by using the pull down tab next to “File”. The “File” menu allows for opening an Alarm History file. The “About” menu provides information about the UIST II program.

#### 3.1.1 Direct Connect

The “Direct Connect” tab allows for a direct connection from a laptop or desktop PC to the PM II, MTP II or Model 330 Microwave Receiver RS232 configuration port. These ports are dB9 connectors. A serial cable with a male and female connector should be used for this connection.

Select the communications port to be used from the pull down menu below “Com Channel” as shown in Figure 3.2. Once the correct communications port has been set, select the “Connect” button. A red progress bar will be shown indicating the connection process. A “Stop” button will be available to stop the connection process.

Once the connection has been established the “INTREPID™ Devices Found” screen as shown in Figure 3.3 will open. The connected device will be shown. In this example, the direct connection is to the MicroPoint II so the PM II has been found.

Clicking the screen will skip the delay time for opening the UIST II for the connected sensor.

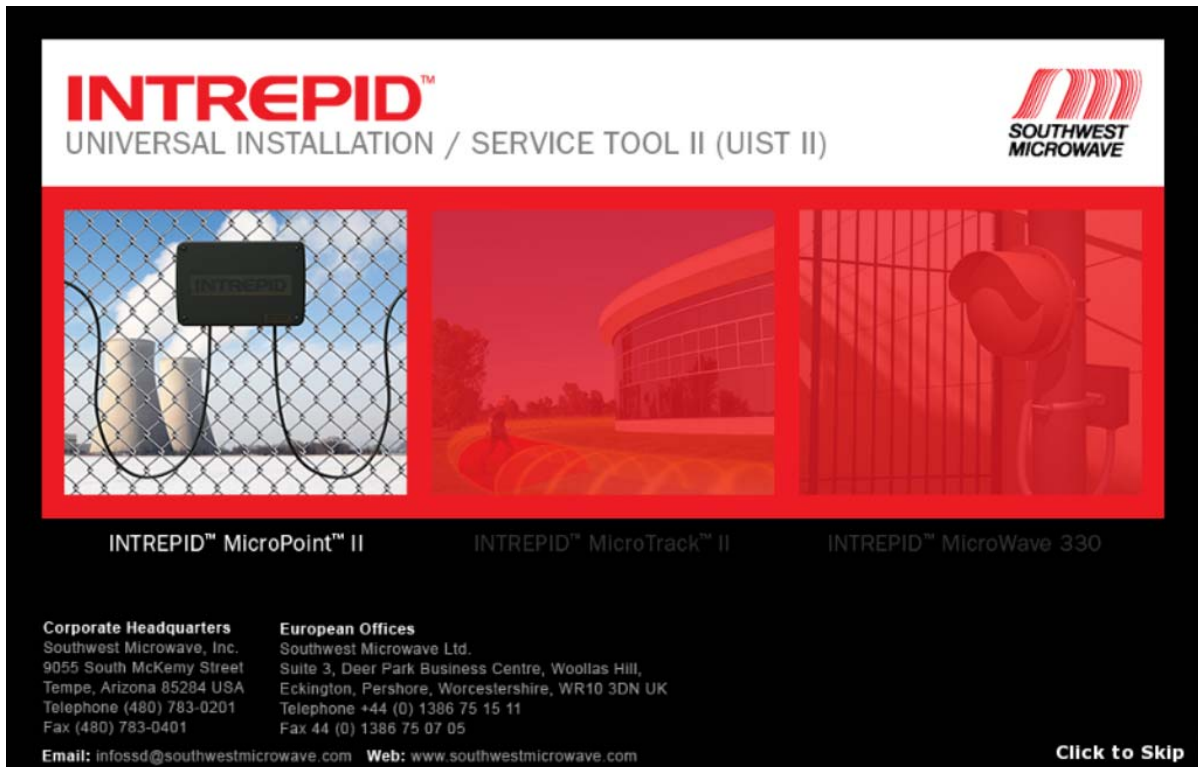


Figure 3.3 – INTREPID Devices Found

### 3.1.2 Controller

The “Controller” tab, as shown in Figure 3.4, allows for a connection from a laptop or desktop PC to the GCM II to establish a connection to a PM II, MTP II or Model 330 Microwave Receiver. An Ethernet RJ45 cross over cable is needed between the PC and GCM II LAN port. The sensor connection is over the GCM II RS422 wiring.

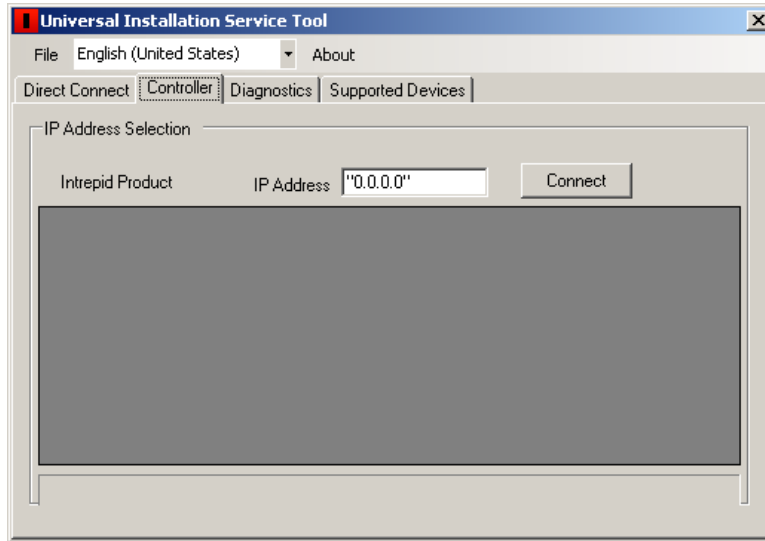


Figure 3.4 – Controller Tab

Enter the IP address of the GCM II and select the connect button to populate the screen with found devices. The screen will list if the device is supported, the device type, the device address and a tag name (if given). Double click the device to open the screen as shown in Figure 3.3. The device selected will be shown. If the IP Address is invalid a dialog box will open stating “No such host is known”.

### 3.1.3 Diagnostics

The “Diagnostics” tab allows for testing from the laptop or PC to the device or GCM II as shown in Figure 3.5.

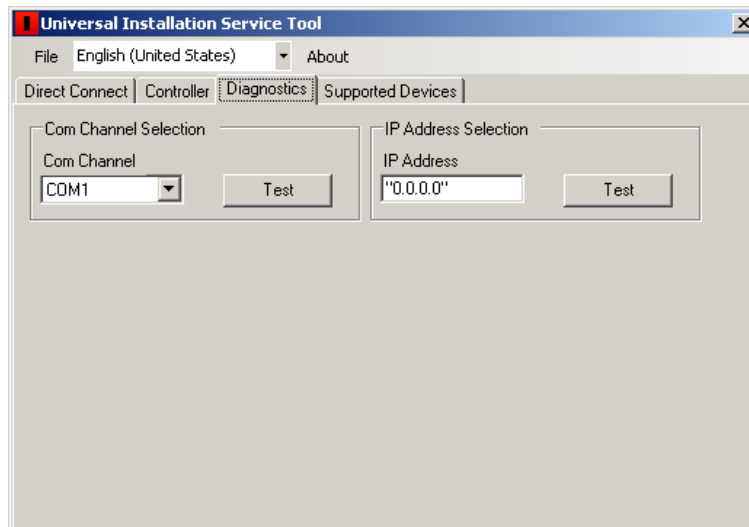


Figure 3.5 – Diagnostics Tab

Selecting the “Test” button in the “Com Channel Selection” will start the test. This test is to insure that the device is sending and receiving data packets. If the port is working correctly two (2) lights on the tab will be displayed as shown in Figure 3.6. A failure will only display one (1) light. The “Stop” button will end the test.

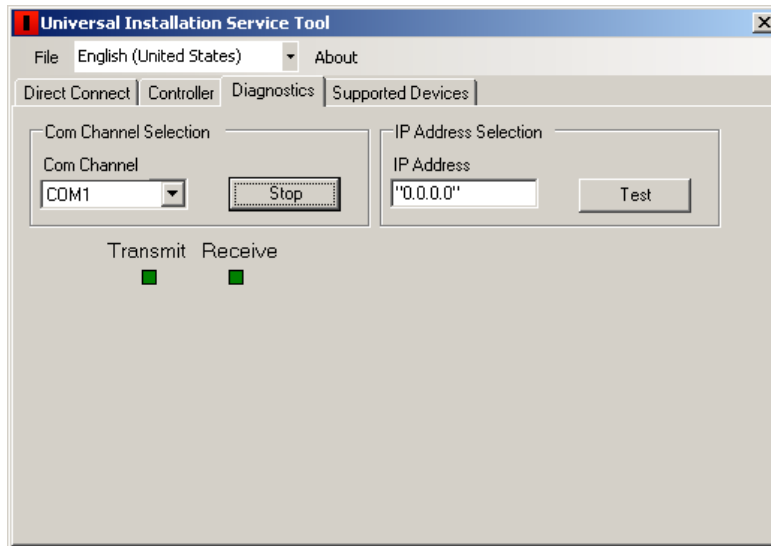


Figure 3.6 – Com Channel Diagnostics Test

Selecting the “Test” button in the “IP Address Selection” will start the test. The correct IP address of the GCM II must be entered into the IP Address field. This test is to check that the laptop or PC running the UIST II can ping the GCM II. If the port is working correctly the word “Success” will be displayed. A failure will display “Destination Host Unreachable”. Select the “Stop” button end the test.

### 3.1.4 Supported Devices

The “Supported Devices” tab will display all devices supported when the connection has been established as shown in Figure 3.7. It will list the device type (MicroPoint™ II, MicroTrack™ II or Model 330 Microwave Link), the version of software being used by the device and the path to where the UIST II is installed.

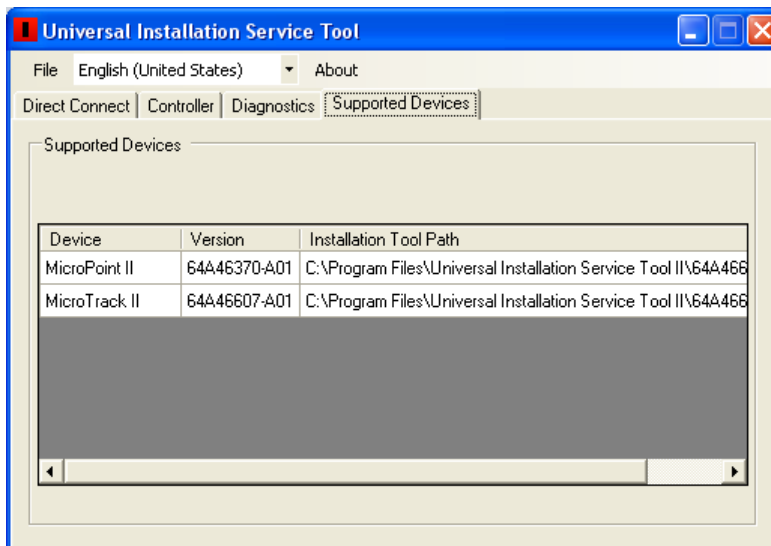


Figure 3.7 – Supported Devices Tab

### 3.1.4 About

The “About” button will display the product name, part number, version number and build date as shown in Figure 3.8. It will also list the copyright information.



*Figure 3.8 – About Screen*

# **MICROPOINT II**

## 4.0 MicroPoint™ II Installation Service Tool

To open the MicroPoint II Installation Service Tool click on the INTREPID™ MicroPoint II icon on the splash screen as shown in Figure 4.1. If nothing is clicked the Installation Service Tool will open automatically.



Figure 4.1 – MicroPoint II Icon

## 4.1 Sensor

Once the INTREPID™ MicroPoint II icon has been selected, the Installation Service Tool “Sensor” tab for the MicroPoint II will open as shown in Figure 4.2. There are two (2) sub tabs: Sensor Information and Sensor Settings.

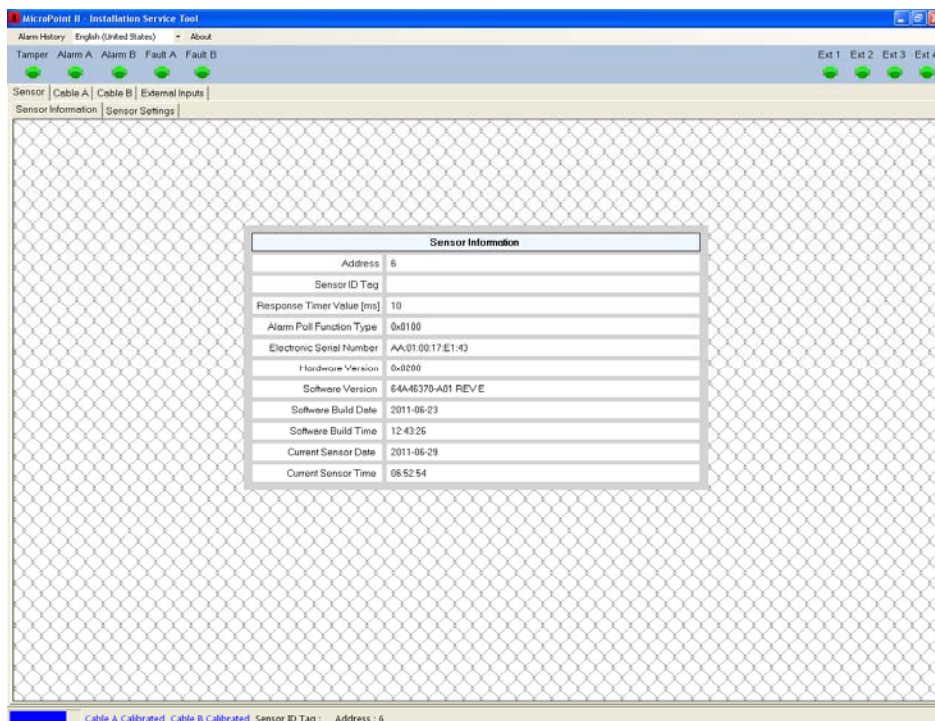


Figure 4.2 – Sensor Information Screen



### 4.1.1 Sensor Information

Selecting the “Sensor Information” tab will open the screen as shown in Figure 4.2. This screen will display basic PM II information. The information displayed is:

- 1 - Address (*the dip switch address setting on the sensor*)
- 2 - Sensor ID Tag (*a descriptive name entered for the sensor*)
- 3 - Response Timer Value (*message turn around delay time – used for SDK development and line delays*)
- 4 - Alarm Poll Function Type (*type of device being polled*)
- 5 - Electronic Serial Number (*the MAC address – for Southwest Microwave use only*)
- 6 - Hardware Version (*hardware version of the PM II*)
- 7 - Software Version (*the version of software operating in the PM II*)
- 8 - Software Build Date (*the date the software was compiled*)
- 9 - Software Build Time (*the time the software was compiled*)
- 10 - Current Sensor Date (*the current date residing in the PM II – used in the alarm log*)
- 11 - Current Sensor Time (*the current time residing in the PM II – used in the alarm log*)

Other tabs shown on this screen that will be used to configure the PM II are: Sensor Settings, Cable A, Cable B, and External Inputs. Also on the screen are status LED’s to indicate a Tamper alarm, a Cable A alarm, a Cable B alarm, Fault cable A, Fault cable B and External Inputs 1 through 4. If the LED is “Green” it is in a secured state. If the LED is “Red” it is an alarm state and if the LED is “Gray” it is in an inactive (turned off) state. These will be shown no matter what tab has been opened. The scrolling blue bar at the bottom left of the screen indicates correct polling from the laptop or PC to the PM II. Red in the bar indicates bad packets of information. *The bottom of all screens will show if a cable is calibrated or disabled, the sensor address and sensor name. Certain screens will also show an X and Y coordinate of mouse location for measurements.*

### 4.1.2 Sensor Settings

Selecting the “Sensor Setting” tab will open the Sensor Settings screen as shown in Figure 4.3.

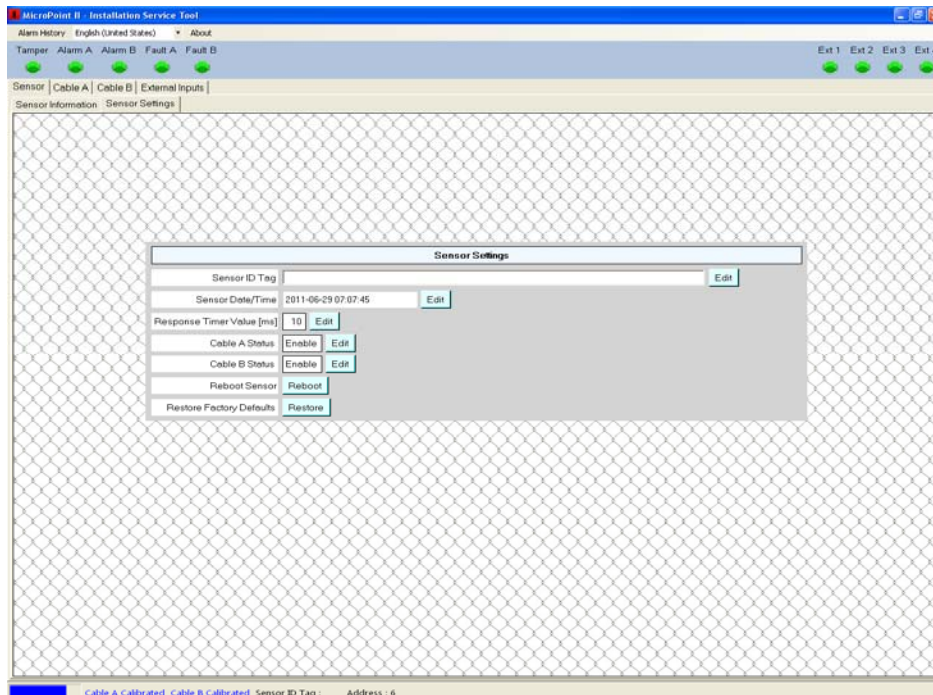


Figure 4.3 – Sensor Settings Screen

### 4.1.2.1 Sensor ID Tag

Selecting the “Sensor ID Tag” edit button will open a “Cancel” or “Accept” button as shown in Figure 4.4. This line is used to enter a unique name for the sensor. Accept will save the change while Cancel will end the task. Once accepted, the name will be displayed at the bottom of the screen. The Sensor ID Tag supports Unicode.

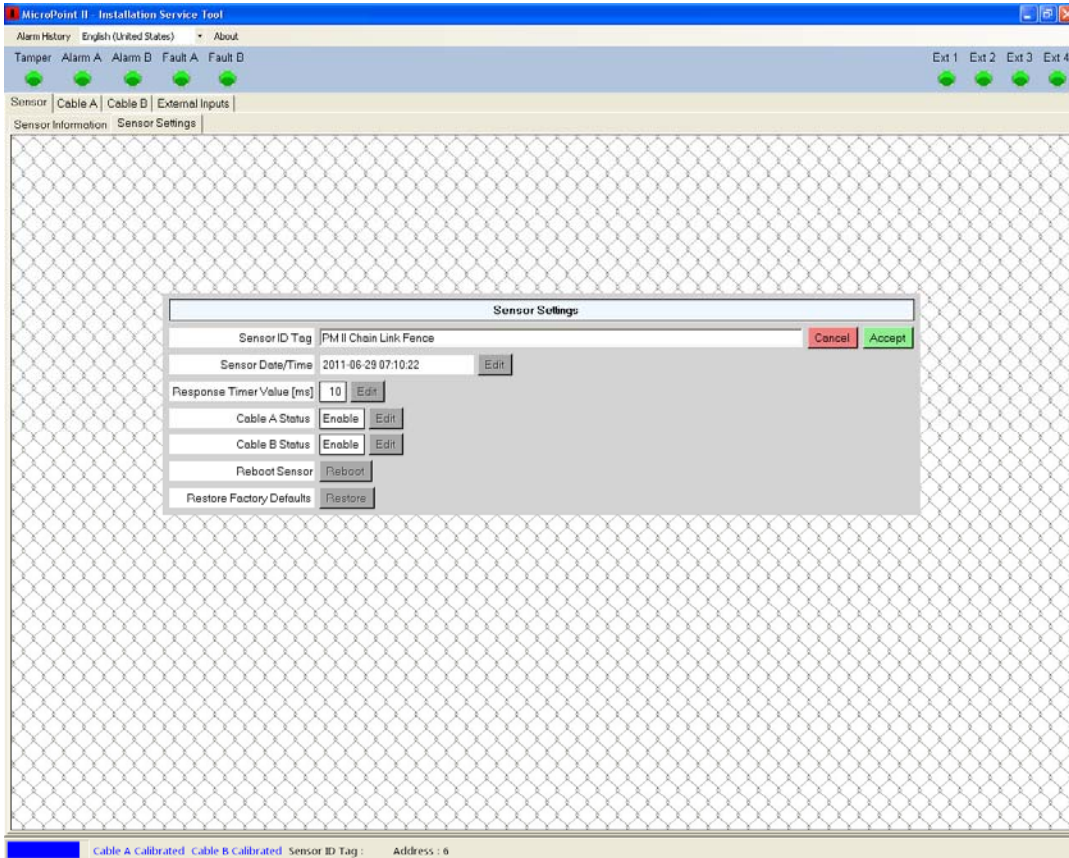


Figure 4.4 – Sensor ID Tag

### 4.1.2.2 Sensor Date/Time

Selecting the “Sensor Date/Time” edit button will open that line to set the correct year, month, day, hours, minutes and seconds for the sensor. Select any one of the fields and type in the correct information or select the field and use the up/down arrows for changes. A “Cancel” or “Accept” button will be available after a change has been made. Accept will save the change while Cancel will end the task.

### 4.1.2.3 Response Timer Value (ms)

Selecting the “Response Timer Value” edit button will open that line to set the response timer value in milliseconds for the sensor. The time adjustment is done by a slide bar (or the directional arrows) and has a range from 0 to 40 ms with a default value of 10 ms as shown in Figure 4.5. This adjustment is typically used when doing SDK development which may require different poll response turn around delay times. A “Cancel” or “Accept” button will be available after a change has been made. Accept will save the change while Cancel will end the task.

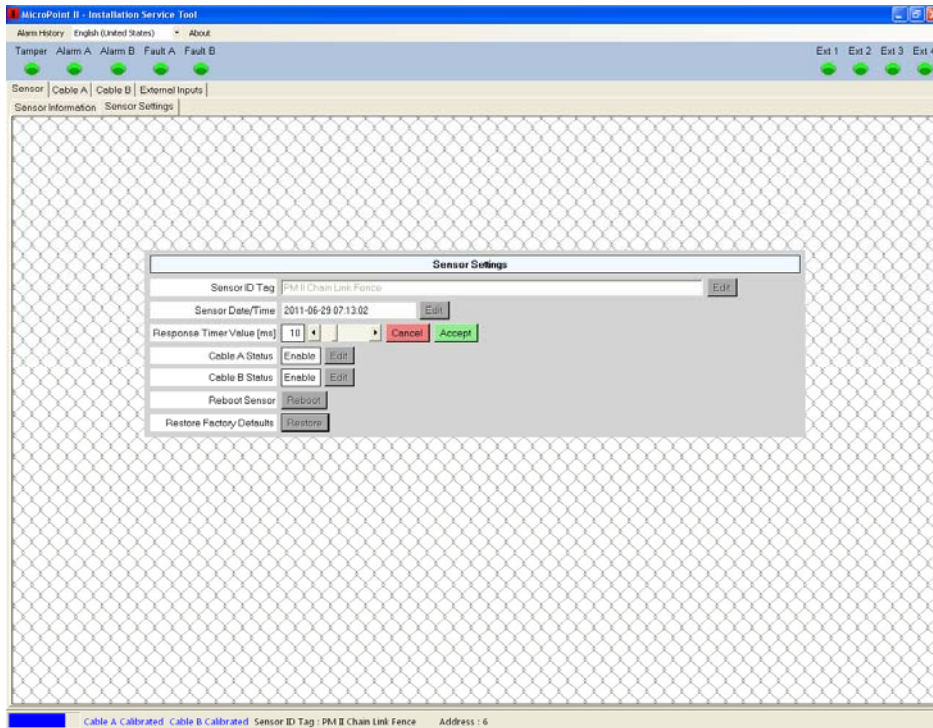


Figure 4.5 – Response Timer Value

#### 4.1.2.4 Cable A Status – Cable B Status

Selecting the “Cable A Status” or “Cable B Status” edit button will open that line to set that cable to be “Enabled” (will detect) or “Disabled” (will not detect) as shown in Figure 4.6. Select the required operation.

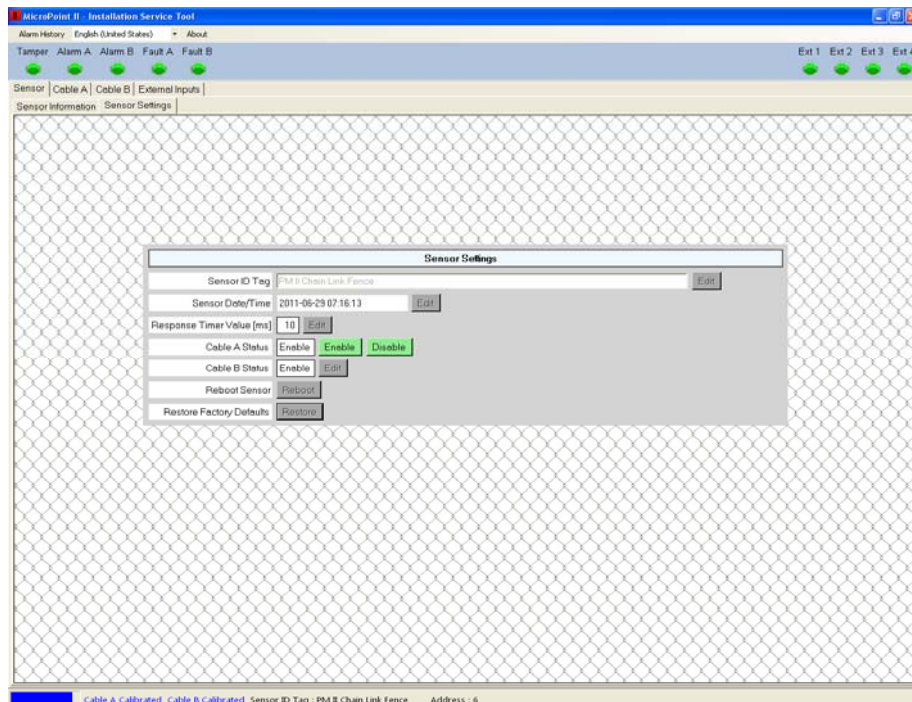


Figure 4.6 – Cable Status



If a cable has been set to “Disabled” the alarm and fault LED on the screen for that cable will be gray (inactive) and no alarms will be generated. The cable status at the bottom of the screen will be red for disabled.

#### 4.1.2.5 Reboot Sensor

Selecting the “Reboot Sensor” reboot button will open a “Cancel” or “Reboot” button. Cancel will end the task and Reboot will send a software reboot command to the PM II.

#### 4.1.2.6 Restore Factory Defaults

Selecting the “Restore Factory Defaults” restore button will open a “Cancel” or “Restore” button. Cancel will end the task and Restore will send a software message command to the PM II to restore all factory default settings. This function should be done on a new installation to ensure no erroneous data is in the PM II. This will also erase any alarm history that may be stored in the PM II.

### 4.2 Cable A and Cable B

Selecting either Cable A or Cable B tab will open the configuration tabs as shown in Figure 4.7. The tabs for viewing and configuring the cables are: Configuration Parameters, Clutter, Target, Target Location, Incremental Threshold Editor, Incremental Enable/Disable Editor, Detection Level Editor, and Detection Window Editor. *Note: Each cable is set up independently of the other cable so both cables (if used) need to be configured. The screens associated with these tabs will only be active if the cable has been set to “Enable” as discussed in Section 4.1.3.4. If a cable is set as “Disabled”, the screens in these tabs will be “grayed” out (inactive).*

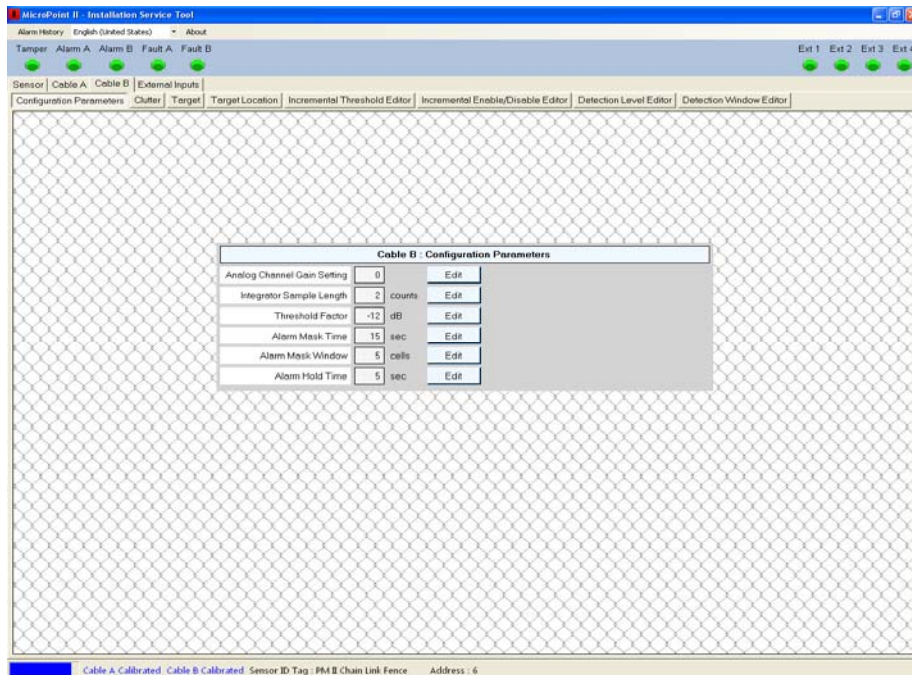


Figure 4.7 – Cable A or B Configuration Tabs

#### 4.2.1 Configuration Parameters

Selecting the “Configuration Parameters” tab will open the screen as shown in Figure 4.7. This screen will be used to set the Analog Channel Gain Setting, Integrator Sample Length, Threshold Factor, Alarm Mask Time, Alarm Mask Window and Alarm Hold Time.

### 4.2.1.1 Analog Channel Gain Setting

Selecting the “Analog Channel Gain Setting” edit button will open a “Slide Bar” “Cancel” button “Default” button and “Accept” button as shown in Figure 4.8. This setting will add 6db of gain to the system. Using the slide bar the value can be changed from “0” to “1” (adds the gain). The change can be viewed in the Clutter tab by an increase or decrease of signal. This gain can be used to improve target response on rigid mediums. Cancel will end the task, Default will set the line back to the factory default setting and Accept will save any change made to the parameter.

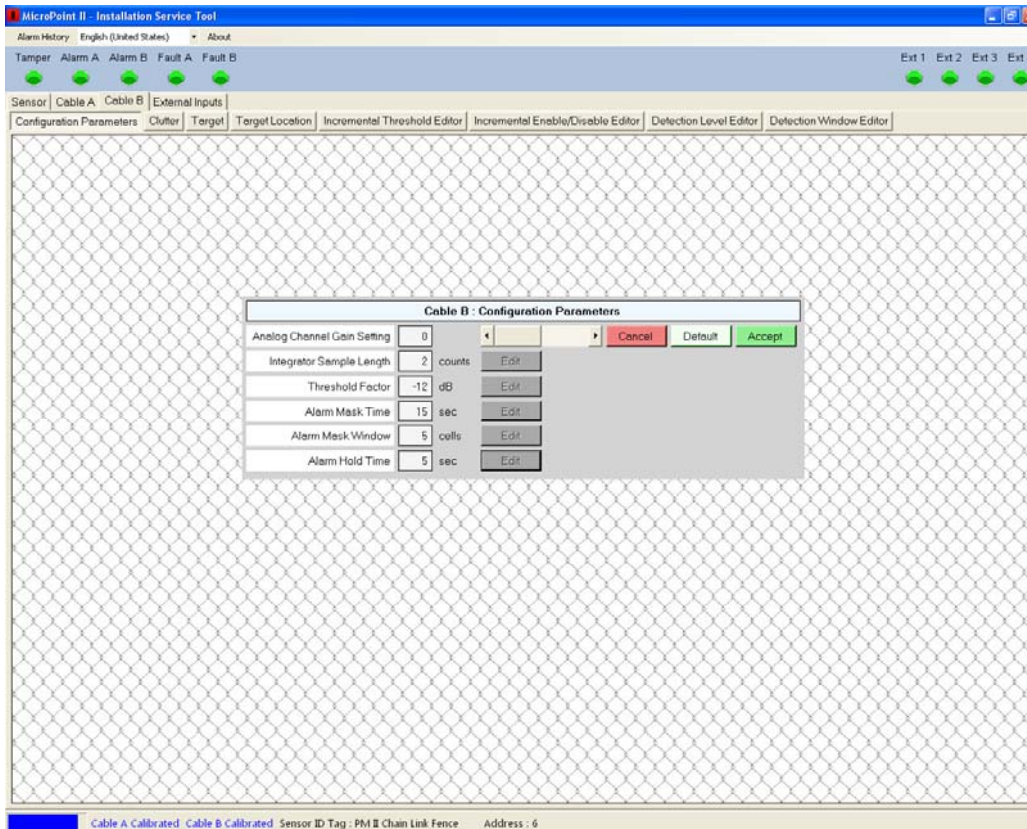


Figure 4.8 – Analog Channel Gain

### 4.2.1.2 Integrator Sample Length

Selecting the “Integrator Sample Length” edit button will open a “Slide Bar” “Cancel” button “Default” button and “Accept” button as shown in Figure 4.9. This setting is used to change the target response time from fast, medium or slow targets on the fence. Using the slide bar or directional arrows the value can be changed from “0” (fast), “1” (medium) or “2” (slow). Cancel will end the task, Default will set the line back to the factory default setting and Accept will save any change made to the parameter.

### 4.2.1.3 Threshold Factor

Selecting the “Threshold Factor” edit button will open a “Slide Bar” “Cancel” button “Default” button and “Accept” button as shown in Figure 4.10. This setting is used to change the threshold (sensitivity) of the entire cable that has been selected (A or B). Using the slide bar or directional arrows the value can be changed from “0 dB” (minimum sensitivity) and “-40 dB” (maximum sensitivity). Cancel will end the task, Default will set the line back to the factory default setting and Accept will save any change made to the parameter.

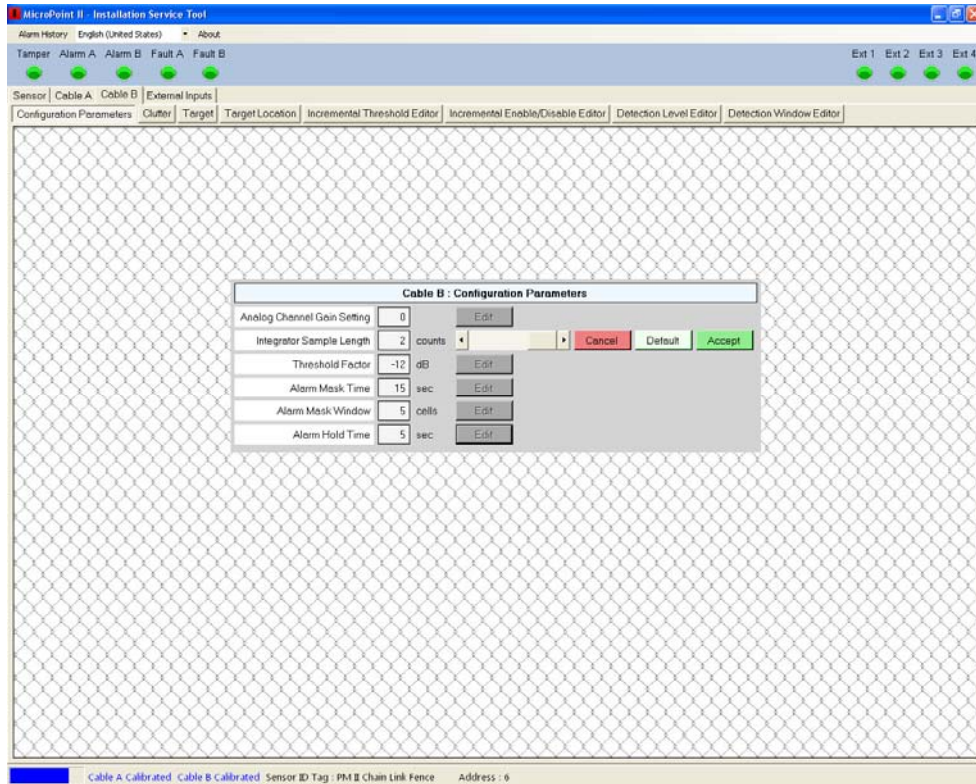


Figure 4.9 – Integrator Sample Length

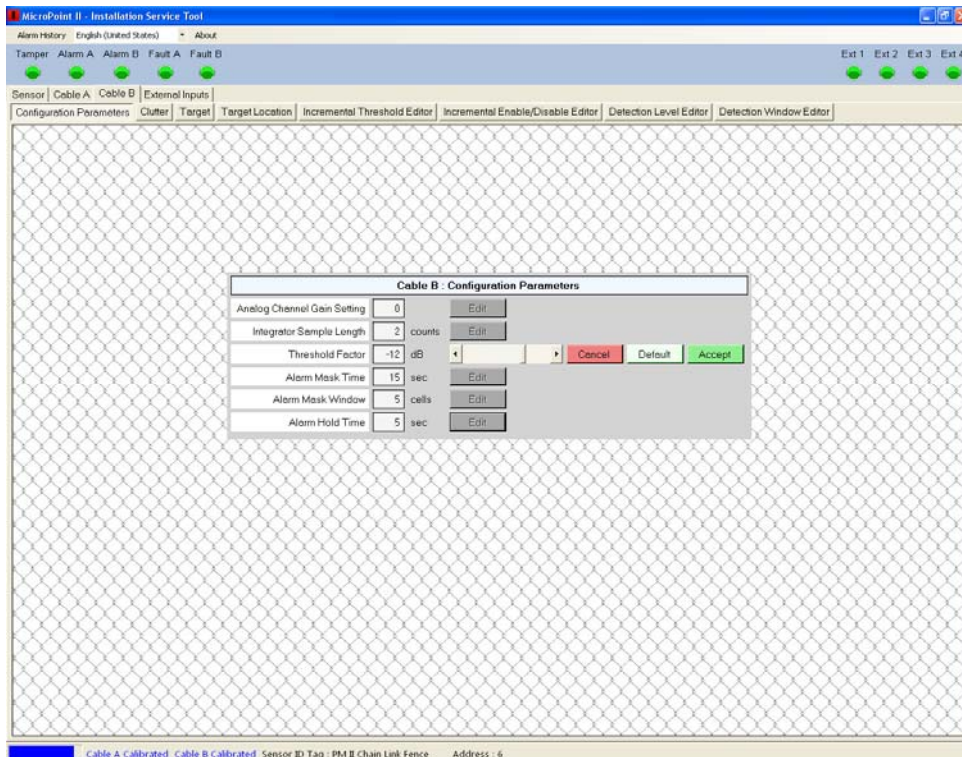


Figure 4.10 – Threshold Factor



#### 4.2.1.4 Alarm Mask Time

Selecting the “Alarm Mask Time” edit button will open a “Slide Bar” “Cancel” button “Default” button and “Accept” button as shown in Figure 4.11. This setting is used to set the time delay between multiple alarms occurring at the same location. Using the slide bar or directional arrows the value can be changed from “1 second” to “60 seconds”. Cancel will end the task, Default will set the line back to the factory default setting and Accept will save any change made to the parameter.

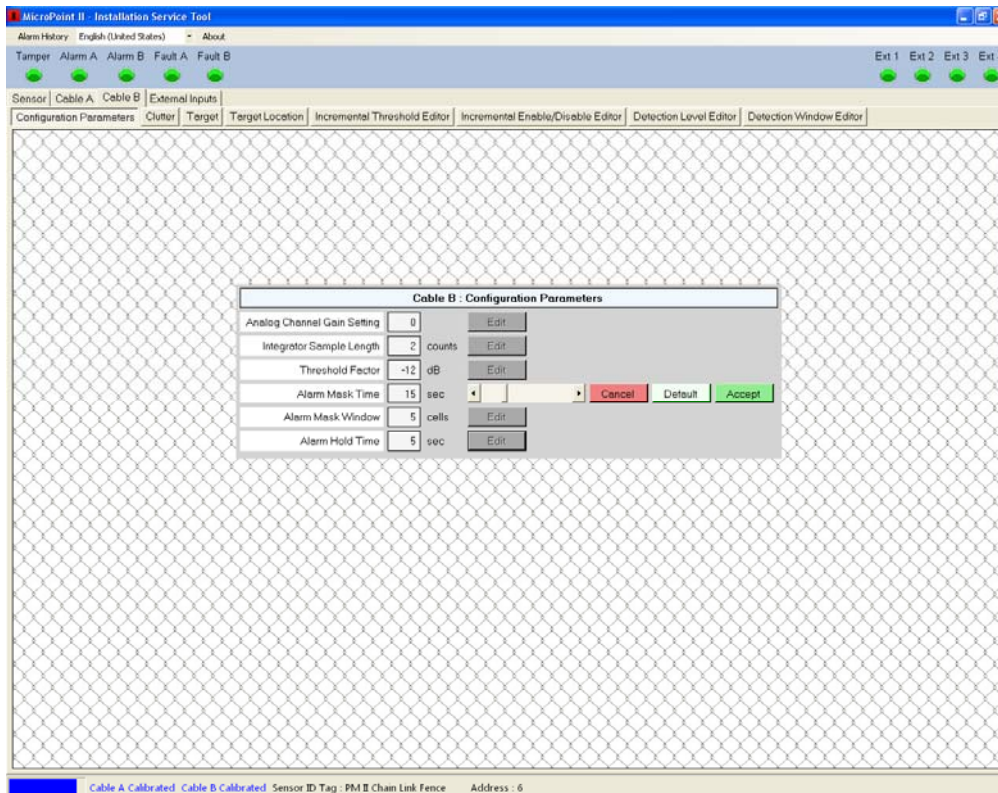


Figure 4.11 – Alarm Mask Time

#### 4.2.1.5 Alarm Mask Window

Selecting the “Alarm Mask Window” edit button will open a “Slide Bar” “Cancel” button “Default” button and “Accept” button as shown in Figure 4.12. This setting is used to set the number of cells to be blocked from reporting another alarm once an alarm has been declared. This is usually used in conjunction with the Alarm Mask Time. Using the slide bar or directional arrows the value can be changed from “0 cells” to “108 cells”. Cancel will end the task, Default will set the line back to the factory default setting and Accept will save any change made to the parameter.

#### 4.2.1.6 Alarm Hold Time

Selecting the “Alarm Hold Time” edit button will open a “Slide Bar” “Cancel” button “Default” button and “Accept” button. This setting is used to set the time duration that an alarm will be held active before automatically resetting. Using the slide bar or directional arrows the value can be changed from “1 second” to “60 seconds”. Cancel will end the task, Default will set the line back to the factory default setting and Accept will save any change made to the parameter.

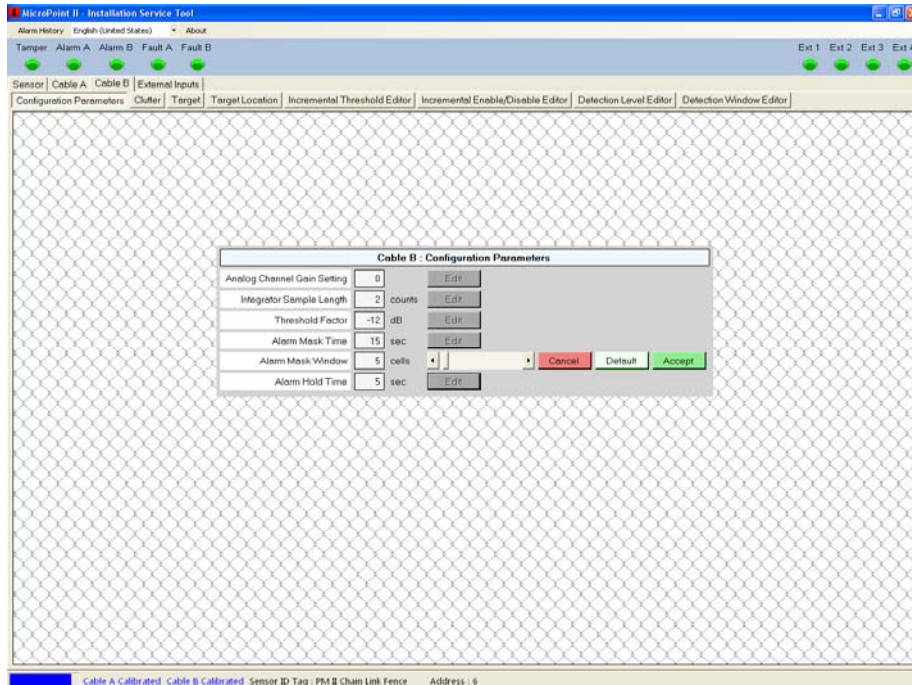


Figure 4.12 – Alarm Mask Window

## 4.2.2 Clutter

Selecting the “Clutter” tab will open the screen as shown in Figure 4.13. This screen is used for reference only and no adjustments can be made other than the Analog Channel Gain Setting as discussed in Section 4.2.1.1. Clutter is the fixed measurement of reflections from all cells in a steady state (no target present). The amplitude should not exceed  $\pm 7168$ . Cable A will be displayed in red, Cable B in blue.

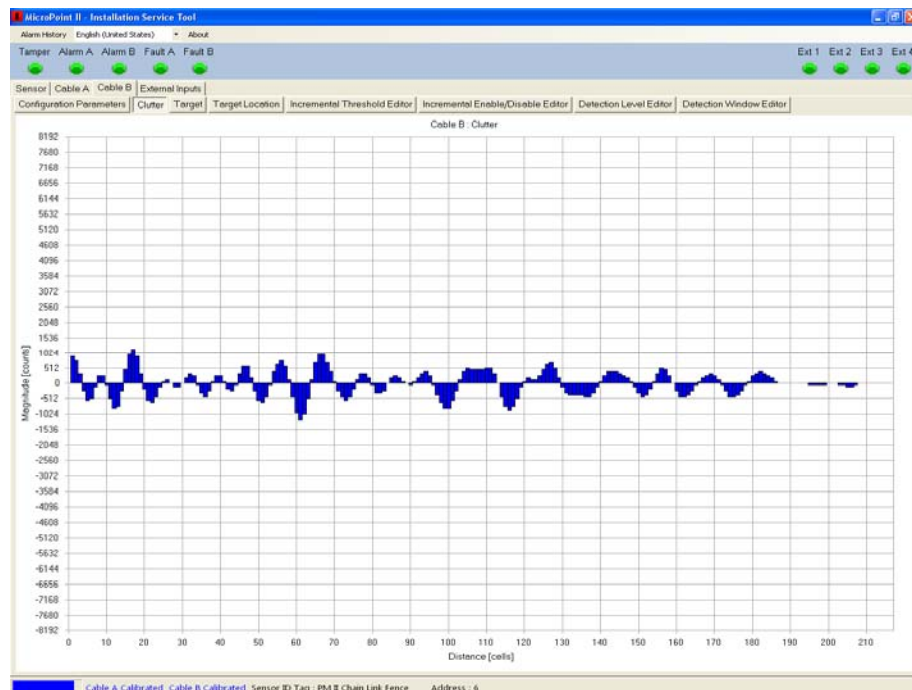


Figure 4.13 – Clutter



### 4.2.3 Target

Selecting the “Target” tab will open the screen as shown in Figure 4.14. This screen is used for reference only and no adjustments can be made. This is the ambient noise level in a steady state (no target present). This noise level should not exceed +/- 256. The screen resolution can be increased or decreased by using the slide bar at the bottom of the screen by the magnifying glass. When a target is present as, shown in Figure 4.15, the cable is modulated providing a point target characteristic signature. The target should not saturate on the maximum screen setting. Cable A is red, Cable B is blue.

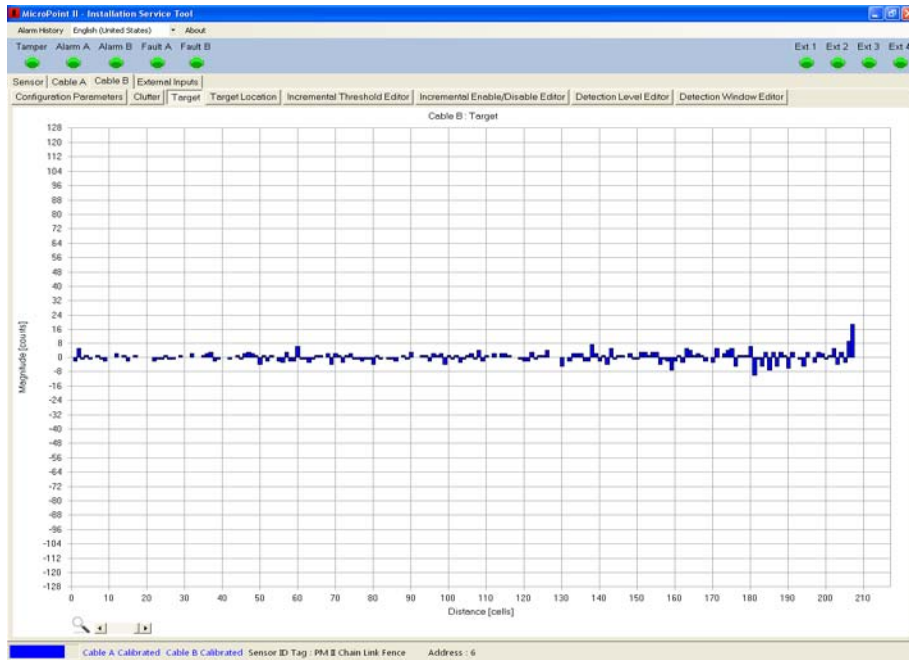


Figure 4.14 – Target (Steady State)

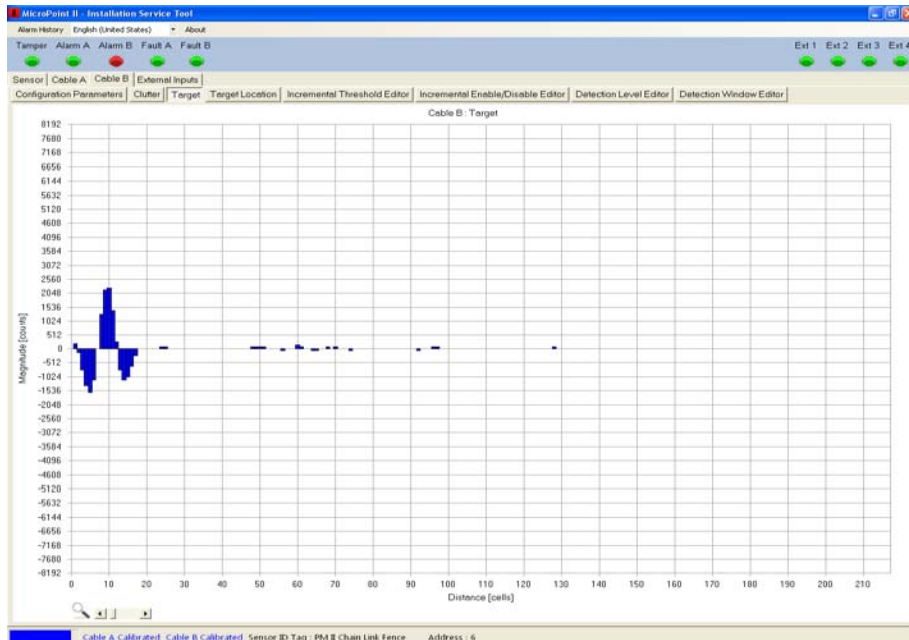


Figure 4.15 – Target (Present)

## 4.2.4 Target Location

Selecting the “Target Location” tab will open the screen as shown in Figure 4.16. This screen is used for calibrating the cable and viewing activity on the cable. The “red” line displayed on the screen is a default flat line calibration that provides the system a nominal calibration level if calibration has not been performed. To start the calibration process, select the “Start Calibration” button then the “Clear Calibration” button. Walk along the cable rattling the fence with a large screwdriver or piece of metal conduit for all cable associated with that side of the PM II. Figure 4.17 shows the “Cable B” being calibrated.

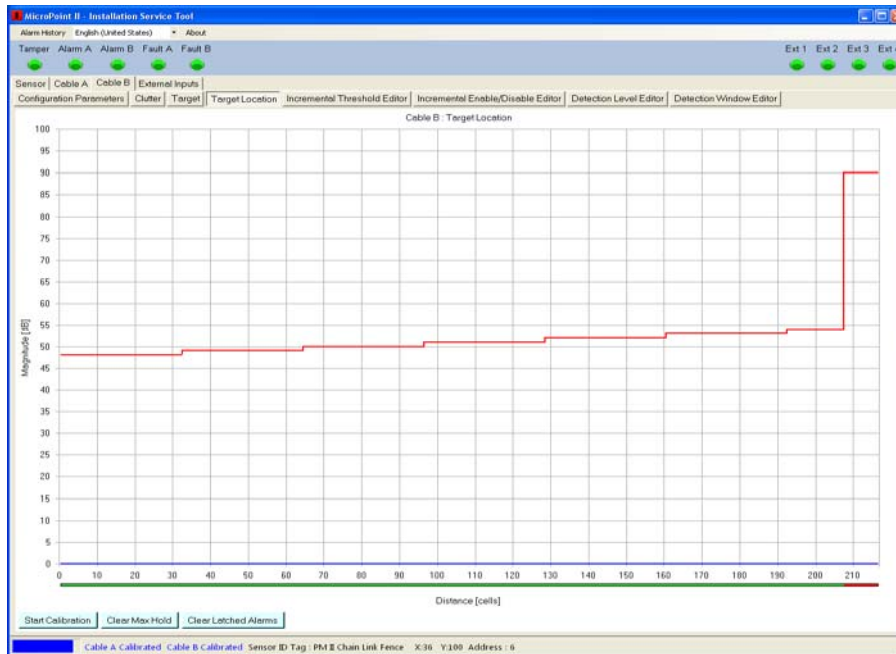


Figure 4.16 – Target Location

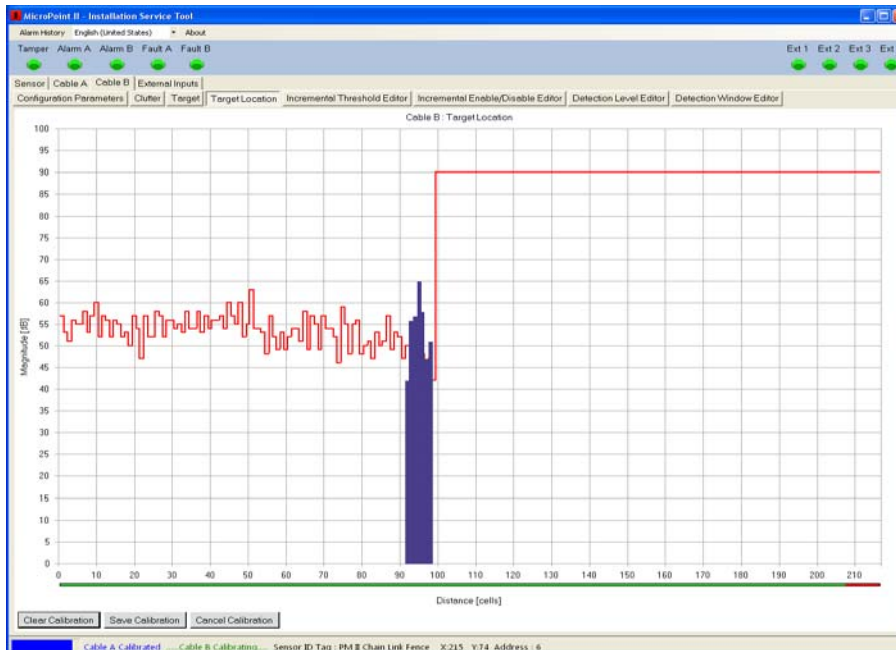
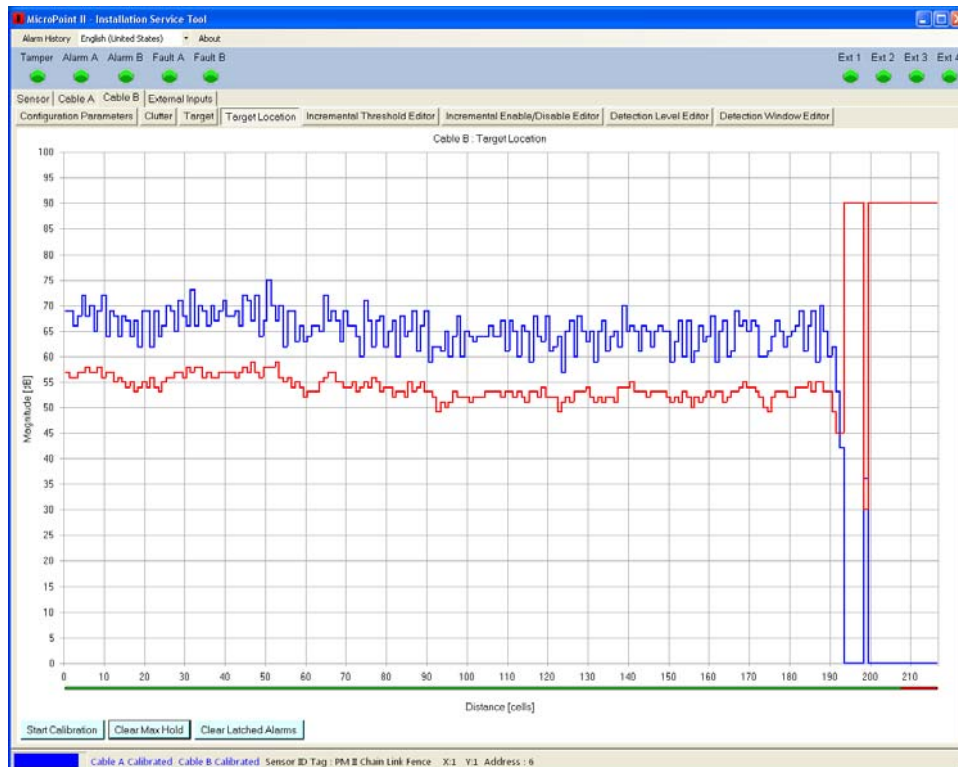


Figure 4.17 – Cable Being Calibrated

When the calibration is started the red line will be at the top of the screen. If there had been a previous calibration in the PM II processor, then the “Clear Calibration” button should be selected to remove that calibration. If the calibration process needs to be stopped select the “Cancel Calibration” button. To keep the flat line calibration, start the calibration and then save the calibration.

Once the cable(s) has been calibrated from the PM II to the LU II or TU II and back to the PM II, select the “Save Calibration” button to save the calibration profile to the flash memory of the processor. A fully calibrated cable is shown in Figure 4.18. The blue line represents the calibration profile while the red line is the alarm threshold with the default -12 dB threshold (sensitivity) setting applied. The calibration, in this example, starts to drop off at cell 191 which is the length of cable attached to the fence. Since there is no cable to calibrate beyond this point the signal stays at a high level. Figure 4.19 shows the calibration with the blue line calibration cleared by selecting the “Clear Max Hold” button.



*Figure 4.18 –Calibrated Cable*

The red line on the display is the threshold. It can be increased or decrease as required by using the “Threshold Factor” as discussed in Section 4.2.1.3. A blue line from the bottom of the display represents a target on the fence in the form of a “Max Peak Hold” as shown in Figure 4.20. If the blue line crosses threshold an alarm will be declared and displayed as a “Red Dot” on the bottom of the display in the cell the alarm occurred. Using the mouse, the X and Y coordinate for this alarm shows the alarm occurred in cell 50 with amplitude of 67 dB.

To clear the Max Peak Hold signal select the “Clear Max Hold” button as shown in Figure 4.20.

To clear any alarms displayed on the bottom of the screen select the “Clear Latched Alarms” button as shown in Figure 4.20.

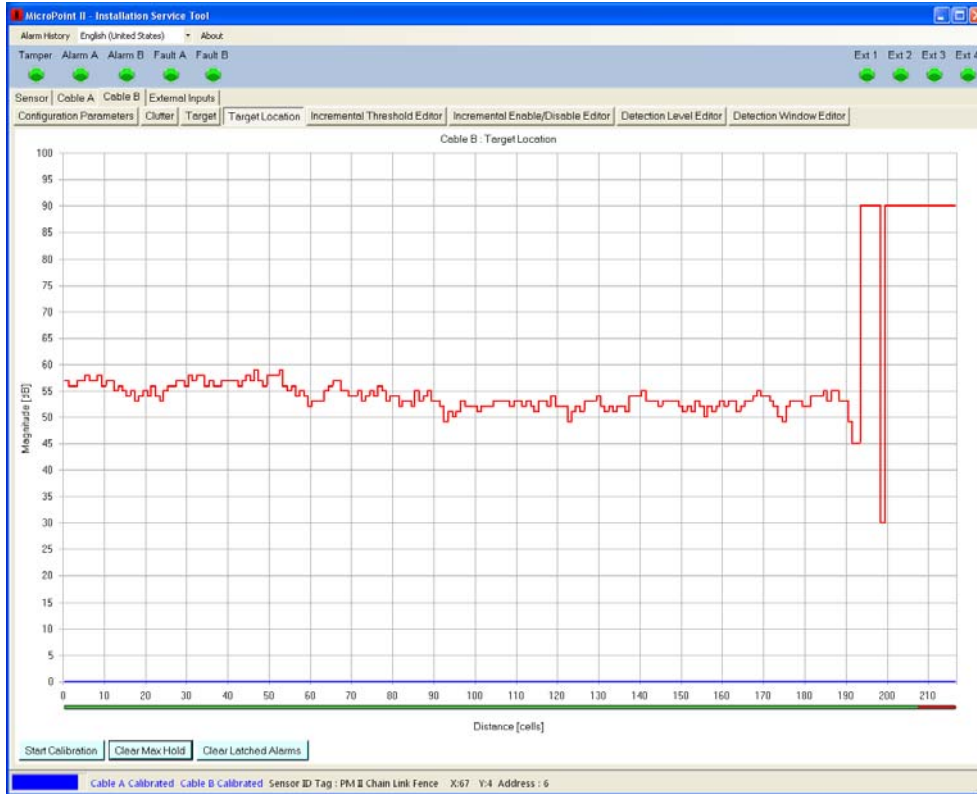


Figure 4.19 – Threshold from Calibrated Cable

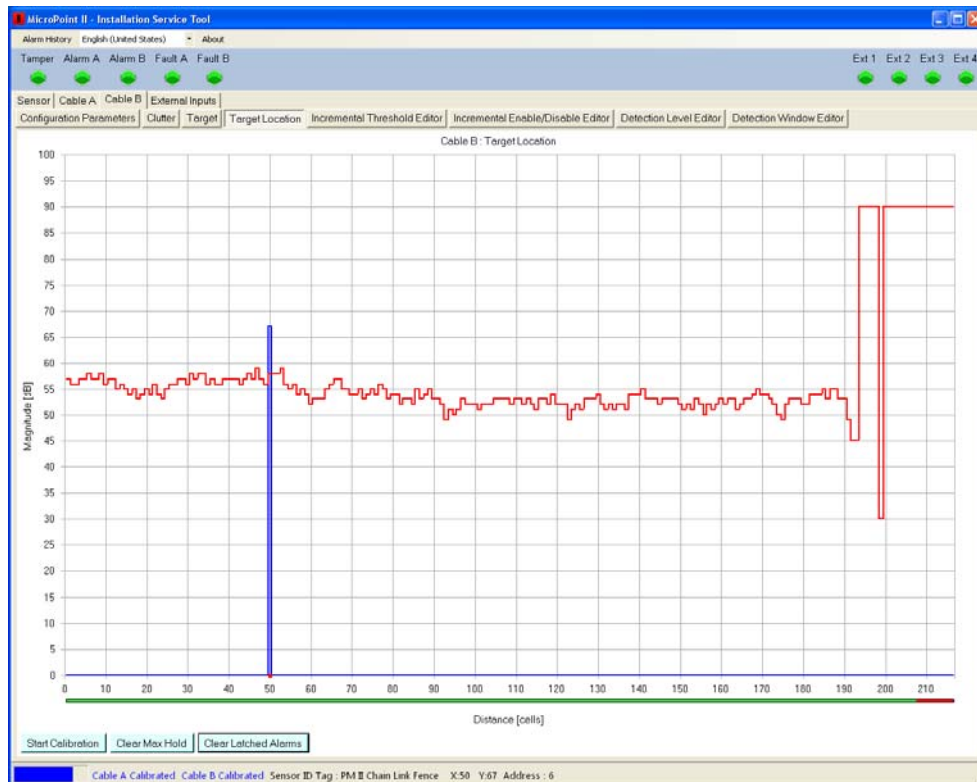


Figure 4.20 – Target on Fence

## 4.2.5 Incremental Threshold Editor

Selecting the “Incremental Threshold Editor” tab will open the screen as shown in Figure 4.21. This screen is used for selecting any section of cable and increasing or decreasing the threshold (sensitivity) in the cell(s) selected. Select the “Edit” button to open the editor as shown in Figure 4.22.

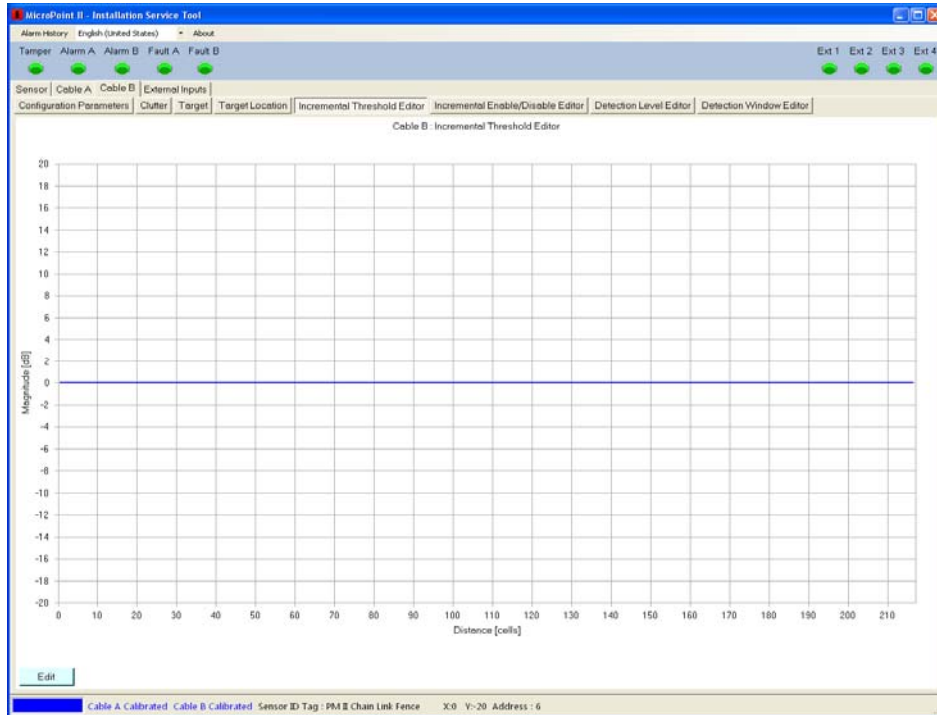


Figure 4.21 – Incremental Threshold Editor

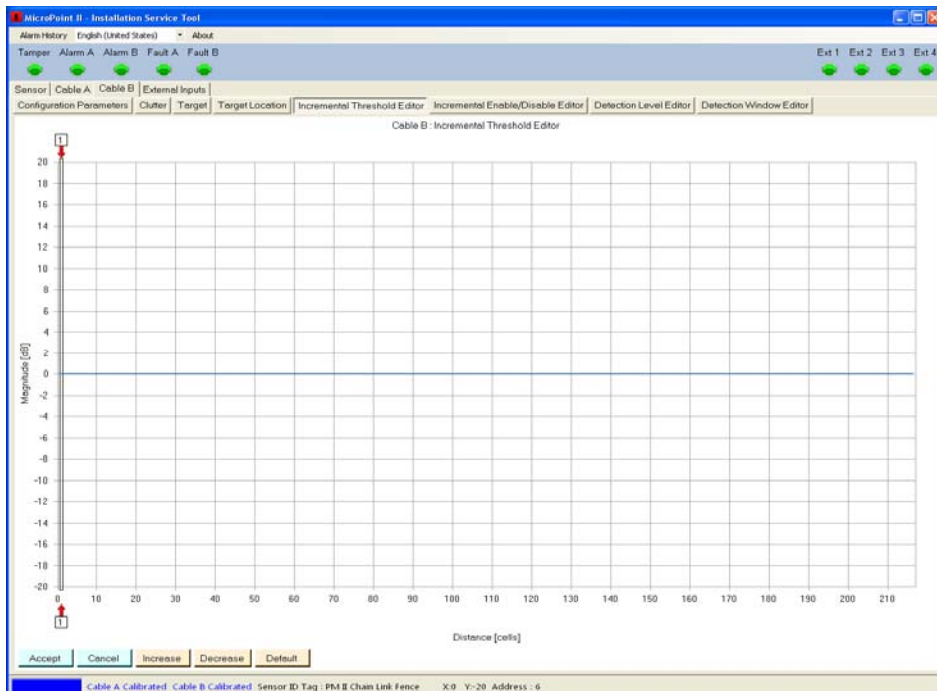


Figure 4.22 – Incremental Threshold Edit

Select the bottom red arrow and position it at the beginning of the cell(s) to be edited. Select the top red arrow and position it at the end of the cell(s) to be edited as shown in Figure 4.23. As the arrow is moved across the screen it will display the cell number associated with its location. In the Figure 4.23 example the cells from 90 to 110 are to be changed. The default value is 0 dB. In Figure 4.24 the threshold is being changed 4 dB by using the “Increase” button (increases the Threshold in these cells) and is shown with the red line. The adjustments are made in 1 dB steps. The coordinates show the mouse to be at cell 100 with a 4 dB change.

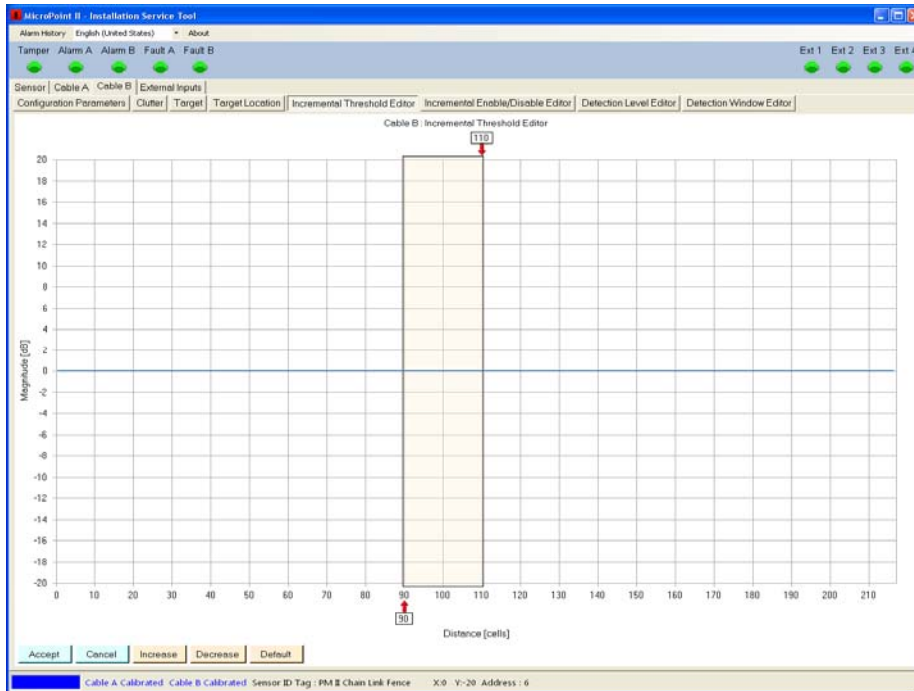


Figure 4.23 – Incremental Threshold Range

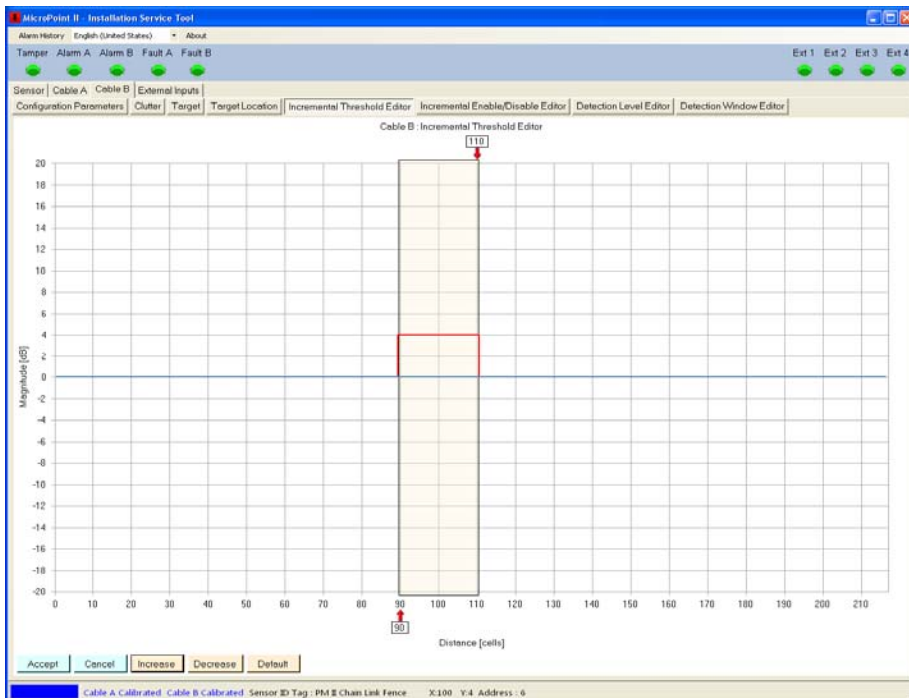


Figure 4.24 – Incremental Threshold Value



Once the threshold has been changed using the “Increase” or “Decrease” buttons to the required level, select the “Accept” button to save the change as shown in Figure 4.25. The change can be stopped by selecting the “Cancel” button or set back to the default setting by selecting the “Default” button. This threshold change can also be seen in the “Target Location” tab.

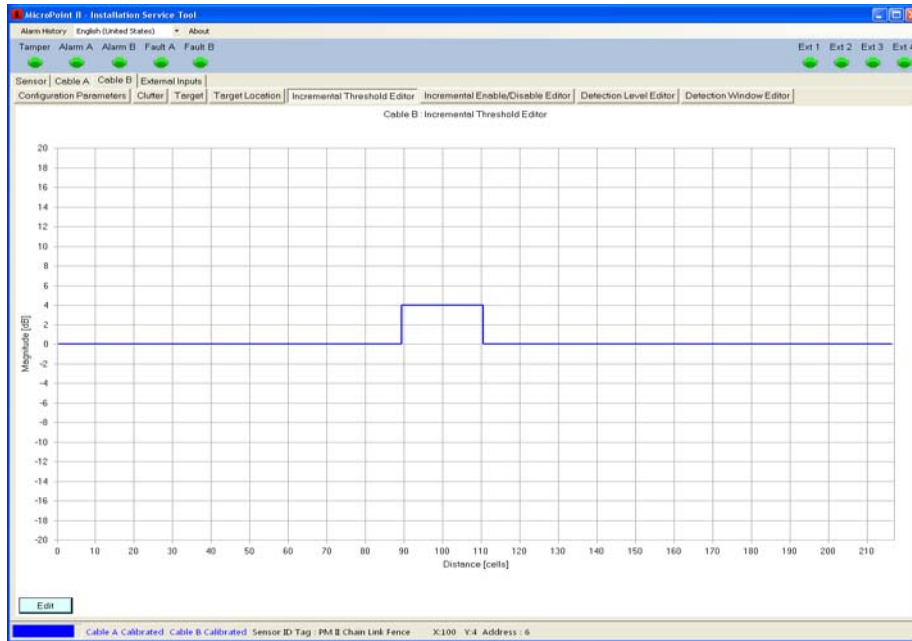


Figure 4.25 – Incremental Threshold Change

#### 4.2.6 Incremental Enable/Disable Editor

Selecting the “Incremental Enable/Disable Editor” tab will open the screen as shown in Figure 4.26. This screen is used for selecting any section of cable and making it “Active (Enabled)” or “Inactive (Disabled)” in the cell(s) selected. Select the “Edit” button to open the editor as shown in Figure 4.27.

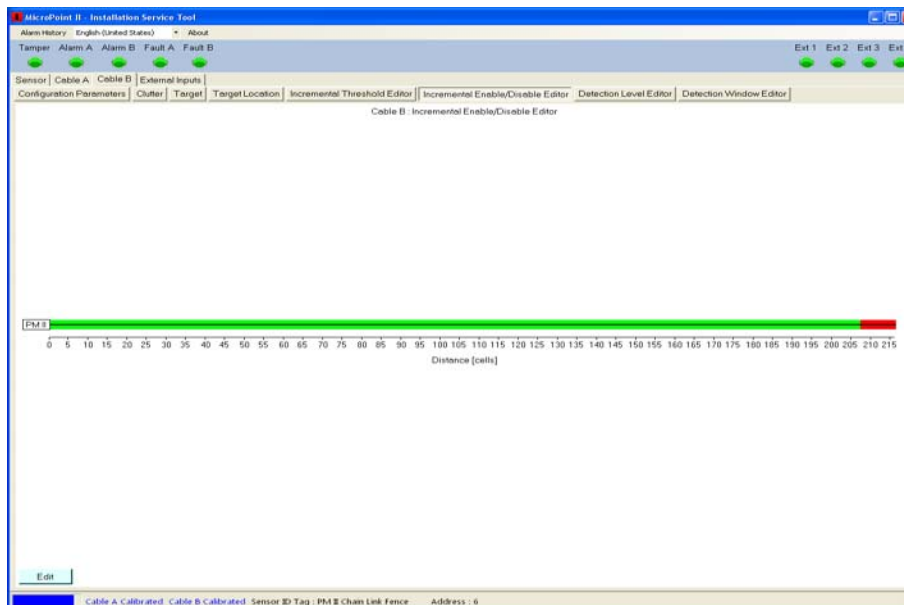


Figure 4.26 – Incremental Enable/Disable Editor

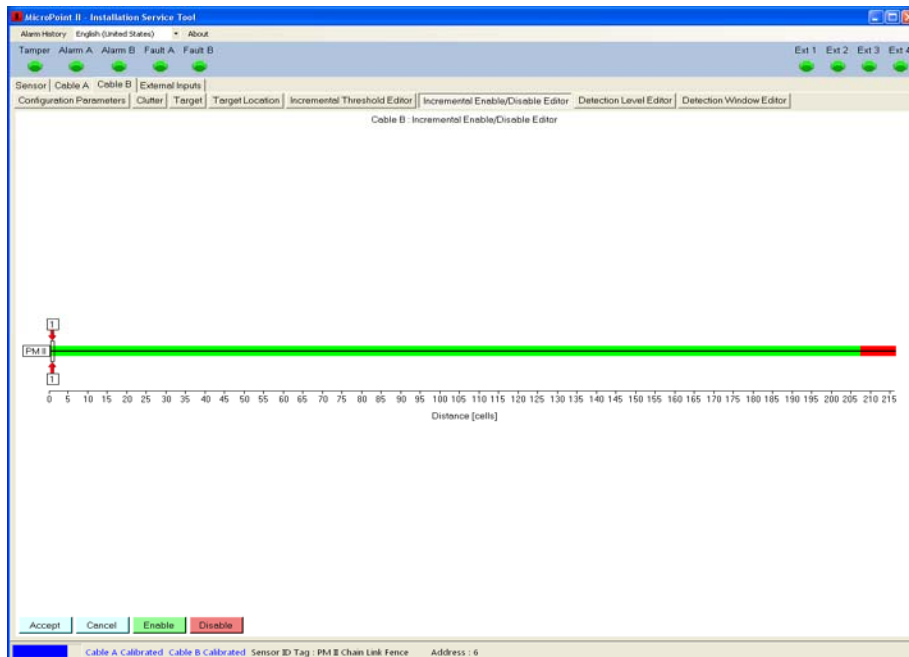


Figure 4.27 – Incremental Enable/Disable Edit

Select the bottom red arrow and position it at the beginning of the cell(s) to be edited. Select the top red arrow and position it at the end of the cell(s) to be edited as shown in Figure 4.28. As the arrow is moved across the screen it will display the cell number associated with its location. Once the required area has been defined select the “Disable” button to make that section of cable inactive or “Enable” to make that section of cable active. In the Figure 4.28 example the cells from 60 to 65 where the cables goes under the gate has been set to “Disable” as well as where the cable ended at cell 191. Select “Accept” to save the change as shown in Figure 4.29. The action can be stopped by selecting the “Cancel” button.

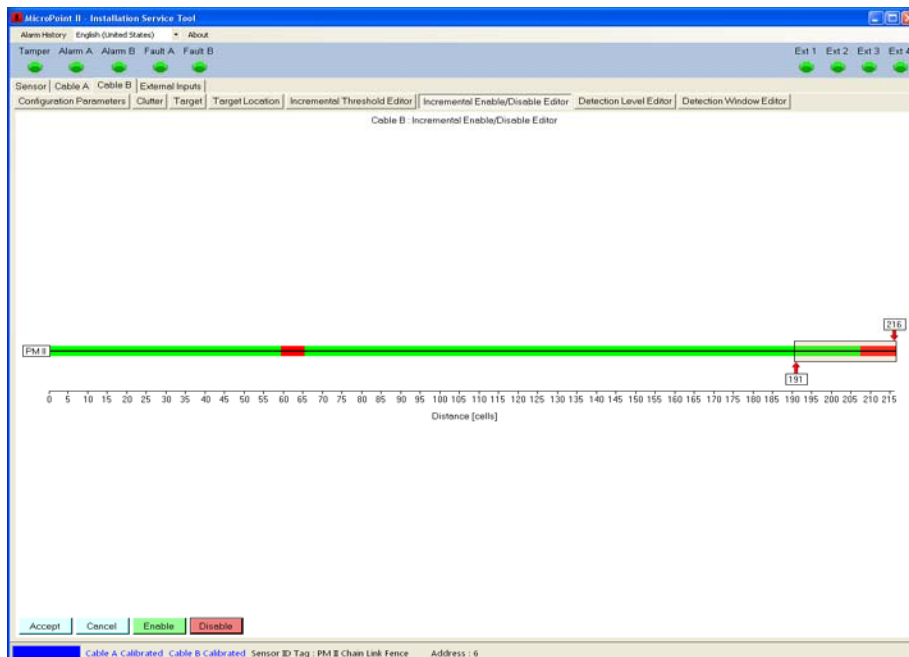


Figure 4.28 – Incremental Enable/Disable Range



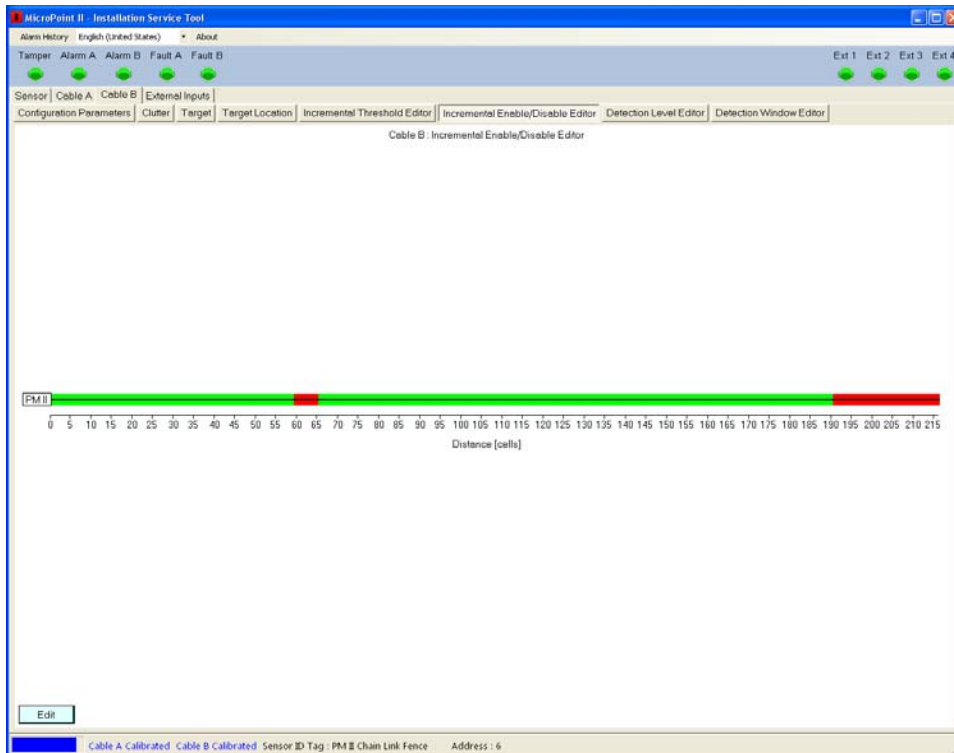


Figure 4.29 – Incremental Enable/Disable Change

The changes made in the Incremental Enable/Disable Editor can also be seen in the “Target Location” tab as shown in Figure 4.30.

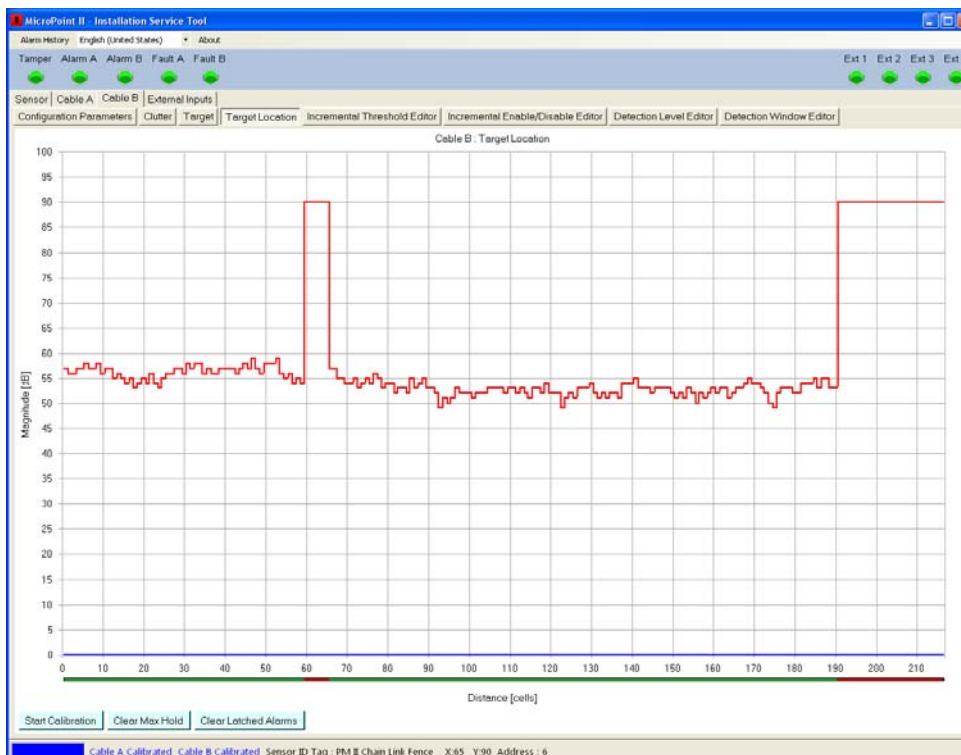


Figure 4.30 – Incremental Enable/Disable Change in Target Location Tab

## 4.2.7 Detection Level Editor

Selecting the “Detection Level Editor” tab will open the screen as shown in Figure 4.31. This screen is used for selecting any section of cable to change the number of events required to declare an alarm. The adjustment is from 1 to 4. Select the “Edit” button to open the editor as shown in Figure 4.32. *The default detection level is 1 but the recommended setting is 2.*

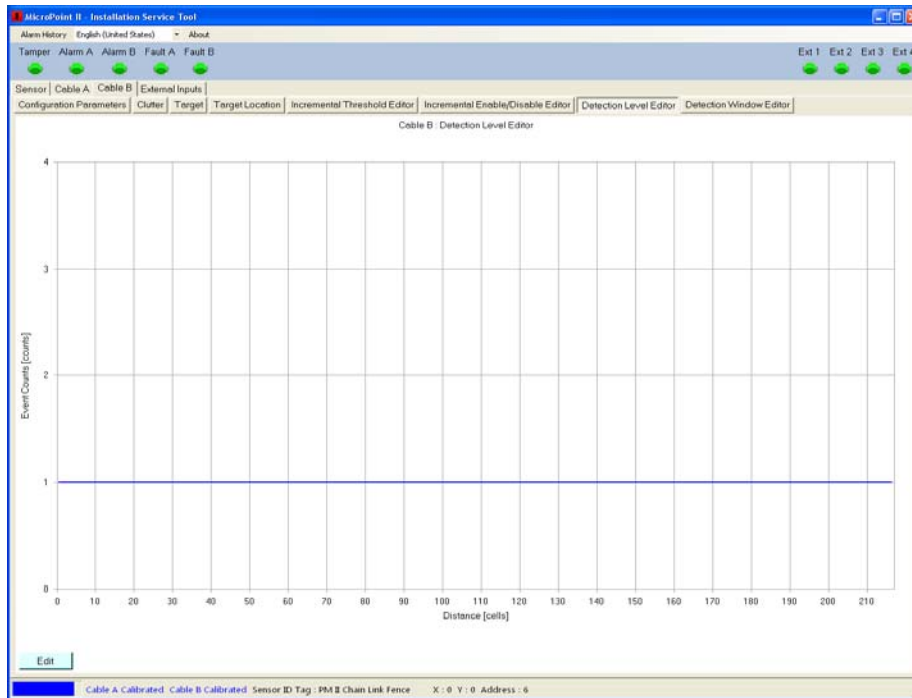


Figure 4.31 – Detection Level Editor

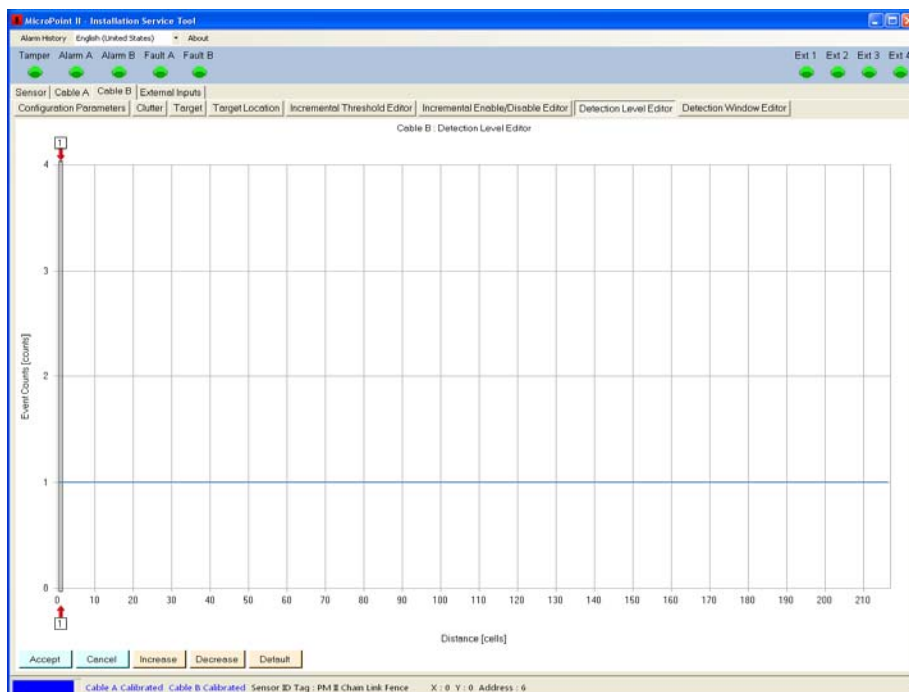


Figure 4.32 – Detection Level Edit

Select the bottom red arrow and position it at the beginning of the cell(s) to be edited. Select the top red arrow and position it at the end of the cell(s) to be edited as shown in Figure 4.33. As the arrow is moved across the screen it will display the cell number associated with its location. Once the required area has been defined select the “Increase” button to raise the number of events to declare an alarm or “Decrease” to reduce the number of events to declare an alarm. In the Figure 4.34 example the entire cable is being changed from 1 event to 2 events to declare an alarm. Select “Accept” to save the change as shown in Figure 4.35. The action can be stopped by selecting the “Cancel” button or set back to the default of 1 by selecting the “Default” button.

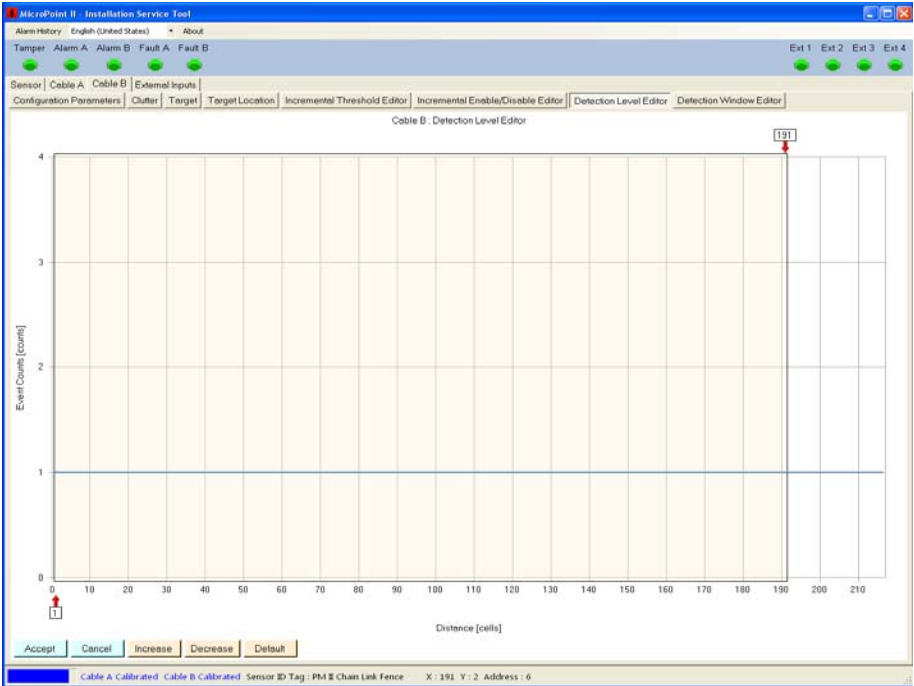


Figure 4.33 – Detection Level Range

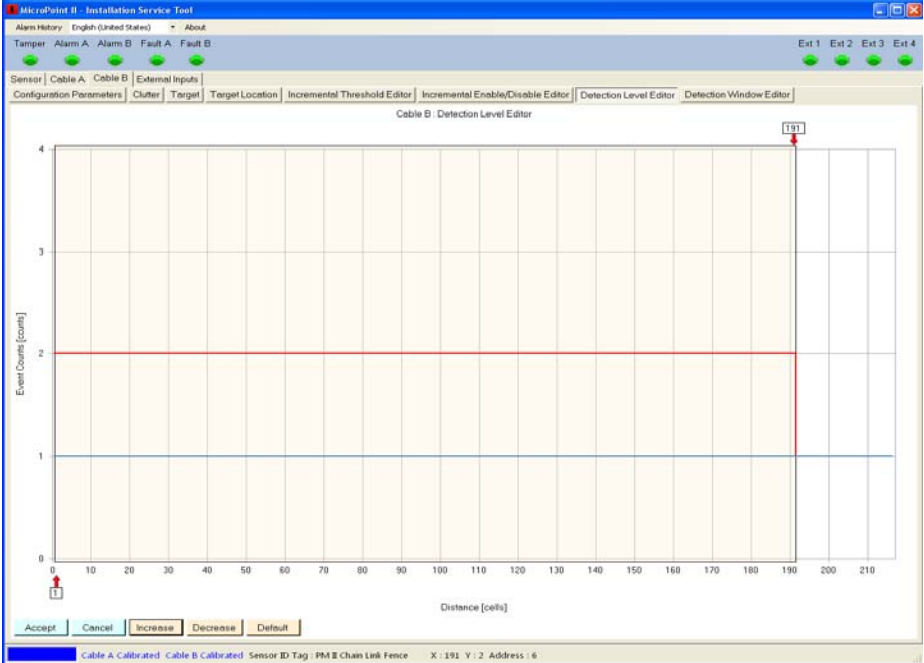


Figure 4.34 – Detection Level Value



Figure 4.35 – Detection Level Change

#### 4.2.8 Detection Window Editor

Selecting the “Detection Window Editor” tab will open the screen as shown in Figure 4.36. This screen is used for selecting the time duration that multiple events must occur to declare an alarm. This only applies to the Detection Level 2, 3 or 4 setting. The adjustment is from 30 to 240 seconds. Select the “Edit” button to open the editor as shown in Figure 4.37. The default window time is 30 seconds.

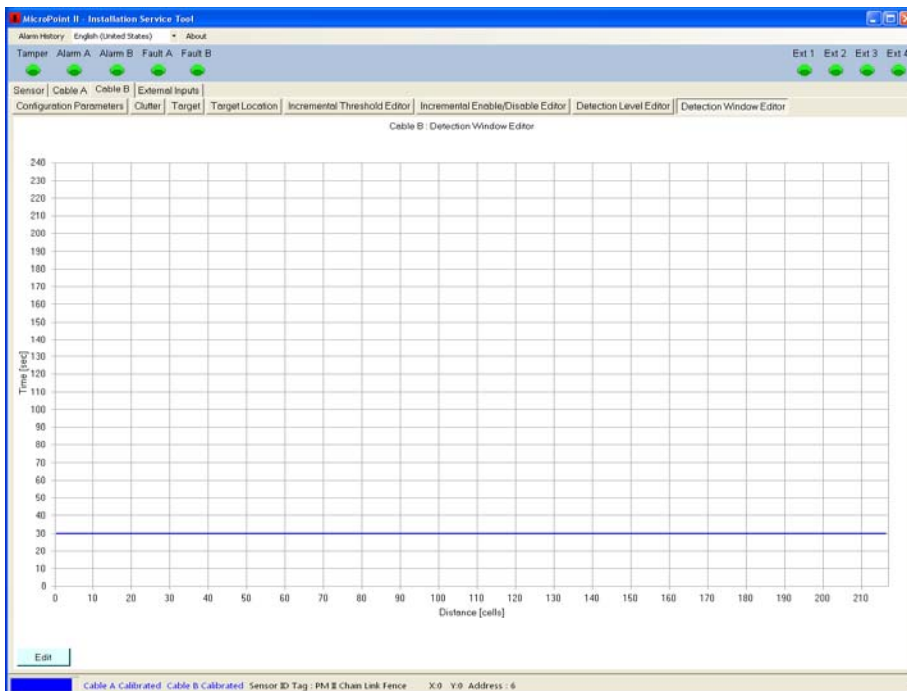


Figure 4.36 – Detection Window Editor

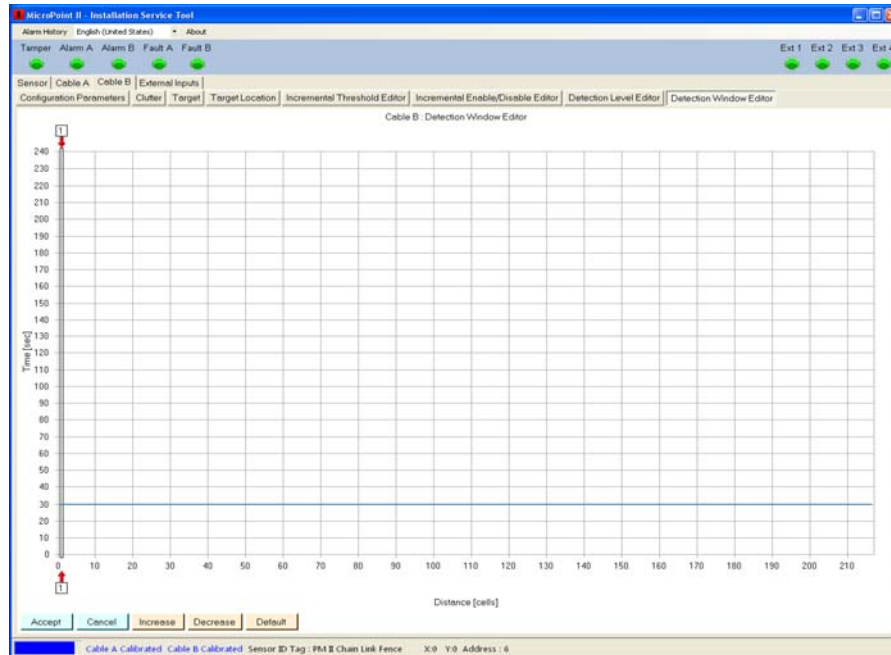


Figure 4.37 – Detection Window Edit

Select the bottom red arrow and position it at the beginning of the cell(s) to be edited. Select the top red arrow and position it at the end of the cell(s) to be edited as shown in Figure 4.38. As the arrow is moved across the screen it will display the cell number associated with its location. Once the required area has been defined select the “Increase” button to raise the time or “Decrease” to reduce the time. In the Figure 4.39 example the time for the entire active cable is being changed from 30 seconds to 60 seconds. Select “Accept” to save the change as shown in Figure 4.40. The action can be stopped by selecting the “Cancel” button or set back to the default of 30 seconds by selecting the “Default” button.

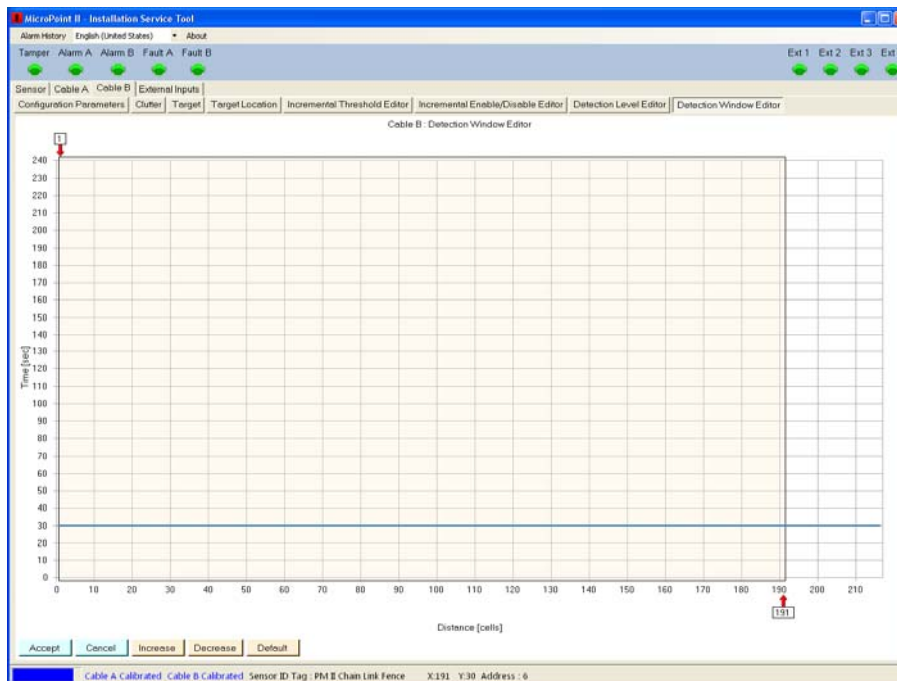


Figure 4.38 – Detection Window Location

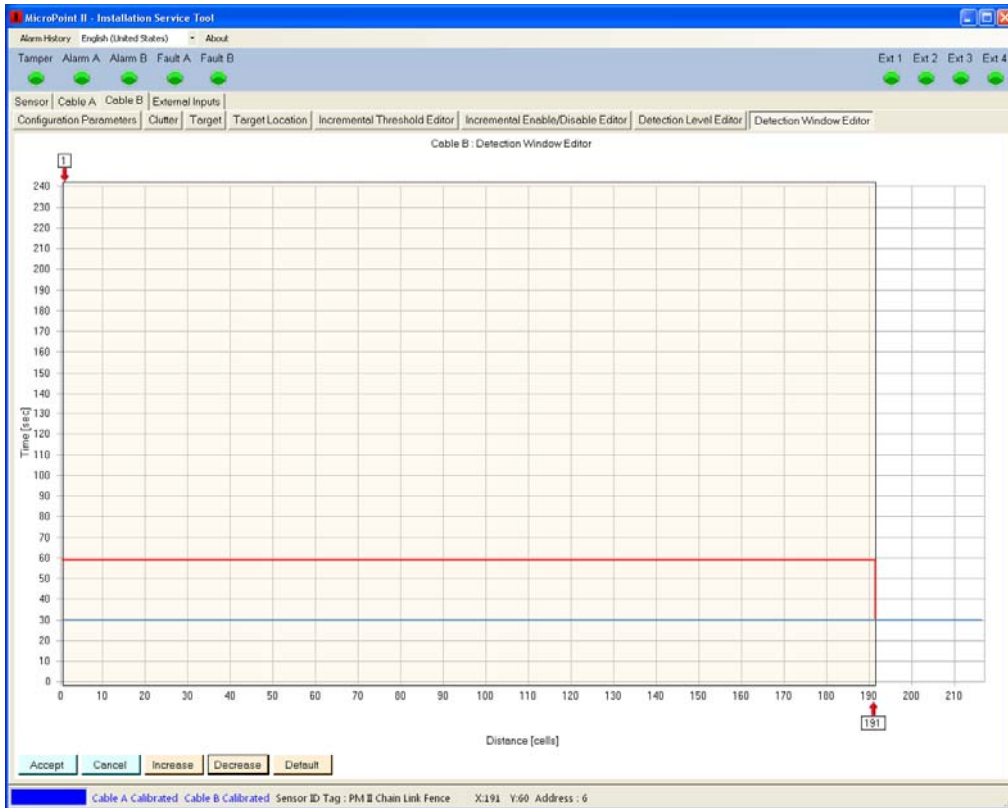


Figure 4.39 – Detection Window Setting

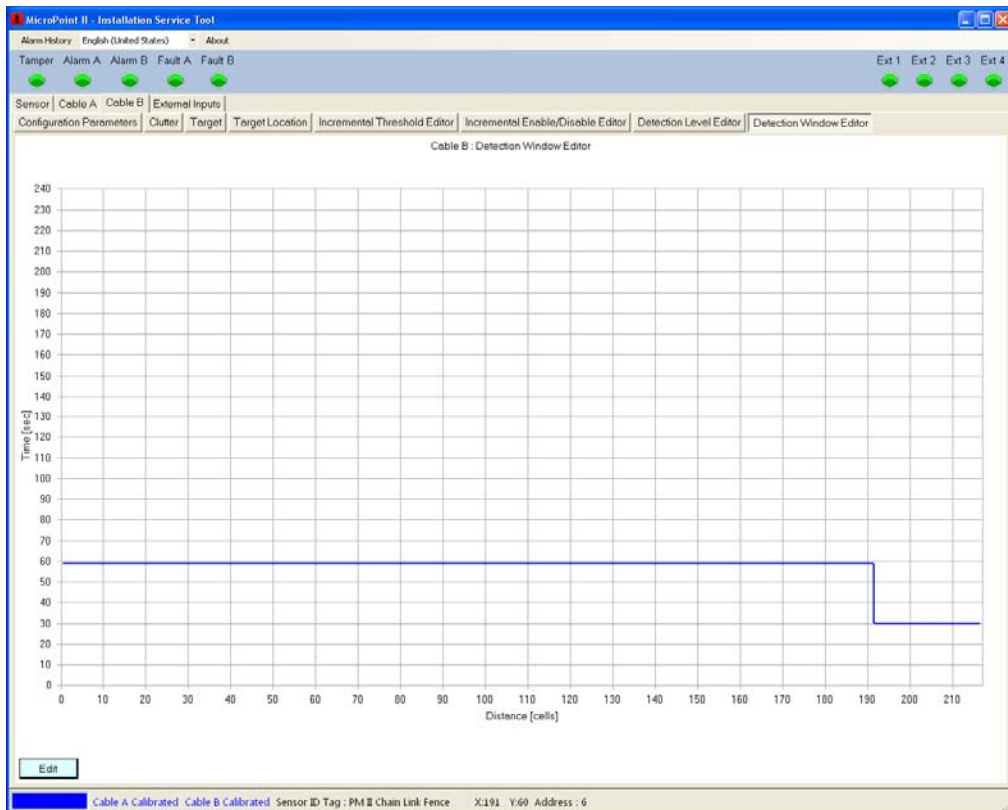


Figure 4.40 – Detection Window Change



### 4.3 External Inputs

Selecting the “External Inputs” tab will open the External Input Configuration Editor as shown in Figure 4.41. This tab is used for setting up external inputs that are connected to any of the four (4) inputs on the PM II processor. The inputs can be set to Normally Open, Normally Closed or Disabled. Selecting the “Edit” button next to the input will open the external input settings as shown in Figure 4.42.

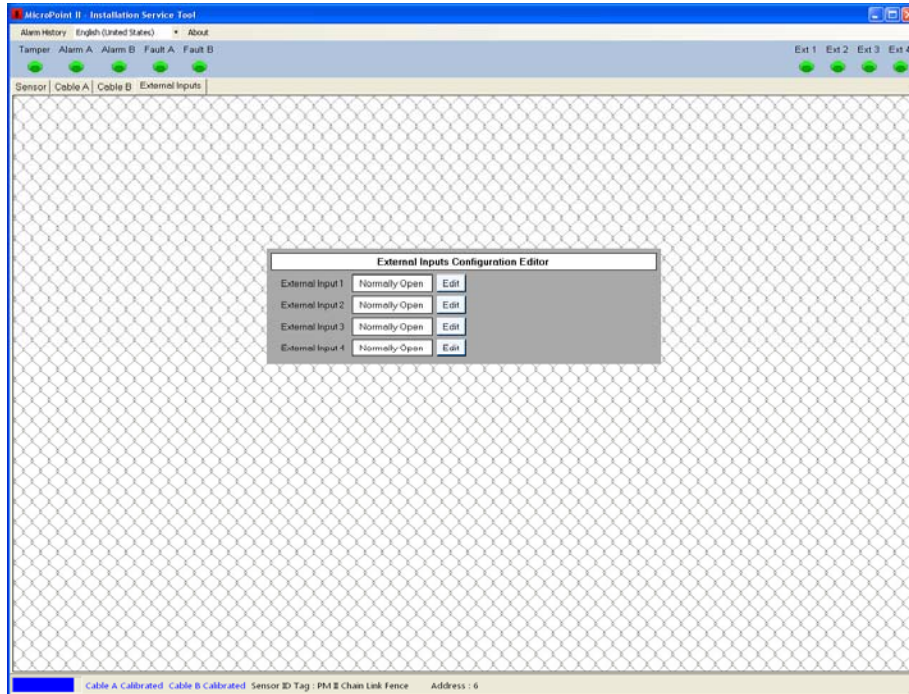


Figure 4.41 – External Inputs

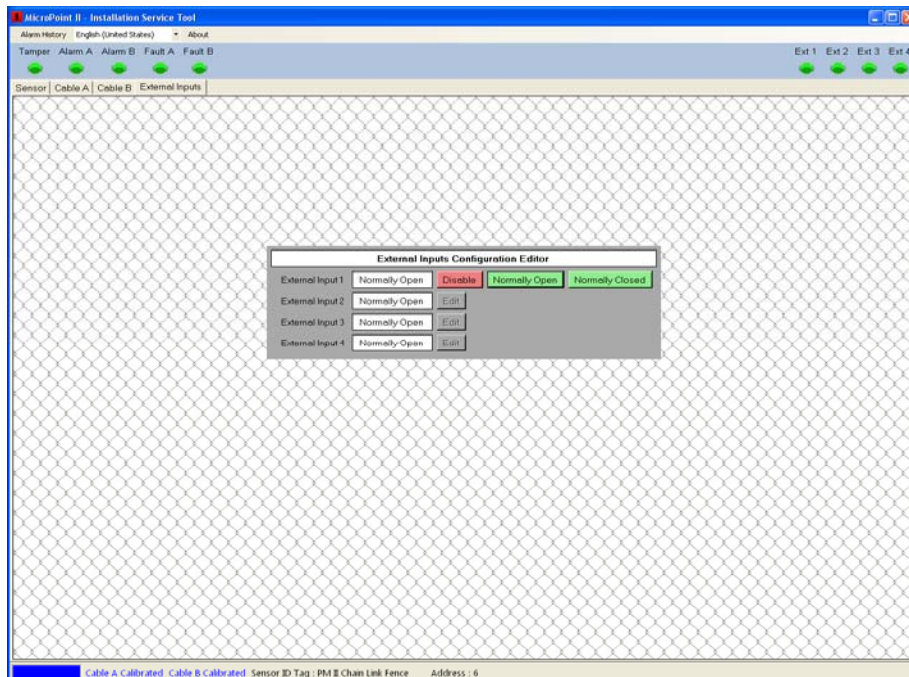


Figure 4.42 – External Input Editor

Select the required setting for the input (Normally Open, Normally Closed or Disabled). *Note: If an input is set as “Disabled”, the associated LED will be “grayed” out (inactive) and no alarms will be generated as shown in Figure 4.43.*

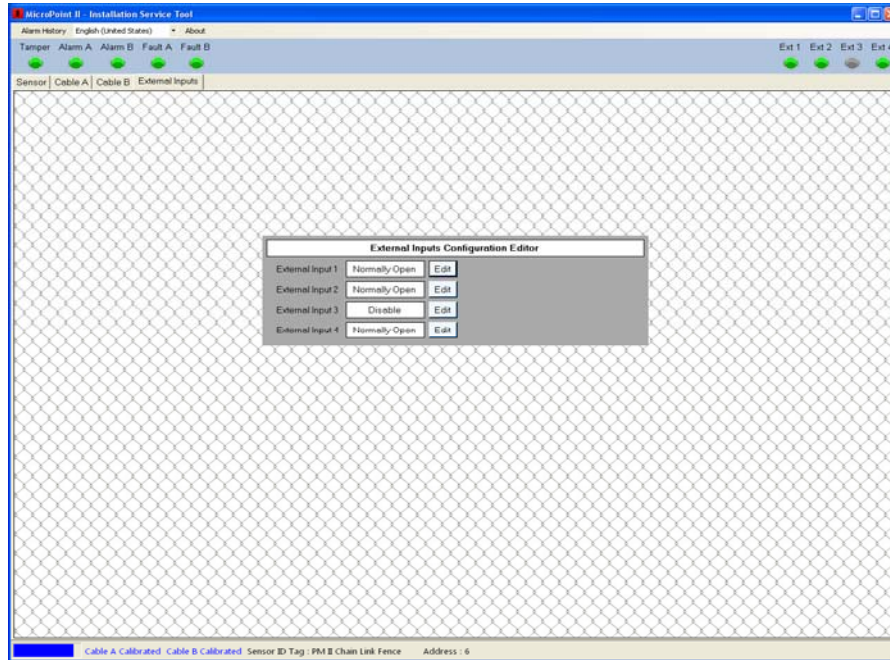


Figure 4.43 – External Input Disabled

## 4.4 Alarm History

Selecting the “Alarm History” menu will open two (2) options: Erase Alarm History and Retrieve from Device as shown in Figure 4.44.

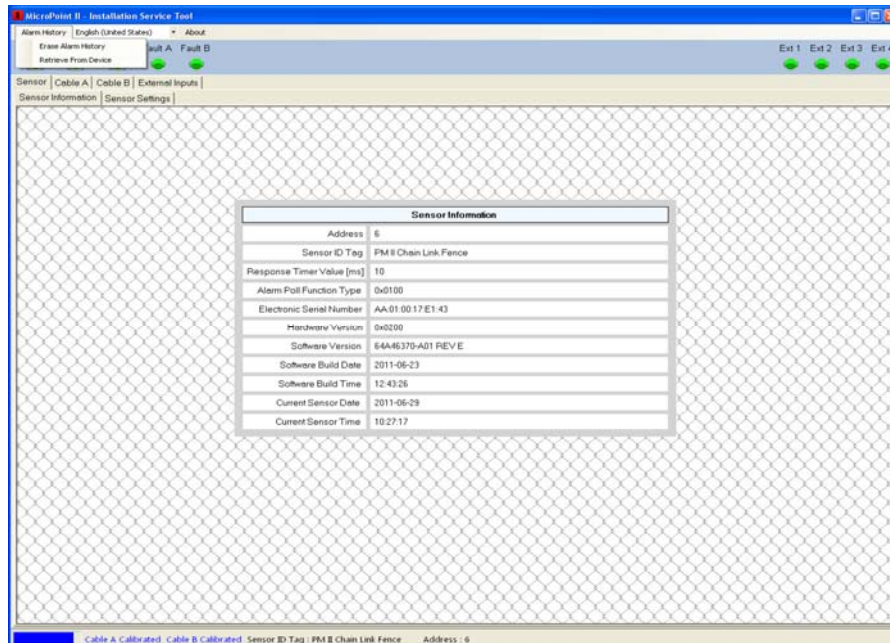


Figure 4.44 – Alarm History



### 4.4.1 Erase Alarm History

Selecting the “Erase Alarm History” menu will erase all event and alarm activity stored in the PM II processor. A dialog box will open after it has been selected stating “Are you sure you want to erase the Alarm History” with a “Yes” and “No” button. To erase: select “Yes” and to cancel select “No”.

On a new installation this function should be done before testing the system to set the threshold and/or incremental threshold for proper detection requirements. This way only the data from the current testing is retained in the processor.

On an existing installation this function should be done after the data from the processor has been retrieved, evaluated and any adjustments made from the relevant information.

### 4.4.2 Retrieve from Device

Selecting the “Retrieve from Device” menu will retrieve all event and alarm activity stored in the PM II processor. The alarm buffer in the PM II processor will store up to 1024 records. When selected a status bar at the bottom of the screen will show the retrieval process as shown in Figure 4.45. When the download is complete the status bar will disappear.

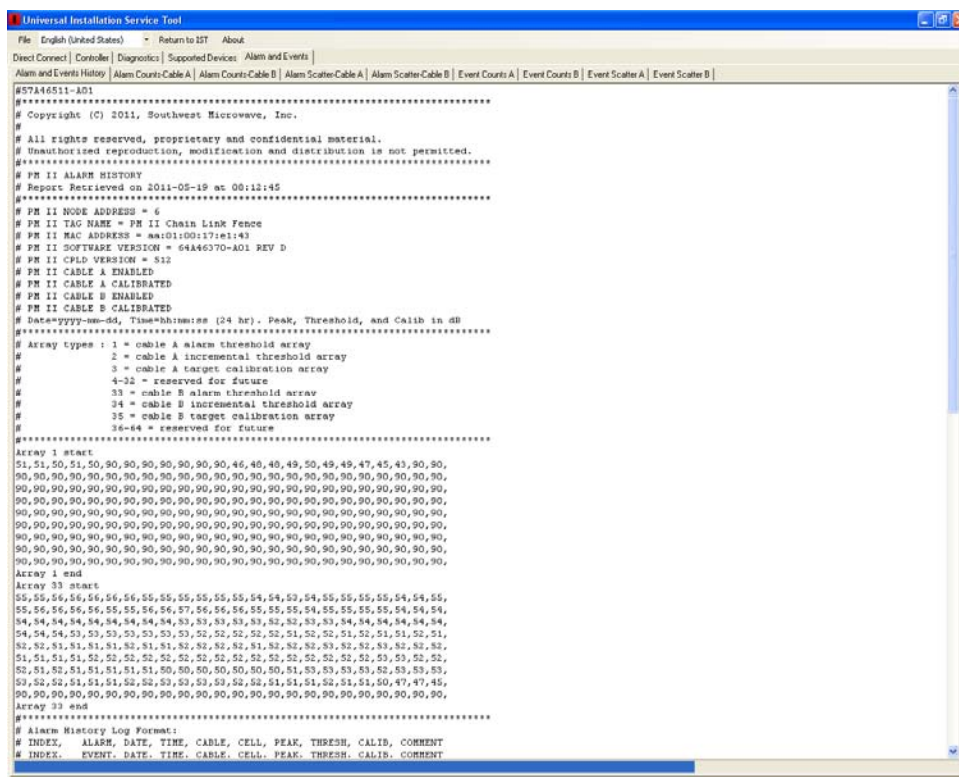


Figure 4.45 – Alarm Retrieve

The alarm history report as shown in Figure 4.46 will display a header with document number, copyright information, report retrieval time, node address, tag name, mac address, software version, CPLD version, Cable A and Cable B status, array types, array start and end (threshold value in that cell) and the alarm information.

The alarm history log format will have an index number (last entry is always on top), entry type (alarm, event, fault, external alarm, tamper, notice and service), date, time and comment. For cable alarms it will also list the

cable (A or B), cell number and peak signal in that cell, threshold in that cell and calibration in that cell. A fault will also list the cable while an external alarm will list the input number.

```
#57A46511-A01
*****
# Copyright (C) 2011, Southwest Microwave, Inc.
#
# All rights reserved, proprietary and confidential material.
# Unauthorized reproduction, modification and distribution is not permitted.
*****
# PM II ALARM HISTORY
# Report Retrieved on 2011-02-22 at 13:33:51
*****
# PM II NODE ADDRESS = 7
# PM II TAG NAME = yard processor
# PM II MAC ADDRESS = aa:01:00:17:ec:3c
# PM II SOFTWARE VERSION = 64A46370-A01 REV D
# PM II CPLD VERSION = 512
# PM II CABLE A ENABLED
# PM II CABLE A CALIBRATED
# PM II CABLE B DISABLED
# PM II CABLE B CALIBRATED
# Date=yyyy-mm-dd, Time=hh:mm:ss (24 hr). Peak, Threshold, and Calib in dB
*****
# Array types : 1 = cable A alarm threshold array
#                2 = cable A incremental threshold array
#                3 = cable A target calibration array
#                4-32 = reserved for future
#                33 = cable B alarm threshold array
#                34 = cable B incremental threshold array
#                35 = cable B target calibration array
#                36-64 = reserved for future
*****
Array 1 start
50,48,49,49,49,49,49,50,50,50,50,49,49,49,48,48,48,48,49,49,49,50,49,
49,48,48,48,48,48,48,48,49,49,48,49,49,49,49,48,48,48,47,47,47,47,48,48,
47,46,44,42,90,90,90,90,39,40,40,40,41,41,41,42,42,43,43,43,43,42,42,
42,42,42,42,43,43,44,44,44,44,44,44,45,45,45,44,44,44,44,44,43,43,43,43,
44,44,44,44,43,42,41,40,39,38,38,37,37,37,36,36,36,37,37,37,38,37,37,37,
37,38,38,39,40,39,40,39,40,41,41,41,41,41,41,41,41,42,42,41,41,41,41,41,
41,41,42,42,42,43,42,42,43,42,43,43,43,44,43,44,45,44,45,44,44,45,45,45,
46,45,46,46,45,44,42,41,40,41,90,90,90,90,90,90,90,90,90,90,90,90,90,
90,90,90,90,90,90,90,90,90,90,90,90,90,90,90,90,90,90,90,90,90,90,
Array 1 end
Array 33 start
48,48,48,48,48,48,48,48,48,48,48,48,48,48,48,48,48,48,48,48,48,48,48,
48,48,48,48,48,48,48,48,49,49,49,49,49,49,49,49,49,49,49,49,49,49,49,49,
49,49,49,49,49,49,49,49,49,49,49,49,49,49,49,49,50,50,50,50,50,50,50,50,
50,50,50,50,50,50,50,50,50,50,50,50,50,50,50,50,50,50,50,50,50,50,50,
51,51,51,51,51,51,51,51,51,51,51,51,51,51,51,51,51,51,51,51,51,51,51,
51,51,51,51,51,51,51,51,52,52,52,52,52,52,52,52,52,52,52,52,52,52,52,52,
52,52,52,52,52,52,52,52,52,52,52,52,52,52,53,53,53,53,53,53,53,53,53,
53,53,53,53,53,53,53,53,53,53,53,53,53,53,53,53,53,53,53,53,53,53,53,
54,54,54,54,54,54,54,54,54,54,54,54,54,54,54,54,54,90,90,90,90,90,90,90,90,
Array 33 end
*****
# Alarm History Log Format:
# INDEX, ALARM, DATE, TIME, CABLE, CELL, PEAK, THRESH, CALIB, COMMENT
```

```

# INDEX, EVENT, DATE, TIME, CABLE, CELL, PEAK, THRESH, CALIB, COMMENT
# INDEX, FAULT, DATE, TIME, CABLE, , , , COMMENT
# INDEX, EXTALM, DATE, TIME, EXT#, , , , COMMENT
# INDEX, TAMPER, DATE, TIME, , , , , COMMENT
# INDEX, NOTICE, DATE, TIME, , , , , COMMENT
# INDEX, SERVICE, DATE, TIME, , , , , COMMENT
#*****
# Alarms in process will be logged after alarm history flash buffer is erased
#*****
1, EVENT, 2011-02-22, 13:33:08, A, 172, 58, 46, 65, CABLE EVENT
2, EVENT, 2011-02-22, 13:33:08, A, 166, 55, 45, 65, CABLE EVENT
3, EVENT, 2011-02-22, 13:33:08, A, 164, 54, 44, 64, CABLE EVENT
4, EVENT, 2011-02-22, 13:32:59, A, 175, 51, 42, 62, CABLE EVENT
5, ALARM, 2011-02-22, 13:32:58, A, 169, 57, 46, 65, CABLE ALARM
6, EVENT, 2011-02-22, 13:32:56, A, 156, 52, 43, 63, CABLE EVENT
7, MALARM, 2011-02-22, 13:32:55, A, 166, 55, 45, 65, MASKED ALARM
8, EVENT, 2011-02-22, 13:32:50, A, 169, 57, 46, 65, CABLE EVENT
9, ALARM, 2011-02-22, 13:32:46, A, 161, 57, 45, 65, CABLE ALARM
10, EVENT, 2011-02-22, 13:32:42, A, 149, 56, 42, 62, CABLE EVENT
11, EVENT, 2011-02-22, 13:32:37, A, 161, 57, 45, 65, CABLE EVENT
12, ALARM, 2011-02-22, 13:32:32, A, 152, 48, 42, 62, CABLE ALARM
13, EVENT, 2011-02-22, 13:32:32, A, 158, 44, 44, 64, CABLE EVENT
14, EVENT, 2011-02-22, 13:32:29, A, 146, 52, 41, 61, CABLE EVENT
15, EVENT, 2011-02-22, 13:32:29, A, 139, 62, 42, 62, CABLE EVENT
16, MALARM, 2011-02-22, 13:32:28, A, 149, 56, 42, 62, MASKED ALARM
17, EVENT, 2011-02-22, 13:32:23, A, 152, 48, 42, 62, CABLE EVENT
18, ALARM, 2011-02-22, 13:32:19, A, 144, 60, 41, 61, CABLE ALARM
19, EVENT, 2011-02-22, 13:32:11, A, 144, 60, 41, 61, CABLE EVENT
20, ALARM, 2011-02-22, 13:32:07, A, 136, 53, 41, 61, CABLE ALARM

```

*Figure 4.46 – Alarm History*

The Service Alarm is generated when the UIST II has been connected or disconnected. Notice alarms are generated from actions such as a PM II reboot, alarm history erased and file system erased.

There are other tabs to view the alarm history and are also used to set the appropriate threshold for the system. These tabs are: Alarm Count Cable A and Cable B, Alarm Scatter Cable A and Cable B, Event Count Cable A and Cable B and Event Scatter Cable A and Cable B.

#### **4.4.2.1 Alarm Counts Cable A or B**

Selecting the “Alarm Counts Cable A or B” tab will open the Alarm Counts screen as shown in Figure 4.47. This screen will list all reported alarms and are displayed with a red line on the bottom of the screen in the cell they occurred. It will also list the total amount of alarms from any cell. The bottom of the screen shows the cell number while the left side of the screen shows the number of alarms. Moving the mouse pointer over an alarm count will display the information as an X - Y coordinate in the lower right corner of the screen.

#### **4.4.2.2 Alarm Scatter Cable A or B**

Selecting the “Alarm Scatter A or B” tab will open the Alarm Scatter screen as shown in Figure 4.48. This screen will list all reported alarms and are displayed as blue dots above the threshold line. The bottom of the screen shows the cell number while the left side of the screen shows amplitude in dB. Moving the mouse pointer over an alarm point will display the location and amplitude of the alarm as an X - Y coordinate in the lower right corner of the screen.

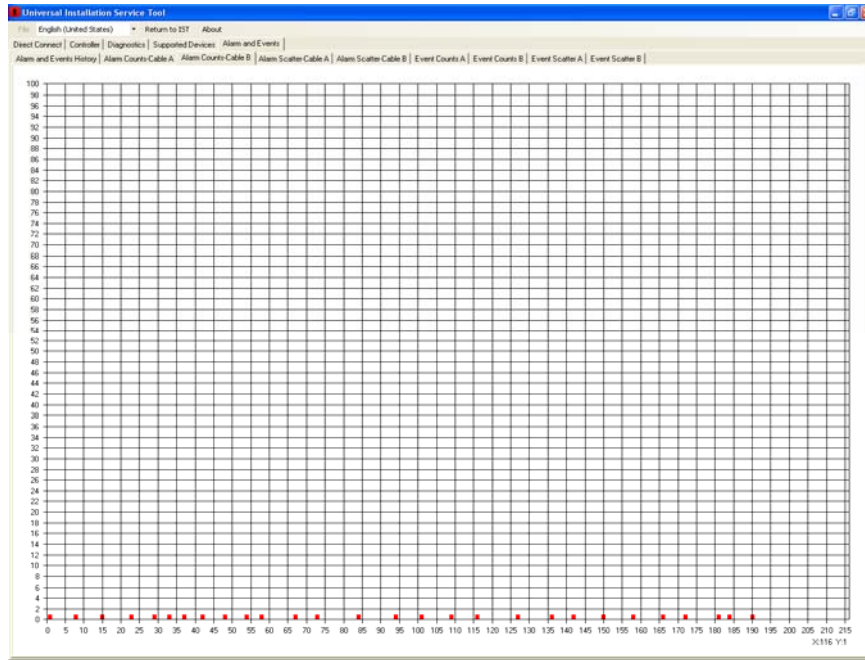


Figure 4.47 – Alarm Counts

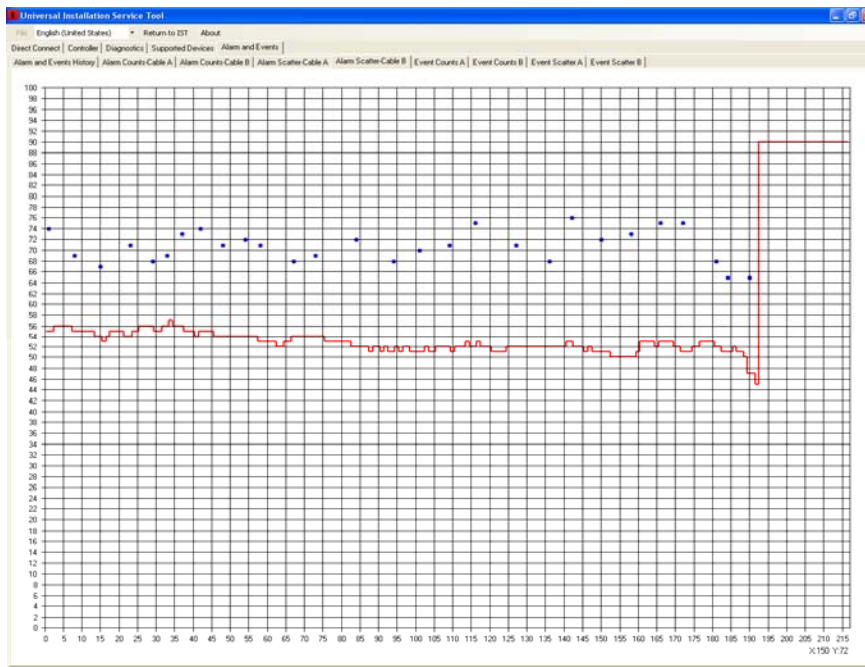


Figure 4.48 – Alarm Scatter

#### 4.4.2.3 Event Counts Cable A or B

Selecting the “Event Counts Cable A or B” tab will open the Event Counts screen as shown in Figure 4.49. This screen will list all reported cable events and displayed with a red line on the bottom of the screen in the cell they occurred. It will also list the total amount of events from any cell. The bottom of the screen shows the cell number while the left side of the screen shows the number of events. Moving the mouse pointer over an event count will display the information as an X - Y coordinate in the lower right corner of the screen.

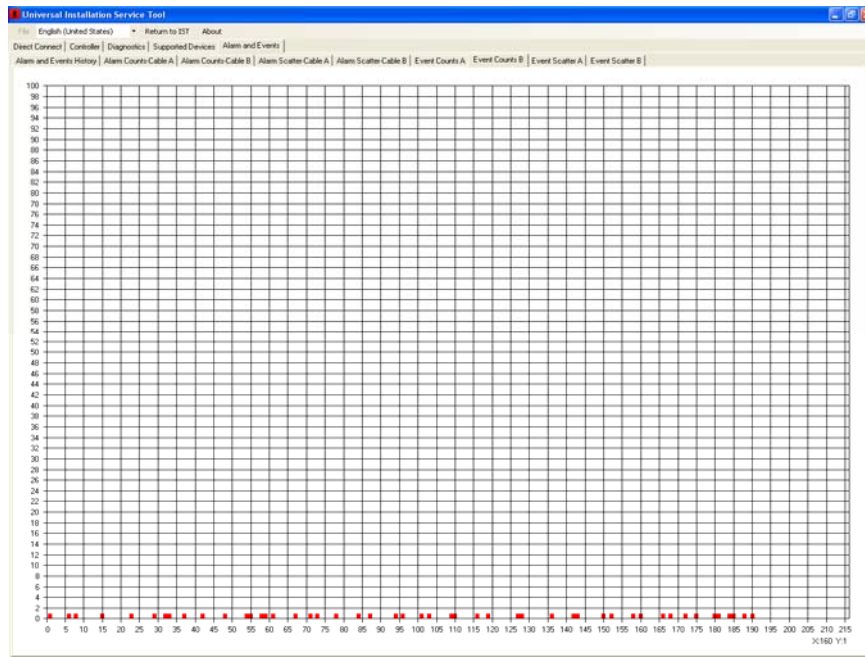


Figure 4.49 – Event Counts

#### 4.4.2.4 Event Scatter Cable A or B

Selecting the “Event Scatter A or B” tab will open the Event Scatter screen as shown in Figure 4.50. This screen will list all reported cable event and displayed as blue dots. The bottom of the screen shows the cell number while the left side of the screen shows amplitude in dB. Moving the mouse pointer over an event point will display the location and amplitude of the event as an X - Y coordinate in the lower right corner of the screen.

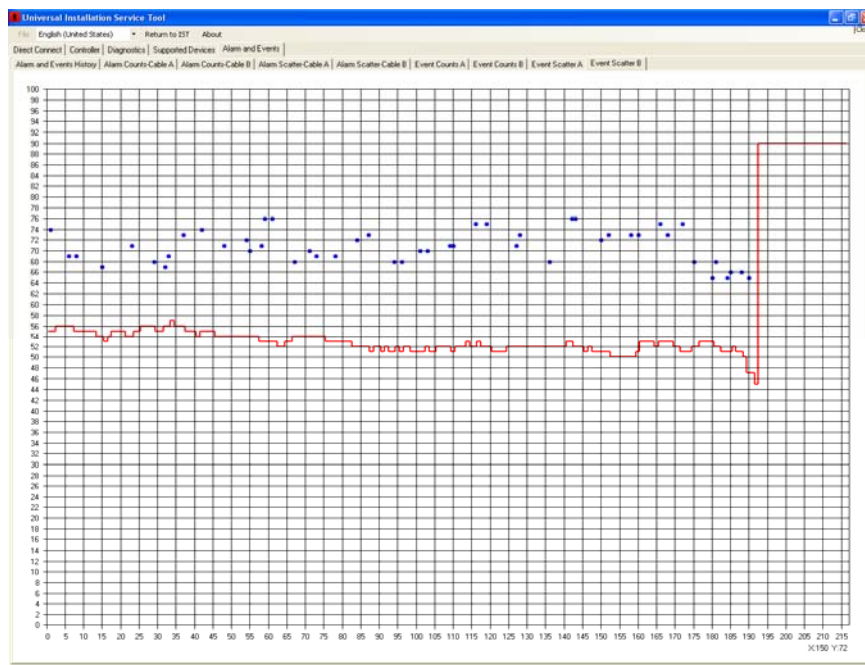


Figure 4.50 – Event Scatter

This screen also provides the capability to open, save and print the alarm history file from the “File” menu (the file is a \*.txt format so it can be imported into Excel™ for review and reports once saved), access to the Direct Connect, Controller, Diagnostics and Supported Devices tabs as well as returning to the IST by selecting the “Return to IST” menu. Selecting any of the other menus will terminate the UIST II session.

## 4.5 Software Setup and Testing

This manual has covered all the parameter settings required for system operation. The next two sections will cover the software setup steps and testing.

The system should be installed per the MicroPoint™ II Installation and Operation manual. All communications and power wiring should be correctly connected and the proper address for the PM II set.

### 4.5.1 Software Setup

The following procedure is a step by step process to setup the PM II processor. Start by connecting to the PM II as described in Section 3.1.1 or 3.1.2.

1. Select “Restore Factory Defaults” from the Sensor Settings tab (Section 4.1.2.6).
2. Set the “Sensor ID Tag” from the Sensor Settings tab (Section 4.1.2.1).
3. Set the “Sensor Date/Time” from the Sensor Settings tab (Section 4.1.2.3).
4. Set the cable to Enabled or Disabled from the Sensor Settings tab (Section 4.1.2.4).
5. Check the “Clutter” and “Target” values (Sections 4.2.2 and 4.2.3).
6. Adjust the “Analog Channel Gain” (if needed based on Clutter level) from the Configuration Parameters tab (Section 4.2.1.1).
7. Calibrated the cable(s) (Section 4.2.4).
8. Set the “Threshold Factor” to -20 dB from the Configuration Parameters tab (Section 4.2.1.3).
9. Set the “Detection Level” to 2 (Section 4.2.7).
10. Using the Cut Simulator tool, strike the center of each fence panel once for all cable associated to the PM II being tested.
11. Retrieve the Alarm History File and display with the Event Scatter for Cable A and then Cable B (Section 4.4).
12. Find the average dB level for all retrieved cut simulations.
13. Return to the UIST II Configuration Parameters screen and adjust the Threshold Factor to be 3 dB below the average level found in step 11.
14. Retrieve Alarm History File and display with the Event Scatter to verify that adjustment is correct.
15. Check/Set External Inputs at the PM II (if used) (Section 4.3)

### 4.5.2 Testing

After steps 1 through 15 have been completed for each PM II, the system is now ready for functional testing. The functional testing is based on the user’s requirements. Typically this would be using the Cut Simulator tool to simulate cutting the fence fabric to generate alarms and having a person climb the fence to generate alarms.

For cut simulation, the number of times to impact the fence is one more than the detection level is set. Example: if the detection level is set to two (2) then the cut test should be done three (3) times to generate the alarm. Keep in mind that the cut simulation needs to be done on the same panel.

When performing a climb test, care should be taken to avoid grabbing or stepping directly on the sensor cable. Usually the posts and the cable are on the protected side of the fence. This means that the climb tests should be performed on the opposite side of the fence from the sensor cable. The climber should weight at least 77 pounds (35 kilograms).

The climber should grasp the fabric with both hands at shoulder height and begin climbing with one foot and proceed in an aggressive and continuous motion, simultaneously altering hand above hand and foot above foot to the maximum allowable height on the fence. If there is Razor Wire on the top of the fence, the climber should stop short of this wire to avoid personal injury. In the absence of Razor Wire the climber should climb to the point where the top of the fence is at waist height. After reaching the maximum height the climber should immediately proceed to climb down to the ground in a continuous motion. The time to complete the climb up and down should not exceed 0.8 times the height of the fence in feet (2.6 times the height of the fence in meters). This means that for a typical 12 foot prison fence the simulated climb should not exceed 9.6 seconds while for a typical 6 foot industrial fence the simulated climb should not exceed 4.8 seconds.

Make any adjustments to the system parameters such as threshold factor, detection window, detection level and incremental threshold that may be required from the testing results retest if necessary.

# **MICROTRACK II**



## 5.0 MicroTrack™ II Installation Service Tool

To open the MicroTrack II Installation Service Tool, connect to the sensor as outlined in Section 3.1. Click on the INTREPID™ MicroTrack II icon on the splash screen as shown in Figure 5.1. If nothing is clicked the Installation Service Tool will open automatically.



Figure 5.1 – MicroTrack II Icon

## 5.1 Sensor Parameters

Once the INTREPID MicroTrack II icon has been selected, the Installation Service Tool “Sensor Parameters” tab for the MicroTrack II will open as shown in Figure 5.2. This tab will display the MicroTrack II Sensor Settings.

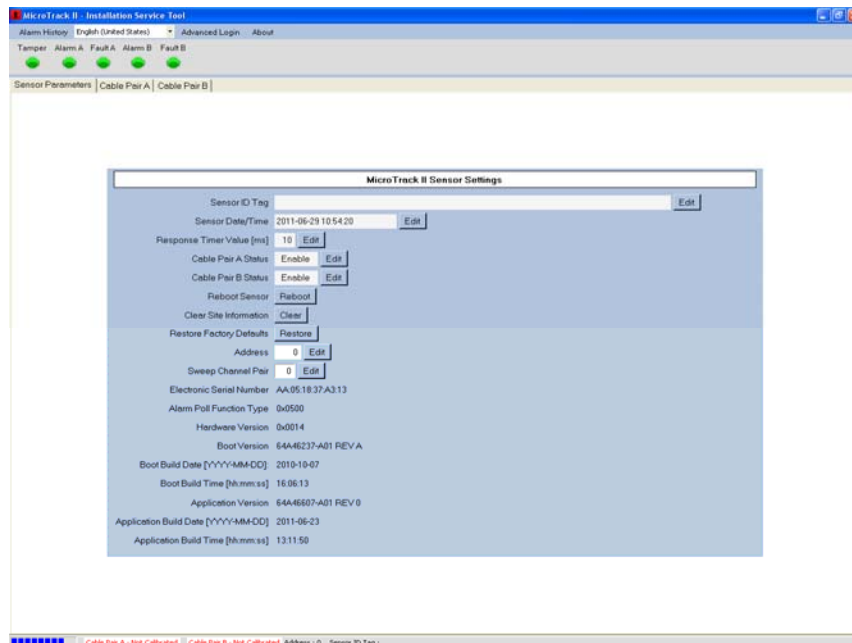


Figure 5.2 – Sensor Parameters

### 5.1.1 Sensor ID Tag

Selecting the “Sensor ID Tag” edit button will open a “Cancel” and “Accept” button as shown in Figure 5.3. This blank line is used to enter a unique name for the sensor. Accept will save the change while Cancel will end the task. Once accepted, the name will be displayed at the bottom of the screen. The Sensor ID Tag supports Unicode.

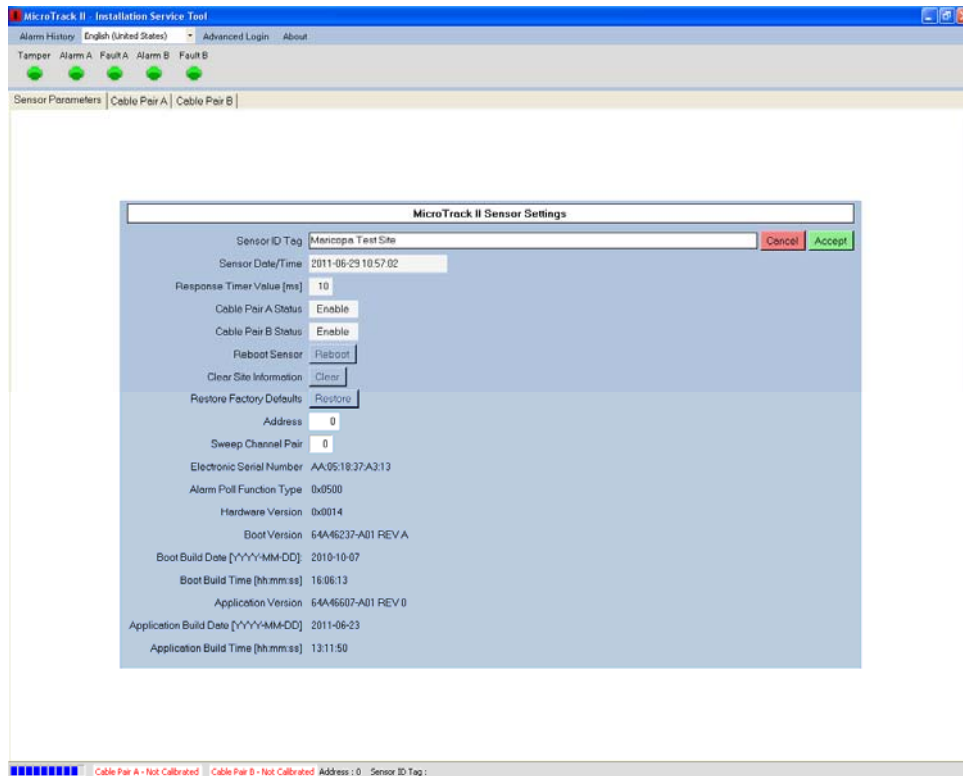


Figure 5.3 – Sensor ID Tag

### 5.1.2 Sensor Date/Time

Selecting the “Sensor Date/Time” edit button will open that line to set the correct year, month, day, hours, minutes and seconds for the sensor. Select any one of the fields and type in the correct information or select the field and use the up/down arrows for changes. A “Cancel” or “Accept” button will be available after a change has been made. Accept will save the change while Cancel will end the task.

### 5.1.3 Response Timer Value (ms)

Selecting the “Response Timer Value” edit button will open a “Slide Bar”, “Cancel” and “Accept” button as shown in Figure 5.4. This line sets the response timer value in milliseconds for the sensor. The time adjustment is done by the slide bar (or the directional arrows) and has a range from 0 to 40 ms with a default setting of 10ms. This adjustment is typically used when doing SDK development which may require different poll response turn around delay times. A “Cancel” or “Accept” button will be available after a change has been made. Accept will save the change while Cancel will end the task.

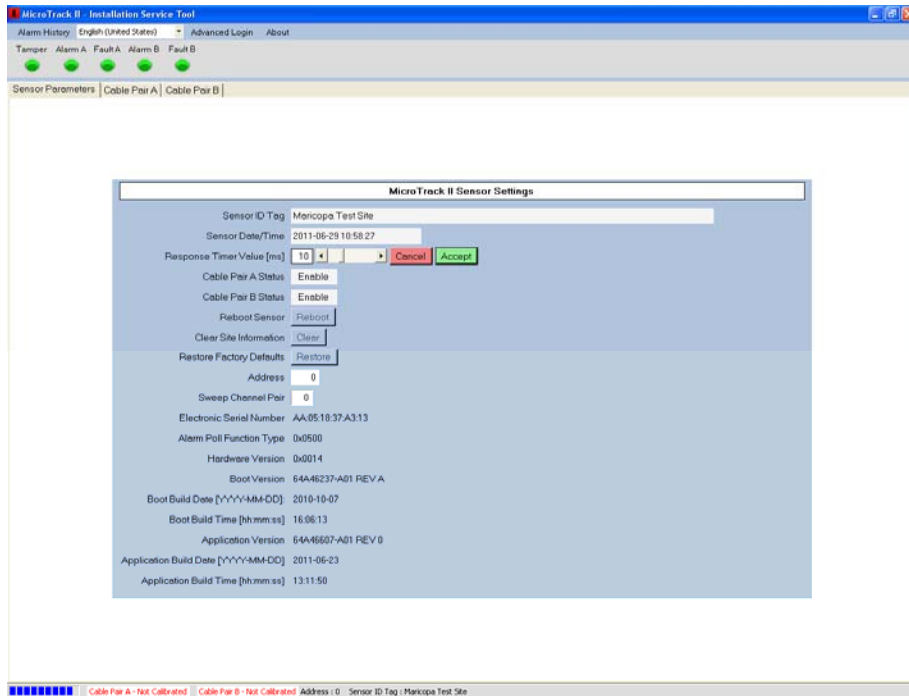


Figure 5.4 – Response Timer Value

### 5.1.4 Cable Pair A Status – Cable Pair B Status

Selecting the “Cable Pair A Status” or “Cable Pair B Status” edit button will open an “Enabled” (will detect) or “Disabled” (will not detect) button as shown in Figure 5.5. Select the required operation. If a cable has been set to “Disabled” the alarm and fault LED on the screen for that cable will be gray (inactive) and no alarms will be generated.

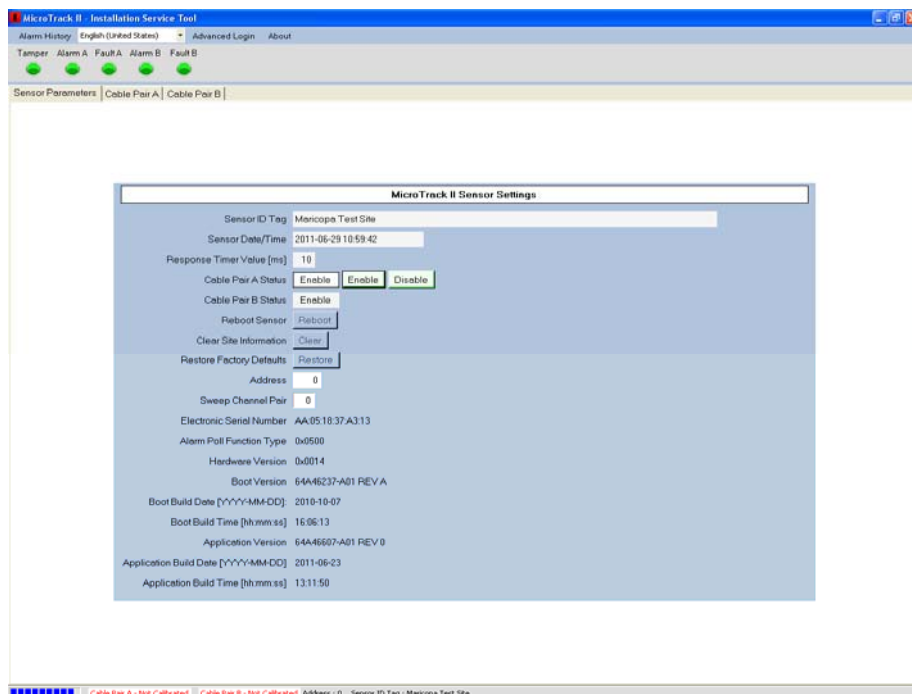


Figure 5.5 – Cable Pair Status; Enabled or Disabled

### 5.1.5 Reboot Sensor

Selecting the “Reboot Sensor” reboot button will send a software command to the MTP II processor to initiate a reboot of the sensor in the same manner as if power was removed and restored.

### 5.1.6 Clear Site Information

Selecting the “Clear Site Information” clear button will erase all information that has been set in the processor except for the address.

### 5.1.7 Restore Factory Defaults

Selecting the “Restore Factory Defaults” restore button will erase all information that has been set in the processor and return them to the factory default settings including the address for the address. This function should be done on a new installation to ensure that no erroneous data resides in the MTP II.

### 5.1.8 Address

Selecting the “Address” edit button will open a “Slide Bar”, “Cancel” and “Accept” button as shown in Figure 5.6. Using the slide bar or directional arrows, set the required address of the MTP II for this installation. The address range is from 0 to 239. Accept will save the change while Cancel will end the task.

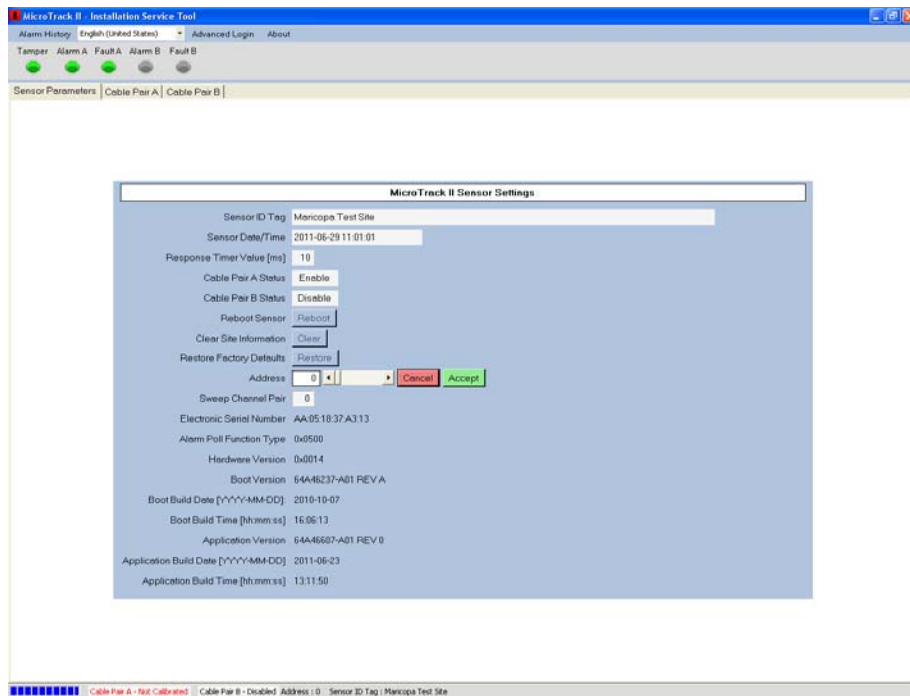


Figure 5.6 – MTP II Address

### 5.1.9 Sweep Channel Pair

Selecting the “Sweep Channel Pair” edit button will open a “Slide Bar”, “Cancel” and “Accept” button as shown in Figure 5.7. Setting the value to 1 will change the frequency sweep from A and B to C and D. This adjustment should not be made unless authorized by Southwest Microwave, Inc factory service technicians. Accept will save the change while Cancel will end the task.

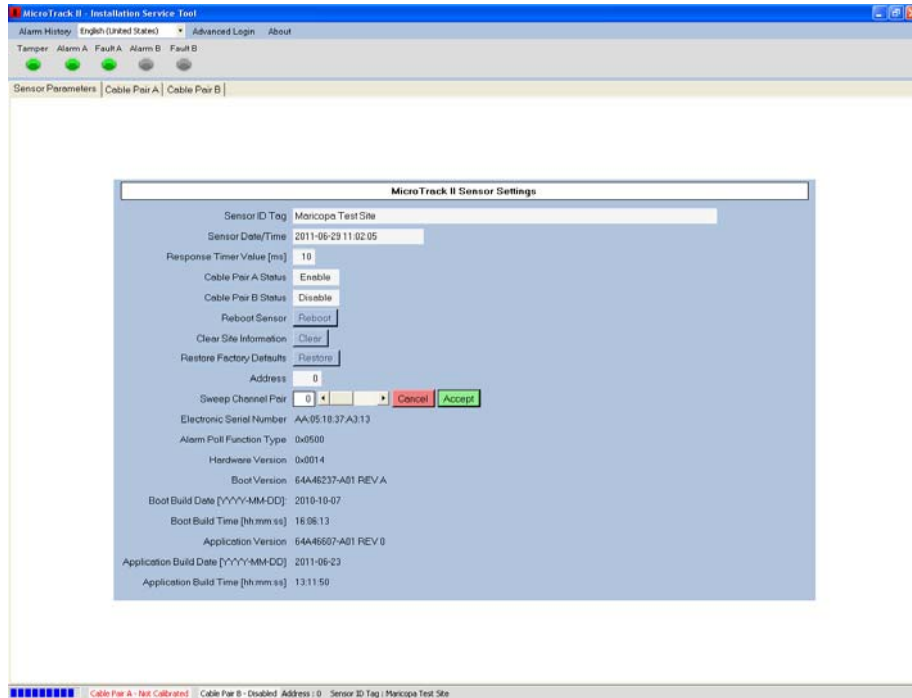


Figure 5.7 – Sweep Channel Pair

### 5.1.10 Sensor Information

Other sensor information that can be viewed for reference in the MicroTrack II Sensor Settings screen is:

- Electronic Serial Number (*the MAC address – for Southwest Microwave use only*)
- Alarm Poll Function Type (*type of device being polled*)
- Hardware Version (*hardware version of the MTP II – part and revision number*)
- Boot Build Date (*the date the boot was compiled – YYYY-MM-DD*)
- Boot Build Time (*the time the boot was compiled – hh-mm-ss*)
- Application Version (*the version of software operating in the MTP II – part and revision number*)
- Application Build Date (*the date the application software was compiled – YYYY-MM-DD*)
- Application Build Time (*the time the application software was compiled – hh-mm-ss*)

## 5.2 Cable Pair A and Cable Pair B

Selecting either Cable Pair A or Cable Pair B tab will open the configuration tabs as shown in Figure 5.8. The tabs for viewing and configuring the cables are: Parameters, Quadrature Clutter Location, Quadrature Target, Target Location, Incremental Threshold and Incremental Enable/Disable. *Note: Each cable is set up independently of the other cable so both cables (if used) need to be configured. The screens associated with these tabs will only be active if the cable has been set to “Enable” as discussed in Section 5.1.4. If a cable is set as “Disabled”, the screens in these tabs will be “grayed” out (inactive).*

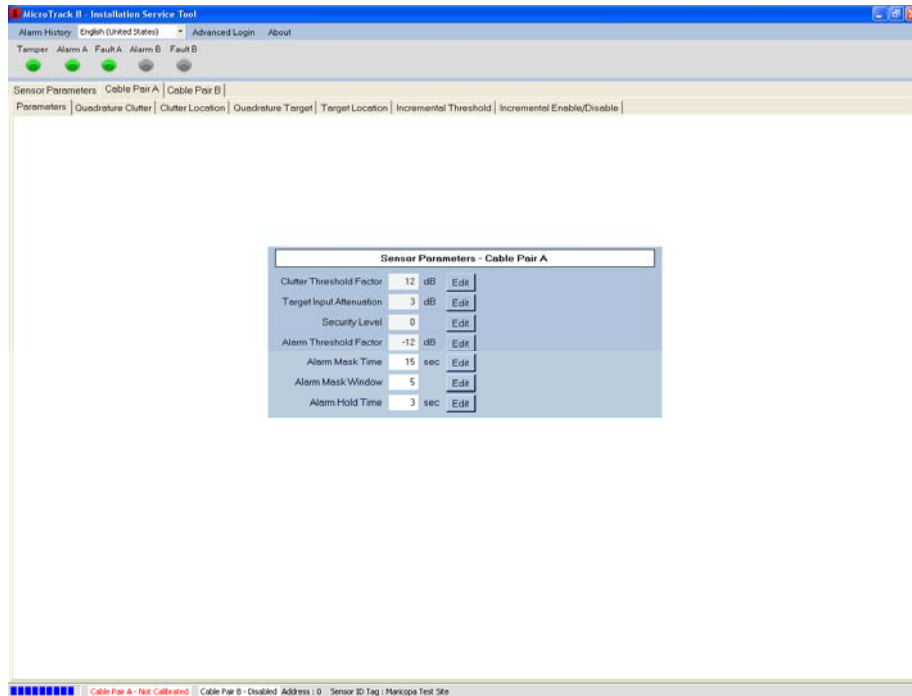


Figure 5.8 - Cable Pair Configuration Tabs

## 5.2.1 Parameters

Selecting the “Parameters” tab will open the information as shown in Figure 5.8. This tab will be used to set the:

- Clutter Threshold Factor (*sets the threshold factor for cable fault alarms*)
- Target Input Attenuation (*sets target input to correct value*)
- Security Level (*sets unit for low or high security applications*)
- Alarm Threshold Factor (*cable sensitivity setting*)
- Alarm Mask Time (*sets time duration before another alarm can be declared in the same cell*)
- Alarm Mask Window (*sets number of cells to be masked out after an alarm has been reported*)
- Alarm Hold Time (*sets time duration to hold active alarm before resetting*)

### 5.2.1.1 Clutter Threshold Factor

Selecting the “Clutter Threshold Factor” edit button will open a “Slide Bar”, “Cancel”, “Default” and “Accept” button as shown in Figure 5.9. This setting is used to change the value required to declare a Cable Fault Alarm. The default value is 12dB. The minimum value is 0dB and the maximum value is 30dB. Using the slide bar or directional arrows, adjust as needed to meet site requirements. To view the setting select the “Clutter Location” tab as shown in Figure 5.17. The blue line represents the clutter value while the red lines represent the cable fault thresholds. Accept will save the change, Cancel will end the task while Default will set the parameter back to the default setting.

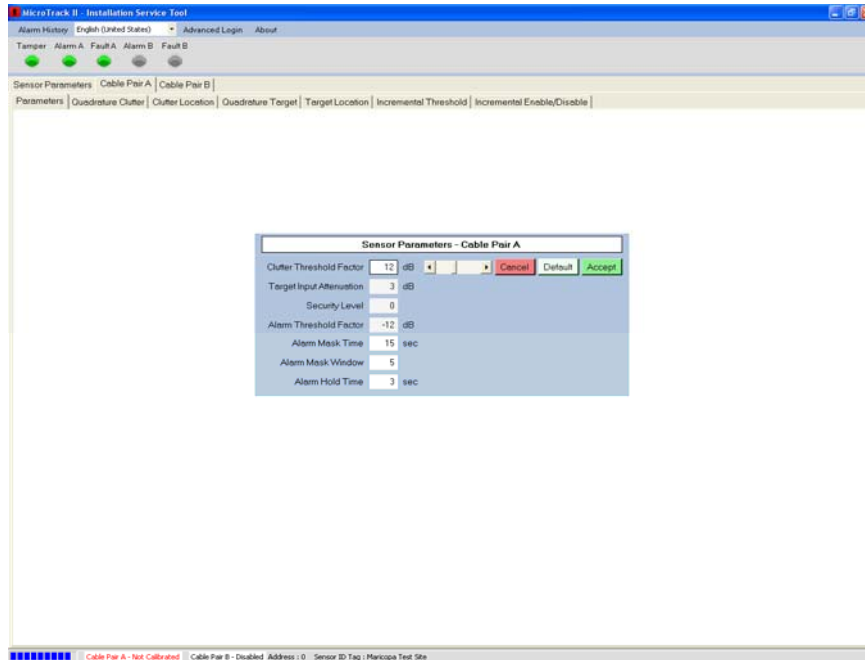


Figure 5.9 - Clutter Threshold Factor

### 5.2.1.2 Target Input Attenuation

Selecting the “Target Input Attenuation” edit button will open a “Slide Bar”, “Cancel”, “Default” and “Accept” button as shown in Figure 5.10. This setting is used to set the input attenuation value to obtain the nominal operating level of +/- 256 to +/- 1024 counts after the gain has been set. The default value is 3dB. The minimum value is 0dB and the maximum value is 16dB. Using the slide bar or directional arrows, adjust to get as close as possible to +/- 512 count. To view setting select the “Quadrature Target” tab as shown in Figure 5.18. Accept will save the change, Cancel will end the task while Default will set the parameter back to the default setting.

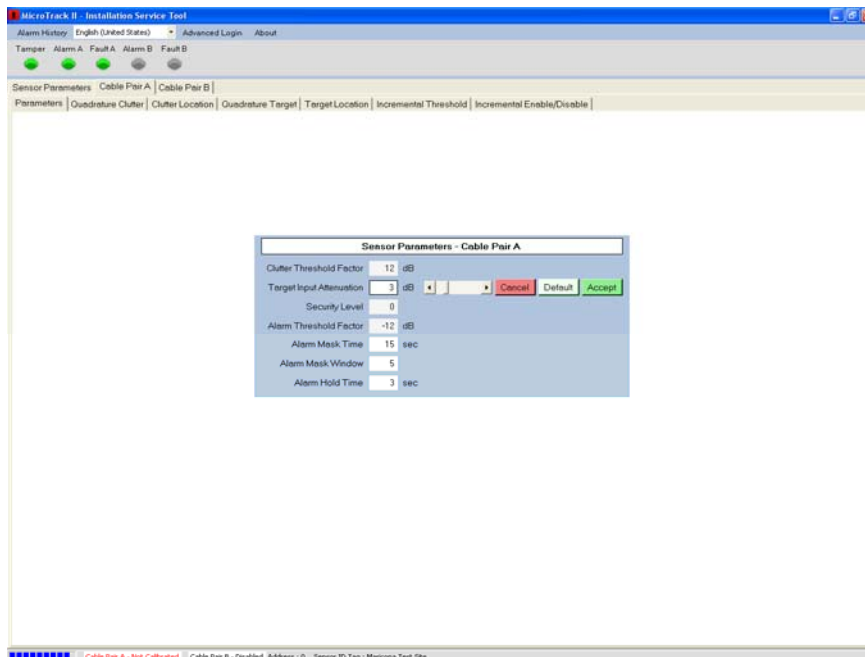


Figure 5.10 - Target Input Attenuation

### 5.2.1.3 Security Level

Selecting the “Security Level” edit button will open a “Slide Bar”, “Cancel”, “Default” and “Accept” button as shown in Figure 5.11. This setting is used to change from a high to low security level. The default value is 0 (high). The minimum value is 0 and the maximum value is 1 (low). Using the slide bar or directional arrows, adjust as needed to meet site requirements. Accept will save the change, Cancel will end the task while Default will set the parameter back to the default setting.

Typically a high security site requires detection of crawling, walking, running and running/jumping intruders while a low security site only requires detection of a walking and running intruder.

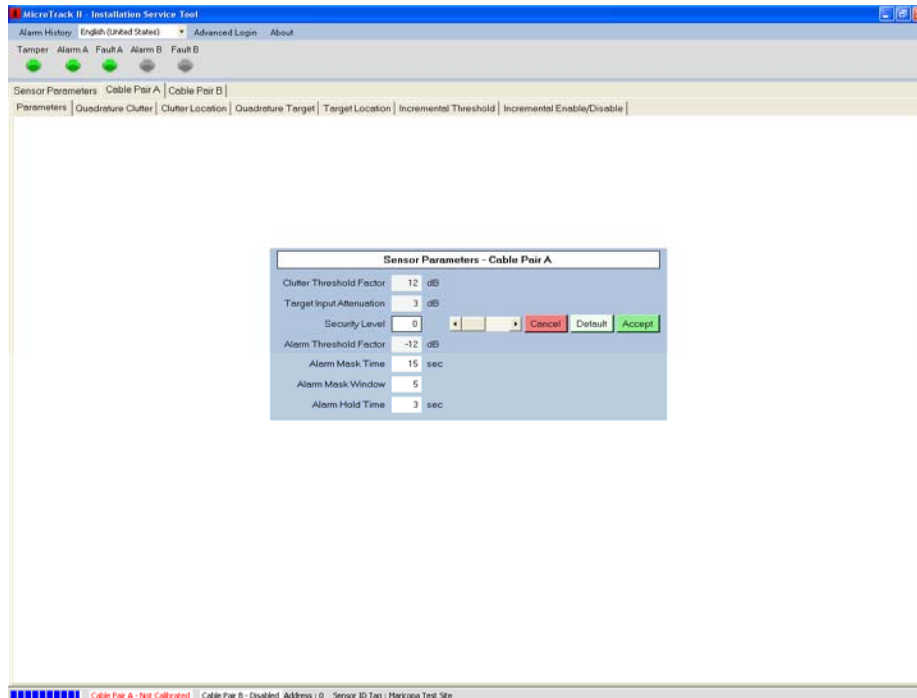


Figure 5.11 - Security Level

### 5.2.1.4 Alarm Threshold Factor

Selecting the “Alarm Threshold Factor” edit button will open a “Slide Bar”, “Cancel”, “Default” and “Accept” button as shown in Figure 5.12. This setting is used to change the threshold (sensitivity) of the cable being configured. The default value is -12dB. The minimum value is 0dB and the maximum value is -40dB. Using the slide bar or directional arrows, adjust as needed to meet site requirements. To view the setting, select the “Target Location” tab as shown in Figure 5.19. Cancel will end the task while Default will set the parameter back to the default setting.

After the cable has been calibrated, perform site testing requirements such as walk tests, run tests, crawl tests, etc. and increase or decrease the threshold factor to meet the requirements of the site.



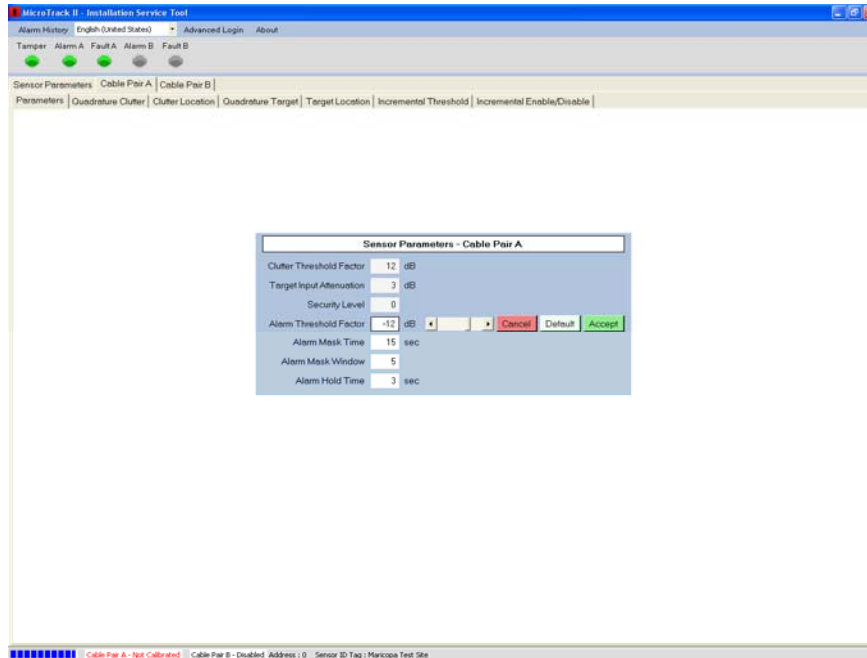


Figure 5.12 – Alarm Threshold Factor

### 5.2.1.5 Alarm Mask Time

Selecting the “Alarm Mask Time” edit button will open a “Slide Bar”, “Cancel”, “Default” and “Accept” button as shown in Figure 5.13. This setting is used to change the time duration that prohibits the reporting of another alarm in that location for a set time. The default value is 15 seconds. The minimum value is 0 seconds and the maximum value is 60 seconds. Using the slide bar or directional arrows, adjust as needed to meet site requirements. Accept will save the change, Cancel will end the task while Default will set the parameter back to the default setting.

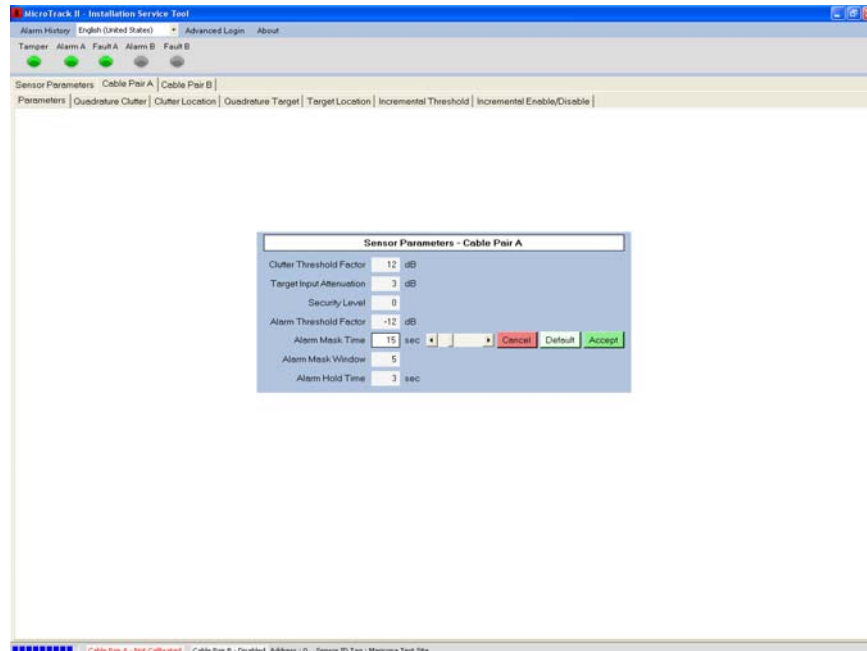


Figure 5.13 – Alarm Mask Time

### 5.2.1.6 Alarm Mask Window

Selecting the “Alarm Mask Window” edit button will open a “Slide Bar”, “Cancel”, “Default” and “Accept” button as shown in Figure 5.14. This setting is used to change the number of cells that will be masked after an alarm has been reported. The default value is 5 cells. The minimum value is 0 cells and the maximum value is 48 cells. Using the slide bar or directional arrows, adjust as needed to meet site requirements. Accept will save the change, Cancel will end the task while Default will set the parameter back to the default setting.

The “Alarm Mask Window” is typically used in conjunction with the “Alarm Mask Time”.

*Example: if the Alarm Mask Window and the Alarm Mask Time is set at default settings and an alarm is reported at cell 50, another alarm would not be reported in cells 45 to 55 for 15 seconds. The Alarm Mask Window is at default +/- 5 cells and the Alarm Mask Time is at default 15 seconds.*

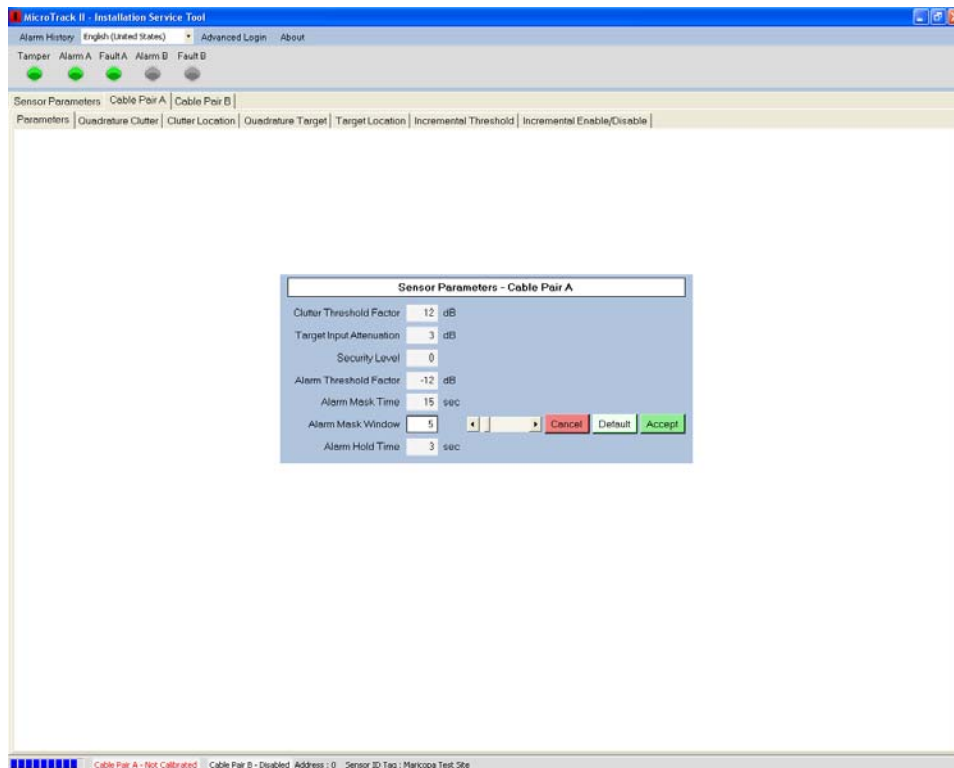


Figure 5.14 – Alarm Mask Window

### 5.2.1.7 Alarm Hold Time

Selecting the “Alarm Hold Time” edit button will open a “Slide Bar”, “Cancel”, “Default” and “Accept” button as shown in Figure 5.15. This setting is used to change the time duration that an alarm is held before resetting. The default value is 3 seconds. The minimum value is 0 seconds and the maximum value is 60 seconds. Using the slide bar or directional arrows, adjust as needed to meet site requirements. Accept will save the change, Cancel will end the task while Default will set the parameter back to the default setting.

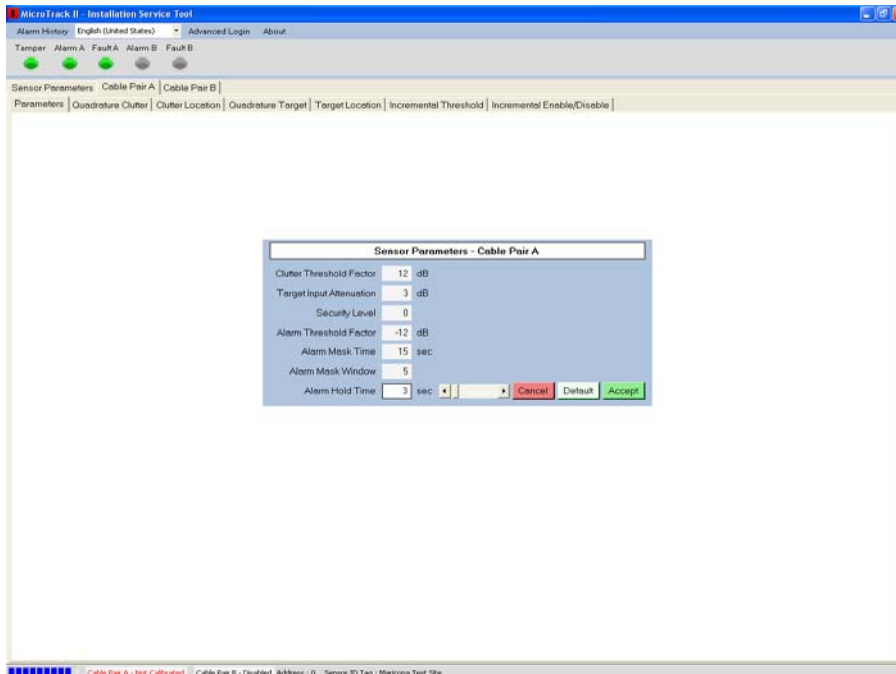


Figure 5.15 – Alarm Hold Time

## 5.2.2 Quadrature Clutter

Selecting the “Quadrature Clutter” tab will open the screen as shown in Figure 5.16. This screen will be used to view the gain of the cable set being configured. Once a cable set has been “Enabled” the quadrature clutter will increase from 0 counts to +/- 88 counts and set the “Channel Gain” which can be viewed in the upper right corner of the screen. The gain will range from 0 to 255. The bottom of the screen shows the 64 frequency bins.

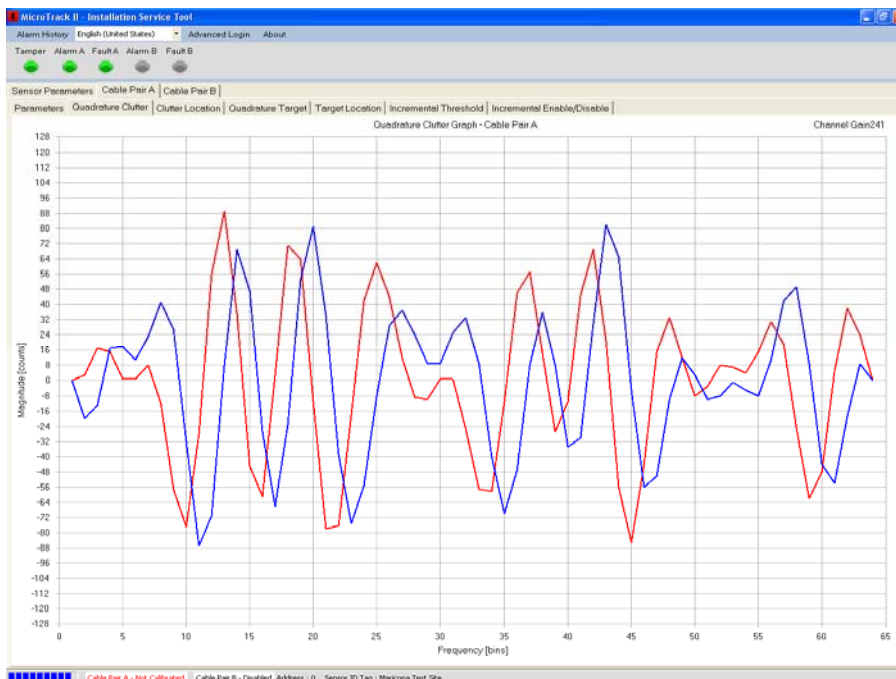


Figure 5.16 – Quadrature Clutter

### 5.2.3 Clutter Location

Selecting the “Clutter Location” tab will open the screen as shown in Figure 5.17. This screen is used to set the clutter threshold for reporting a Cable Fault Alarm. The blue line represents the clutter value while the red lines represent the cable fault thresholds. If the blue line crosses either of the red lines a Cable Fault Alarm will be reported. The threshold can be changed as discussed in section 5.2.1.1, Clutter Threshold Factor.

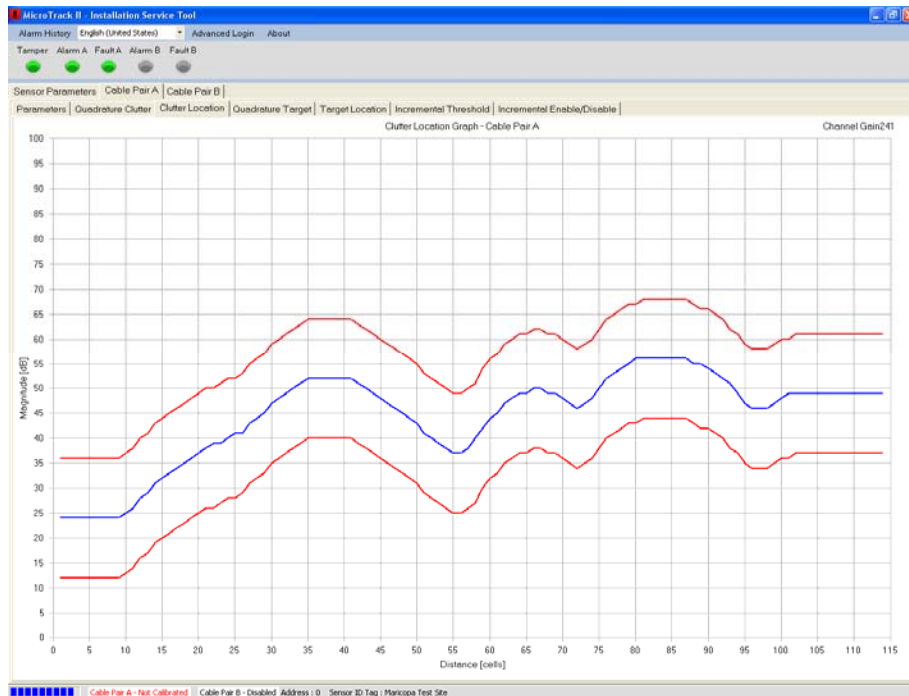


Figure 5.17 – Clutter Location

### 5.2.4 Quadrature Target

Selecting the “Quadrature Target” tab will open the screen as shown in Figure 5.18. This screen is used to set and view the Target Input Attenuation. An acceptable range for nominal operation is +/- 256 to +/- 1024 counts with an average range to obtain of +/- 512 counts. The “Target Input Attenuation” adjustment, which is found in Section 5.2.1.2, will either double this signal strength if you decrease it’s value by 1, or it will cut the signal strength in half if you increase it’s value by 1. Using the slide bar or directional arrows, adjust as needed to meet +/- 512 counts range.

Note that this is an attenuation value. Increasing the attenuation will decrease the signal strength, and vice-versa. Since the signal can be doubled or cut it in half, it is not always possible to hit +/- 512, so select the closest setting that meets the range.

The counts are shown on the left side of the screen while the frequency bins are displayed at the bottom of the screen. A magnifying glass is also available at the bottom left of the screen to zoom in or out by using the slide bar.

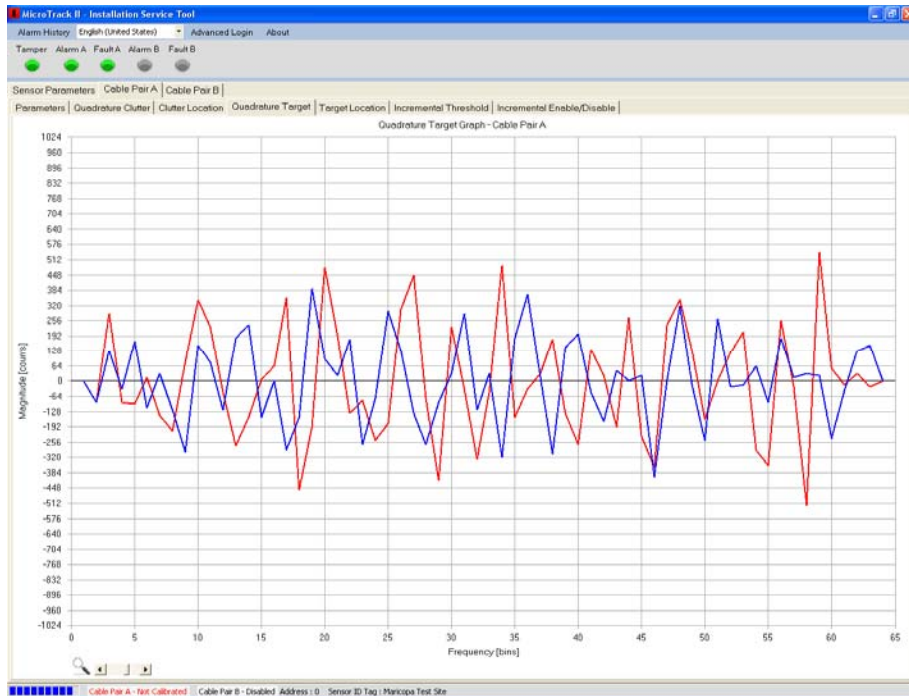


Figure 5.18 – Quadrature Target

## 5.2.5 Target Location

Selecting the “Target Location” tab will open the screen as shown in Figure 5.19. This screen is used for calibrating the cable and viewing activity on the cable. The “red” line displayed on the screen is a default flat line calibration that provides the system a nominal calibration level if calibration has not been performed. The blue line is the ambient noise on the system. To start the calibration process, select the “Start Calibration” button then the “Clear Calibration” button. Walk between the cable pair from the MTP II processor to the cable end where the MTT or MTI are installed and then back to the MTP II processor. Figure 5.20 shows the “Cable Pair A” being calibrated.

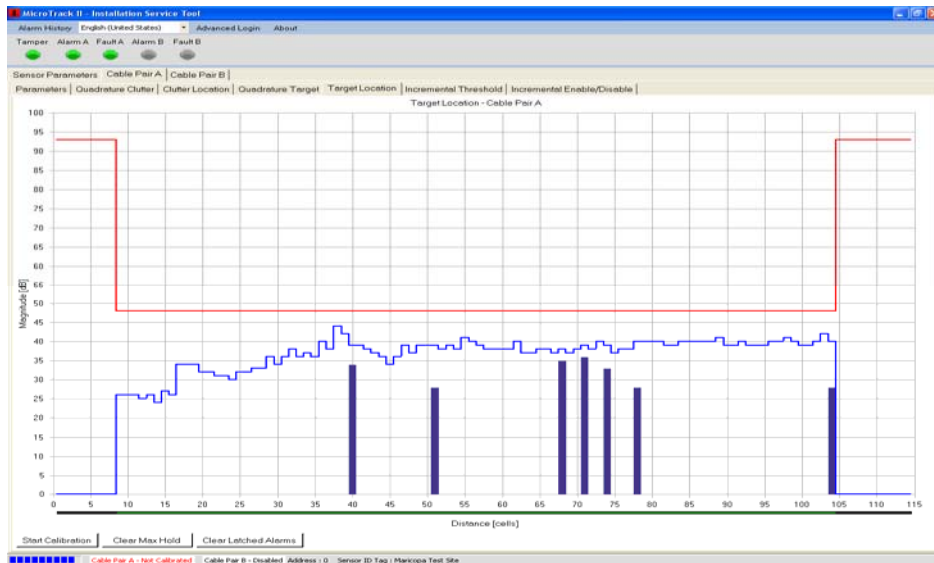


Figure 5.19 – Target Location

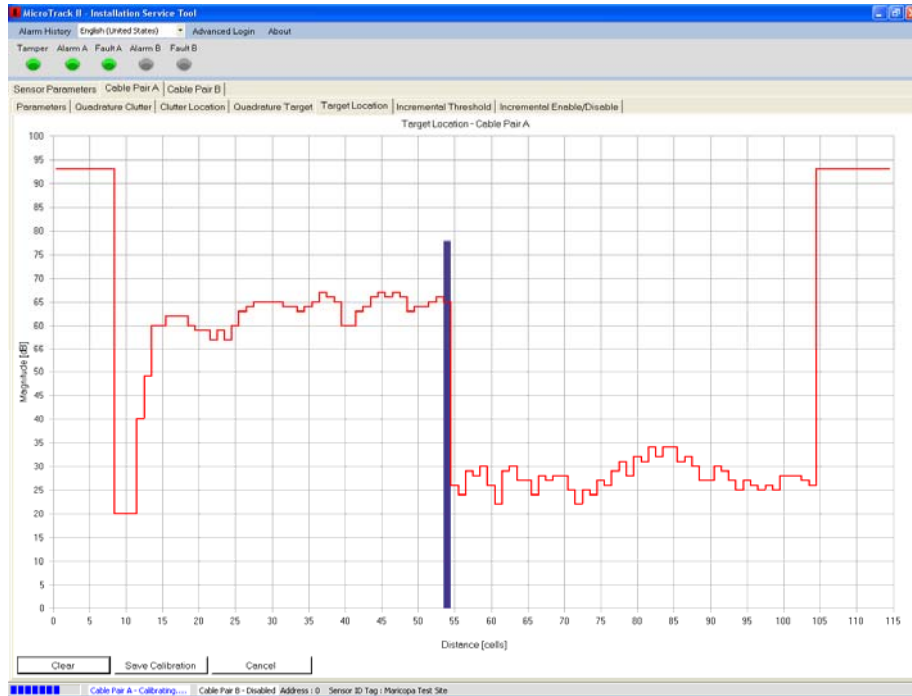


Figure 5.20 – Calibration Walk

Once the calibration walk has been completed select the “Save Calibration” button to save the calibration to the memory of the MTP II processor. Figure 5.21 show a completely calibrated cable pair. After the cable pair has been calibration, the system will now be able to report alarms.

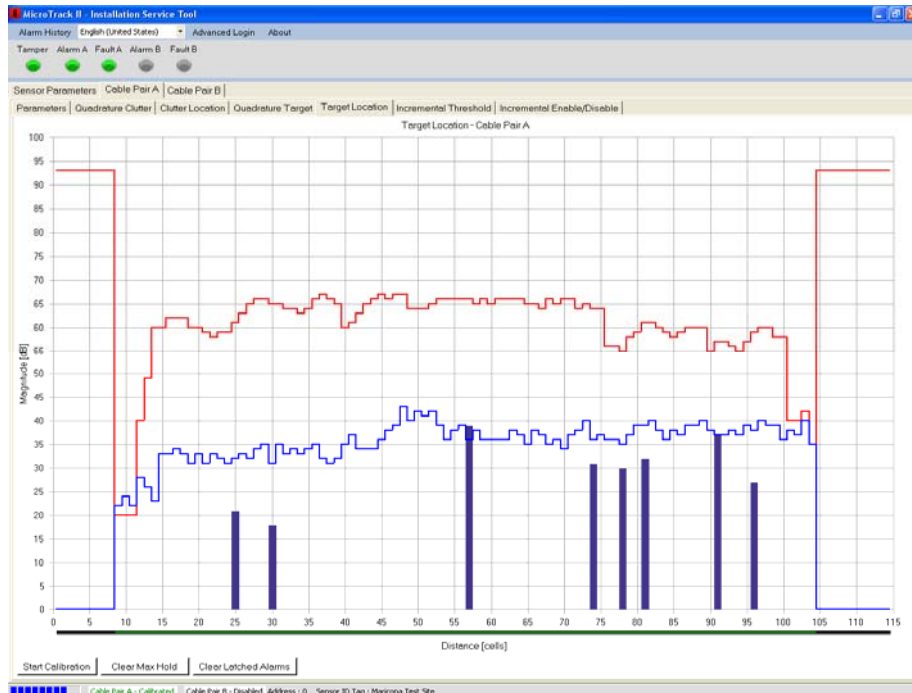


Figure 5.21 – Calibrated Cable



To adjust the threshold (sensitivity) of the entire cable pair, open the “Alarm Threshold Factor” as discussed in Section 5.2.1.4. Increase or decrease the value using the slide bar or directional arrows. This adjustment should be done after site detection requirement testing has been done.

### 5.2.6 Incremental Threshold

Selecting the “Incremental Threshold” tab will open the screen as shown in Figure 5.22. This screen is used for selecting any section of a cable pair and increasing or decreasing the threshold (sensitivity) in the cell(s) selected. Select the “Edit” button to open the editor as shown in Figure 5.23.

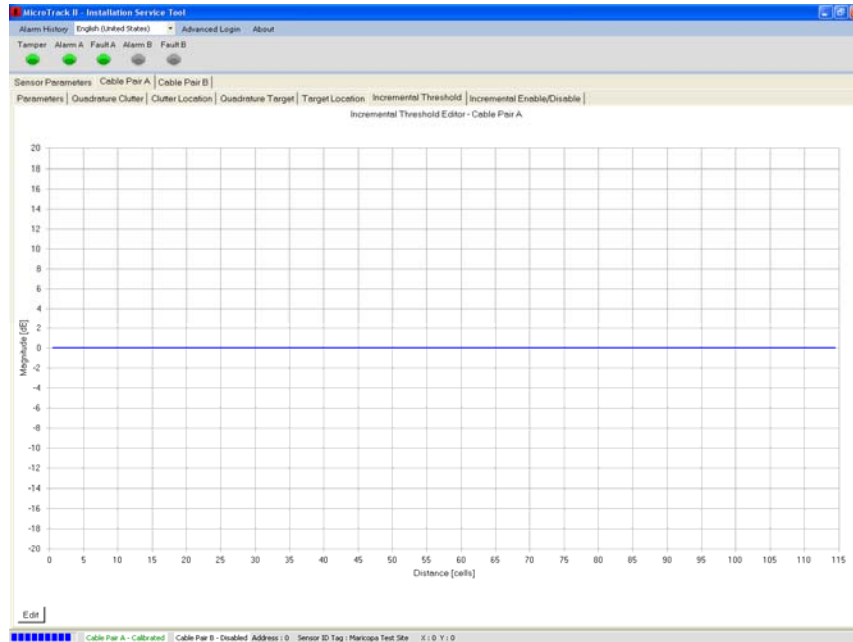


Figure 5.22 – Incremental Threshold

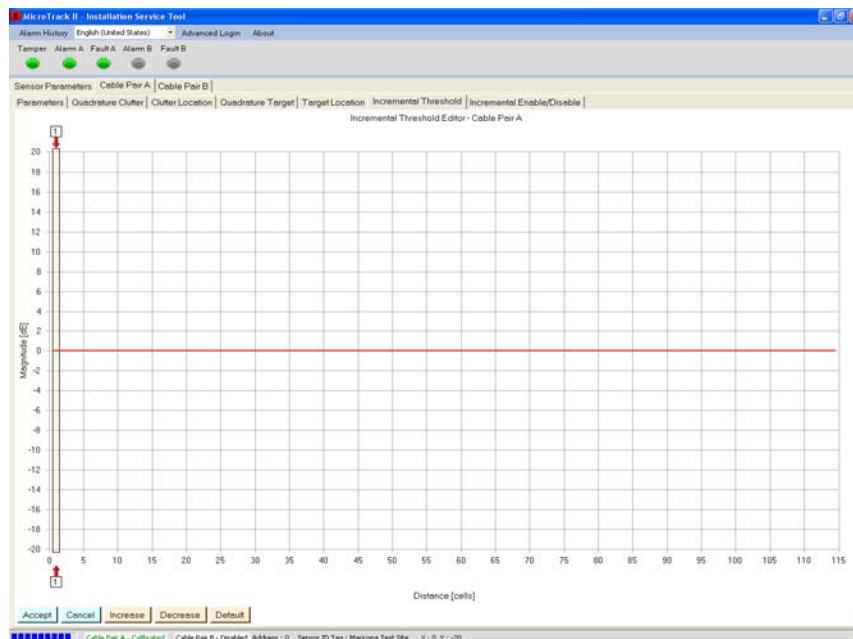


Figure 5.23 – Incremental Threshold Editor

Select the bottom red arrow and position it at the beginning of the cell(s) to be edited. Select the top red arrow and position it at the end of the cell(s) to be edited as shown in Figure 5.24. As the arrow is moved across the screen it will display the cell number associated with its location. In the Figure 5.24 example the cells from 40 to 50 are to be changed. The default value is 0dB. In Figure 5.24 the threshold is being changed 6dB by using the “Increase” button (increases the Threshold in these cells) and is shown with the red line. The adjustments are made in 1 dB steps. The coordinates at the bottom of the screen show the mouse to be at cell 45 with a 6dB change.

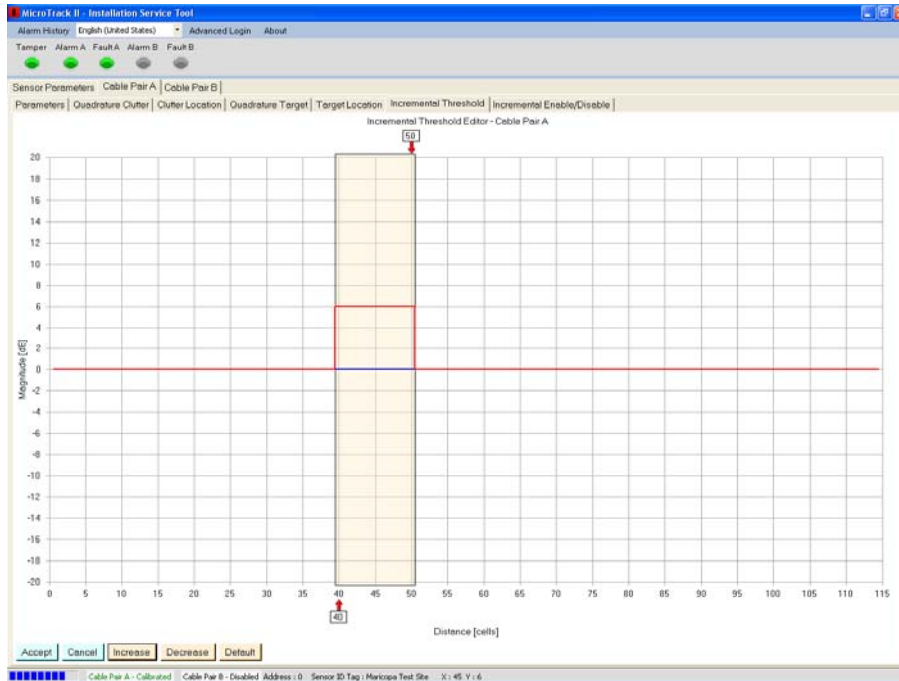


Figure 5.24 – Incremental Threshold Edits

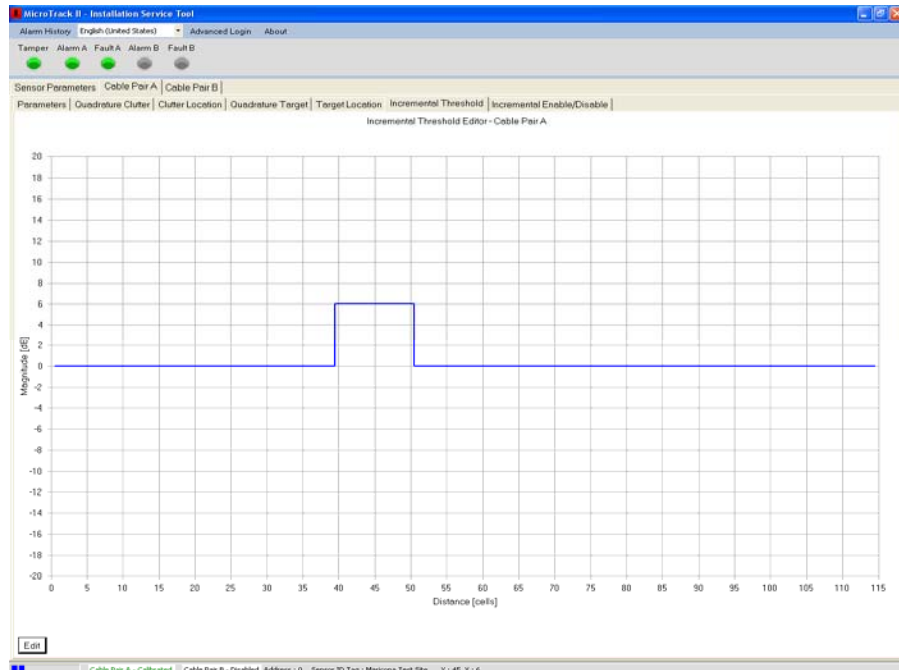


Figure 5.25 – Incremental Threshold Edits

Once the threshold has been changed using the “Increase” or “Decrease” buttons to the required level, select the “Accept” button to save the change as shown in Figure 5.25. The change can be stopped by selecting the “Cancel” button or set back to the default setting by selecting the “Default” button. This threshold change can also be seen in the “Target Location” tab.

### 5.2.7 Incremental Enable/Disable

Selecting the “Incremental Enable/Disable” tab will open the screen as shown in Figure 5.26. This screen is used for selecting any section of a cable pair and making it “Active (Enabled)” or “Inactive (Disabled)” in the cell(s) selected. *This must be done for the start and end of each cable pair.* Select the “Edit” button to open the editor as shown in Figure 5.27.

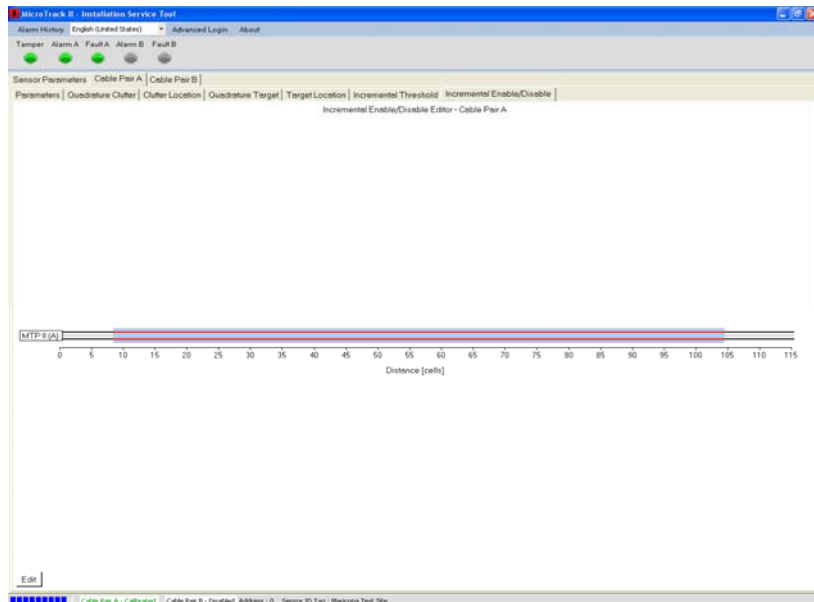


Figure 5.26 – Incremental Enable/Disable

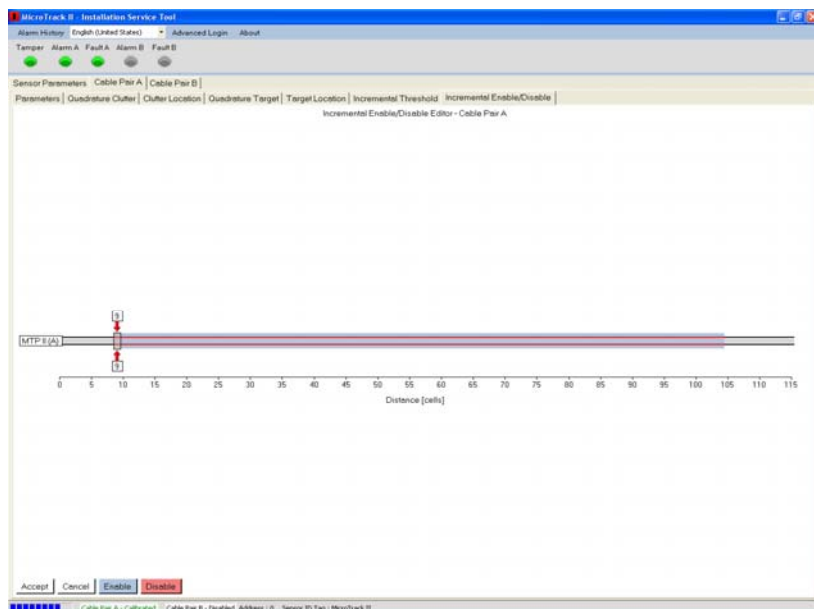


Figure 5.27 – Incremental Enable/Disable Editor

Select the bottom red arrow and position it at the beginning of the cell(s) to be edited. Select the top red arrow and position it at the end of the cell(s) to be edited as shown in Figure 5.28. As the arrow is moved across the screen it will display the cell number associated with its location. In the Figure 5.28 example the cells from 100 to 104 are being “Disabled” as cell 100 is the last active detection cell. Cells 9 to 13 have also been disabled as detection is to begin in Cell 14.

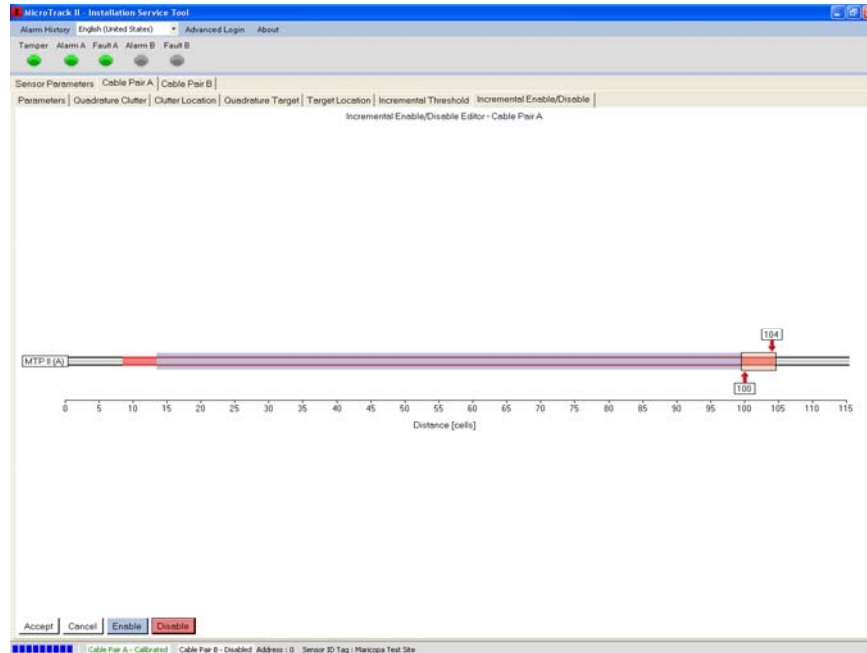


Figure 5.28 – Incremental Enable/Disable Edit

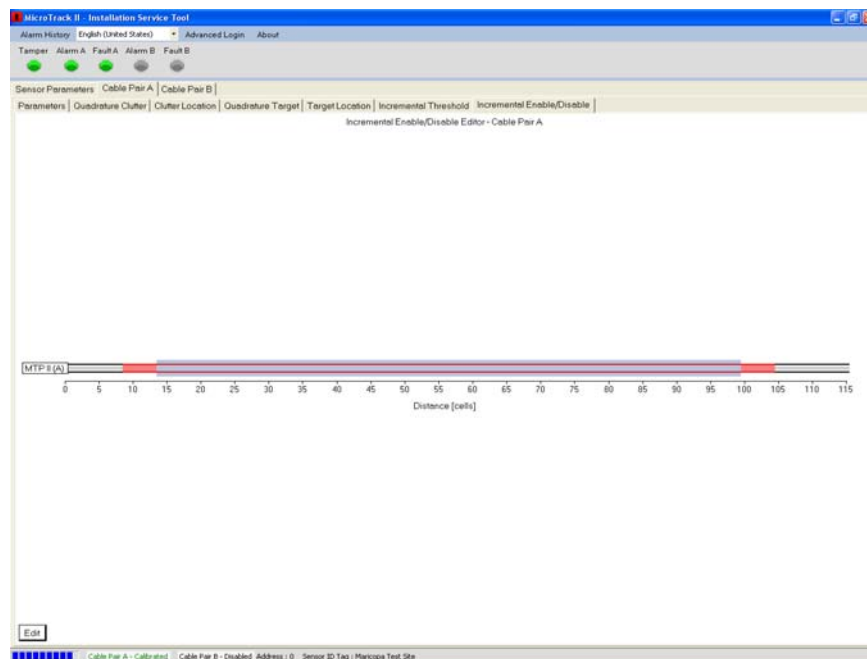


Figure 5.29 – Incremental Enable/Disable Change

Once the cell locations have been set, select the “Enable” or “Disable” button to make the change as shown in Figure 5.29. This start and end setting can also be seen in the “Target Location” tab as shown in Figure 5.30.

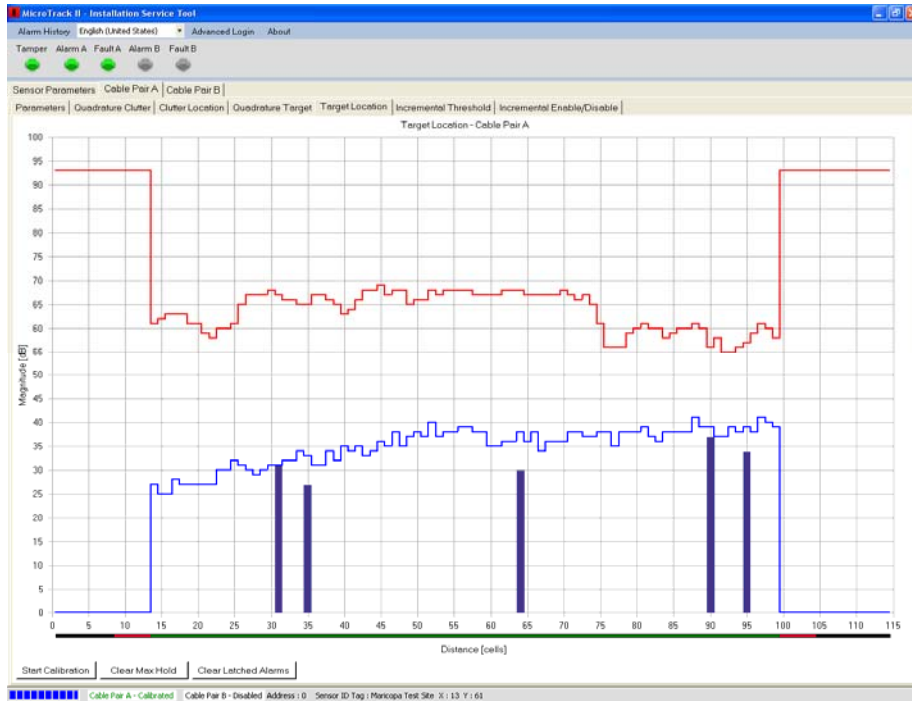


Figure 5.30 – Target Location with Starting/Ending Cell Disabled

## 5.2.8 Target Location Alarm

Figure 5.31 shows the Target Location screen with a single alarm. Moving the mouse pointer over the alarm peak will show the location and amplitude at the bottom of the screen. In this example the alarm is in cell 25 with amplitude of 74dB.

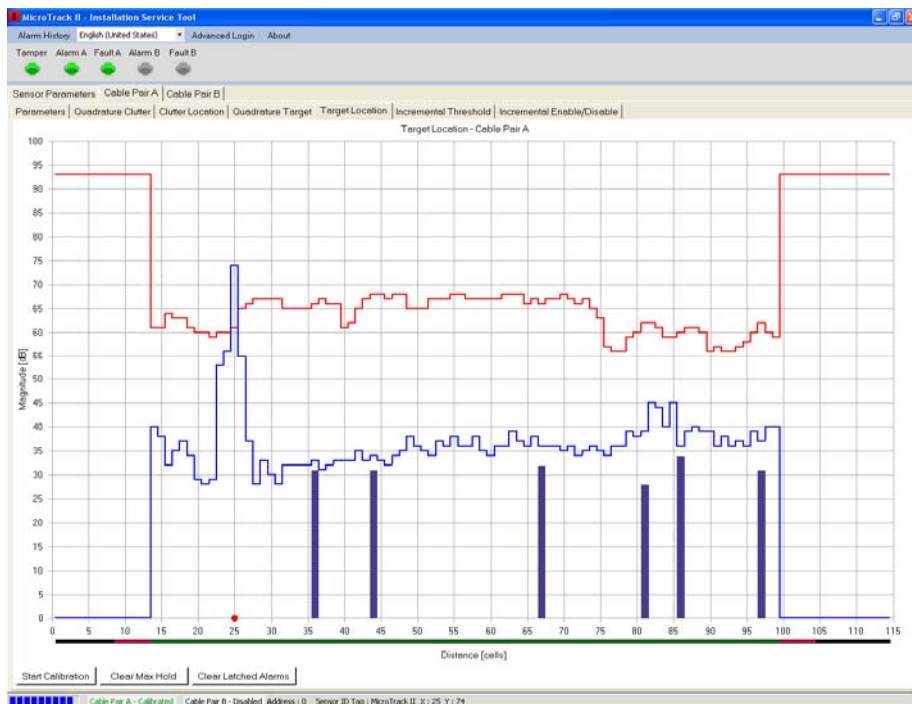


Figure 5.31 – Target Location with Single Alarm

## 5.3 Alarm History

Selecting the “Alarm History” menu will open two (2) options: Erase Alarm History and Retrieve from Device as shown in Figure 5.32. It can be opened from any tab.



Figure 5.32 – Erase or Retrieve Alarm History

### 5.3.1 Erase Alarm History

Selecting the “Erase Alarm History” menu will erase all alarm activity stored in the MTP II processor. A dialog box will open after it has been selected stating “Are you sure you want to erase the Alarm History” with a “Yes” and “No” button. To erase: select “Yes” and to cancel select “No”.

On a new installation this function should be done before testing the system to set the threshold and/or incremental threshold for proper detection requirements. This way only the data from the current testing is retained in the processor.

On an existing installation this function should be done after the data from the processor has been retrieved, evaluated and any adjustments made from the relevant information.

### 5.3.2 Retrieve from Device

Selecting the “Retrieve from Device” menu will retrieve all alarm activity stored in the MTP II processor. The alarm buffer in the MTP II processor will store up to 1024 records. When selected a status bar at the bottom of the screen will show the retrieval process as shown in Figure 5.33. When the download is complete the status bar will disappear.



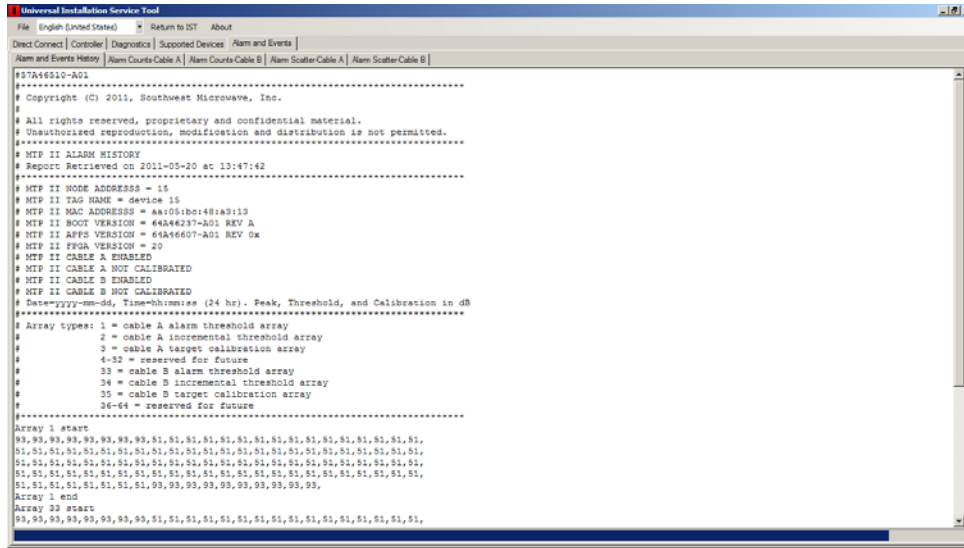


Figure 5.33 – Alarm History Retrieve

The alarm history report as shown in Figure 5.33 will display a header with document number, copyright information, report retrieval time, node address, tag name, mac address, software version, CPLD version, Cable A and Cable B status, array types, array start and end (threshold value in that cell) and the alarm information.

The alarm history log format will have an index number (last entry is always on top), entry type (alarm, masked alarm, fault, tamper, notice and service), date, time and comment. For cable pair alarms it will also list the cable pair (A or B), cell number and peak signal in that cell, threshold in that cell, calibration in that cell and ASV value. A fault will also list the cable pair. A Masked Alarm (MALARM) is an event that would have been declared an alarm but occurred during the Masking Time or Masking Window parameter setting.

```
#57A46510-A01
#*****
# Copyright (C) 2011, Southwest Microwave, Inc.
#
# All rights reserved, proprietary and confidential material.
# Unauthorized reproduction, modification and distribution is not permitted.
#*****
# MTP II ALARM HISTORY
# Report Retrieved on 2011-06-29 at 11:41:54
#*****
# MTP II NODE ADDRESS = 0
# MTP II TAG NAME = Maricopa Test Site
# MTP II MAC ADDRESS = aa:05:18:37:a3:13
# MTP II BOOT VERSION = 64A46237-A01 REV A
# MTP II APPS VERSION = 64A46607-A01 REV 0
# MTP II FPGA VERSION = 20
# MTP II CABLE A ENABLED
# MTP II CABLE A CALIBRATED
# MTP II CABLE B DISABLED
# MTP II CABLE B NOT CALIBRATED
# Date=yyyy-mm-dd, Time=hh:mm:ss (24 hr). Peak, Threshold, and Calibration in dB
#*****
# Array types: 1 = cable A alarm threshold array
```

```

#       2 = cable A incremental threshold array
#       3 = cable A target calibration array
#       4-32 = reserved for future
#       33 = cable B alarm threshold array
#       34 = cable B incremental threshold array
#       35 = cable B target calibration array
#       36-64 = reserved for future
#*****
Array 1 start
93,93,93,93,93,93,93,93,93,93,93,93,93,93,93,93,61,62,63,63,63,61,61,59,58,60,60,
61,65,67,67,67,68,67,66,66,65,65,67,67,66,65,63,64,66,68,68,69,67,68,68,
65,66,66,68,67,68,68,68,68,67,67,67,67,68,68,68,67,67,67,67,68,67,66,
67,65,61,56,56,56,59,60,61,60,60,58,59,60,60,61,60,56,58,55,55,56,57,59,
61,60,58,93,93,93,93,93,93,93,93,93,93,93,93,93,93,
Array 1 end
Array 33 start
93,93,93,93,93,93,93,93,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,
21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,
21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,
21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,21,
21,21,21,21,21,21,21,21,93,93,93,93,93,93,93,93,93,93,
Array 33 end
#*****
# Alarm History Log Format:
# INDEX, ALARM, DATE, TIME, CABLE, SC, PEAK, THRESH, CALIB, ASV, COMMENT
# INDEX, FAULT, DATE, TIME, CABLE, , , , , , COMMENT
# INDEX, TAMPER, DATE, TIME, , , , , , , COMMENT
# INDEX, NOTICE, DATE, TIME, , , , , , , COMMENT
# INDEX,SERVICE, DATE, TIME, , , , , , , COMMENT
#*****
# Alarms in process will be logged after alarm history flash buffer is erased
#*****
1, MALARM, 2011-06-29, 11:39:54, A, 45, 78, 69, 81, -1, MASKED ALARM
2, ALARM, 2011-06-29, 11:39:40, A, 40, 75, 63, 75, -1, CABLE ALARM
3, MALARM, 2011-06-29, 11:39:26, A, 36, 76, 67, 79, -1, MASKED ALARM
4, MALARM, 2011-06-29, 11:39:26, A, 37, 76, 67, 79, -1, MASKED ALARM
5, ALARM, 2011-06-29, 11:39:14, A, 34, 75, 65, 77, -1, CABLE ALARM
6, ALARM, 2011-06-29, 11:38:57, A, 28, 79, 67, 79, 0, CABLE ALARM
7, MALARM, 2011-06-29, 11:38:43, A, 24, 72, 60, 73, -1, MASKED ALARM
8, MALARM, 2011-06-29, 11:38:41, A, 23, 72, 60, 72, -2, MASKED ALARM
9, MALARM, 2011-06-29, 11:38:41, A, 22, 72, 58, 70, -2, MASKED ALARM
10, ALARM, 2011-06-29, 11:38:30, A, 21, 70, 59, 71, -1, CABLE ALARM
11, MALARM, 2011-06-29, 11:38:19, A, 17, 75, 63, 75, 0, MASKED ALARM
12, MALARM, 2011-06-29, 11:38:19, A, 16, 75, 63, 76, 0, MASKED ALARM
13, MALARM, 2011-06-29, 11:38:10, A, 15, 68, 62, 74, 0, MASKED ALARM
14, ALARM, 2011-06-29, 11:38:08, A, 14, 73, 61, 73, 0, CABLE ALARM
15, SERVICE, 2011-06-29, 11:36:37, , , , , , , UIST II CONNECTED
16, NOTICE, 2011-06-29, 11:36:37, , , , , , , ALM HISTORY ERASED

```

Figure 5.34 – Alarm History

The Service Alarm is generated when the UIST II has been connected or disconnected. Notice alarms are generated from actions such as a MTP II reboot, alarm history erased and file system erased.

Two other tabs are available to view the alarm history and are also used to set the appropriate threshold for the system. These tabs are: Alarm Counts Cable A and Cable B and Alarm Scatter Cable A and Cable B.

### 5.3.3 Alarm Counts Cable A or B

Selecting the “Alarm Counts Cable A or B” tab will open the Alarm Counts screen as shown in Figure 5.35. This screen will list all reported alarms and are displayed with a red line on the bottom of the screen in the cell they occurred. It will also list the total amount of alarms from any cell. The bottom of the screen shows the cell number while the left side of the screen shows the number of alarms. Moving the mouse pointer over an alarm count will display the information as an X - Y coordinate in the lower right corner of the screen.

If a cable is “Disabled” and the tabs is selected the screen will show “No Data to be Displayed”.

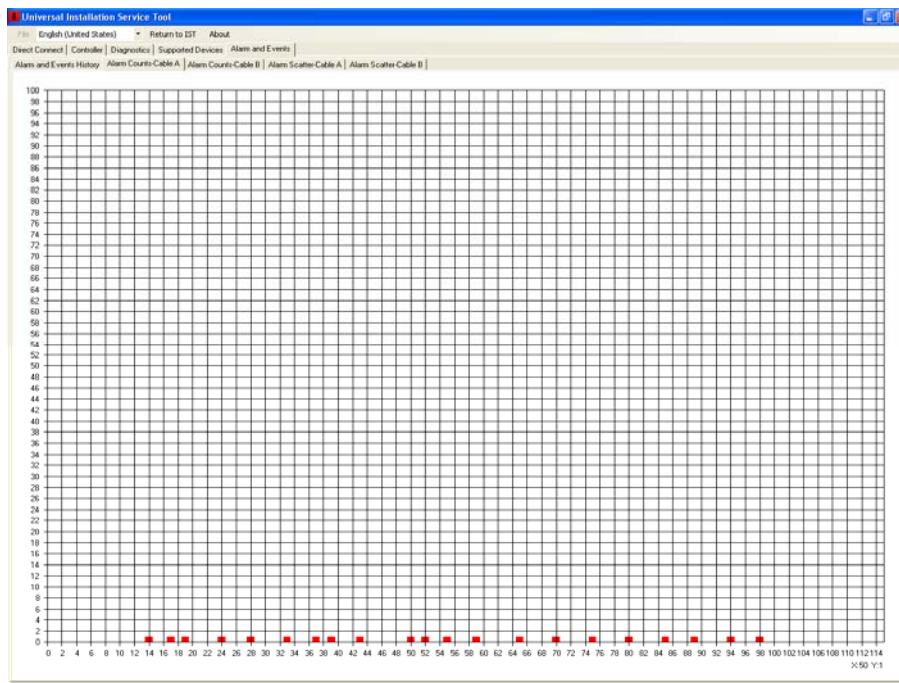


Figure 5.35 – Alarm Counts

### 5.3.4 Alarm Scatter Cable A or B

Selecting the “Alarm Scatter A or B” tab will open the Alarm Scatter screen as shown in Figure 5.36. This screen will list all reported alarms and are displayed as blue dots above the threshold line. The bottom of the screen shows the cell number while the left side of the screen shows the amplitude in dB. Moving the mouse pointer over an alarm point will display the location and amplitude of the alarm as an X - Y coordinate in the lower right corner of the screen.

If a cable is “Disabled” and the tabs is selected the screen will show “No Data to be Displayed”.

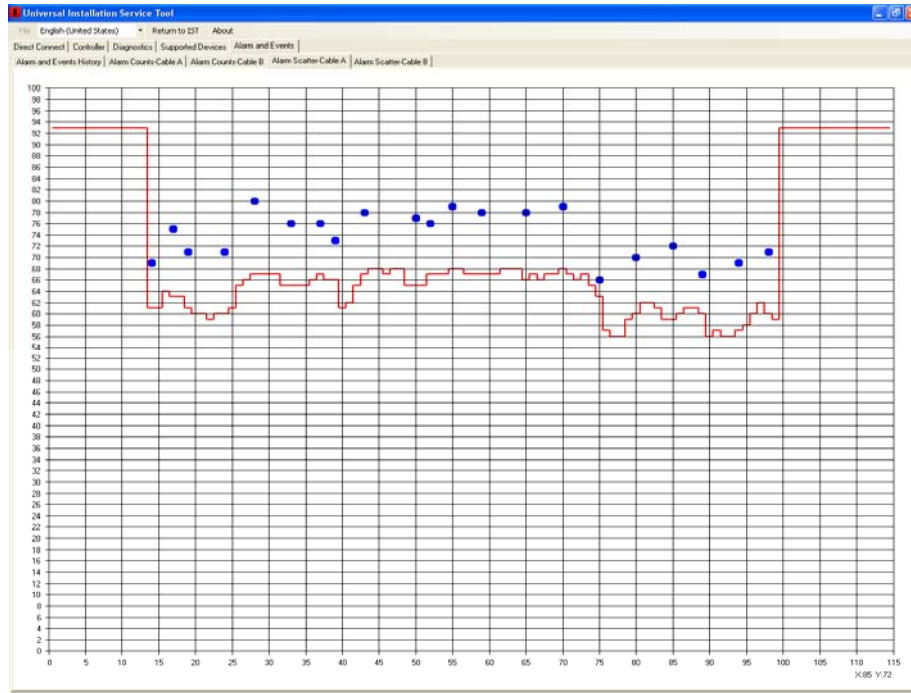


Figure 5.36 – Alarm Scatter

## 5.4 Software Setup and Testing

This manual has covered all the parameter settings required for system operation. The next two sections will cover the software setup steps and testing.

The system should be installed per the MicroTrack™ II Installation and Operation manual. All communications and power wiring should be correctly connected and the proper address for the MTP II set.

### 5.4.1 Software Setup

The following procedure is a step by step process to setup the MTP II processor. Start by connecting to the MTP II as described in Section 3.1.1 or 3.1.2.

1. Select “Restore Factory Defaults” from the Sensor Settings tab (Section 5.1.7).
2. Set the “Sensor ID Tag” from the Sensor Settings tab (Section 5.1.1).
3. Set the “Sensor Date/Time” from the Sensor Settings tab (Section 5.1.2).
4. Set the cable pair to Enabled or Disabled from the Sensor Settings tab (Section 5.1.4).
5. Set the correct “Address” from the Sensor Settings tab (Section 5.1.8).
6. Check the “Quadrature Clutter” for gain setting (Section 5.2.2)
7. Check and set the “Clutter Location” (Section 5.2.3).
8. Check the “Quadrature Target” (Section 5.2.4) and set “Target Input Attenuation” (Section 5.2.1.2).
9. Set “Security Level” from the Sensor Parameters tab (Section 5.2.1.3)
10. Calibrated the cable pair(s) (Section 5.2.5).
11. Set the beginning and ending detection cells (Section 5.2.7).
12. Test by walking, running or crawling at 10 foot (3m) intervals along the cable pair length.
13. Retrieve the Alarm History File and display with the Alarm Scatter for Cable A and then Cable B (Section 5.3).

14. Find the average dB level for all retrieved testing.
15. Return to the UIST II Configuration Parameters screen and adjust the Threshold Factor to be 1 dB below the average level found in step 14.
16. Retrieve Alarm History File and display with the Alarm Scatter to verify that adjustment is correct.

#### **5.4.2 Testing**

After steps 1 through 17 have been completed for each MTP II, the system is now ready for functional testing. The functional testing is based on the user's requirements. Typically this would be walking, running, jumping and crawling intrusion attempts to generate alarms. The testing person should weight at least 77 pounds (35 kilograms).

Make any adjustments to the system parameters that may be required from the testing results such as Alarm Threshold adjustment, Incremental Threshold adjustments, Alarm Masking Time, Alarm Masking Window and Alarm Hold Time and retest if necessary.