



SIGA-HDT Signature Handheld Diagnostic Tool

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Version This document applies to SIGA-HDT version 002.

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FCC compliance This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Environmental class IEC: 3K5 (Indoor use only)



Battery directive: This product contains a battery that cannot be disposed of as unsorted municipal waste. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info.

Contact information For contact information, see www.edwardsfiresafety.com.

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Important information

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Installation in accordance with this manual, applicable codes, and the instructions of the authority having jurisdiction is mandatory.

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Advisory messages

Advisory messages alert you to conditions or practices that can cause unwanted results. The advisory messages used in this document are shown and described below.

Note: Note messages advise you of the possible loss of time or effort. They describe how to avoid the loss. Notes are also used to point out important information that you should read.

Chapter 1

About the SIGA-HDT

Summary

The SIGA-HDT is a handheld standalone diagnostic tool intended to help users locate and resolve issues during installation or on an existing system. The tool can be used to initialize a Signature loop before connecting to a control panel or it can be used for diagnosis of an existing loop. The SIGA-HDT is shipped with the Signature Diagnostic Tool Software (*P/N 7350894*) which is compatible with Windows 7 and 10 Operating systems.

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Functions of the SIGA-HDT

The SIGA-HDT comes with a USB drive containing a setup program that installs the Signature Diagnostic Tool Software and the SIGA-HDT Operations User Guide (P/N 3102424-EN) on your PC. Also included are the USB charging cable, AC USB charging adapter, SIGA-HDT Installation sheet (P/N 3102422-EN), a 10-position terminal connector block, and a 4-position terminal connector block.

In operation, the SIGA-HDT performs the following functions:

1. Initializes the loop (i.e. identifies all devices connected to the SLC).
2. Restores the loop.
3. Performs Map Analysis on detectors and modules (contact analysis and map consistency) and identifies failed units.
4. Performs Dirty Level analysis on photo detectors and identifies detectors that require cleaning.
5. Allows the user to program new device address to a detector or module. See notes 1 & 2.
 6. Perform maintenance on a single detector.
7. Reinitialize the device address of detectors or modules on a loop to zeros.
8. Single device diagnostics
9. Loop history, etc.

Detectors and modules that fail contact analysis or map consistency are possible causes for map faults and map mismatch troubles.

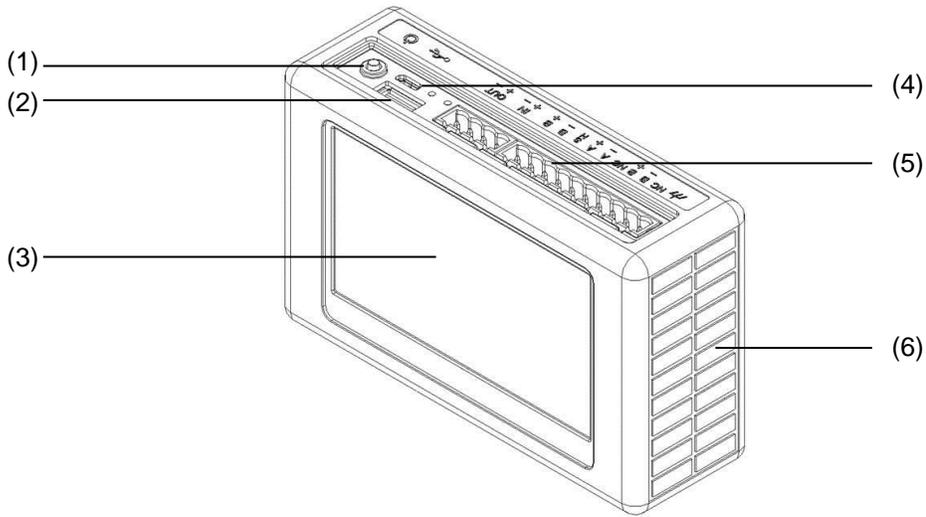
In addition, the SIGA-HDT can help identify the following problems:

1. Reversed IN/OUT wiring
2. Loops within loops
3. Short circuit in the SLC
4. False EOL devices or T-taps
5. Ground fault problems

Notes;

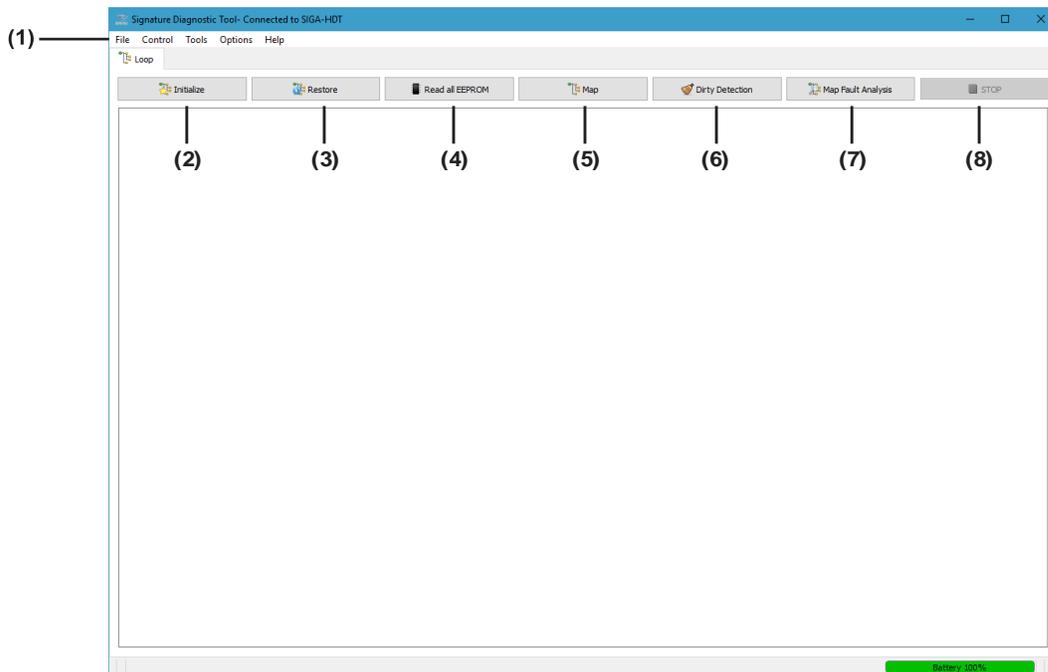
- 1: The user can use the SIGA-HDT to program a new device address to a new unit that can be used to replaced a unit on a mapped enabled loop.
- 2: An unprogrammed device trouble condition will still exist on a disabled mapped panel after a unit is replaced with a newly programmed device.

Figure 1: SIGA-HDT Device



- | | |
|----------------------------|-------------------------------|
| (1) Power button | (5) Loop Interface connectors |
| (2) USB drive | (6) Antistatic Silicone cover |
| (3) Touch screen interface | |
| (4) Micro USB | |

Figure 2: SIGA-HDT PC Software



- | | |
|----------------------------|----------------------------|
| (1) Menu items | (5) Map button |
| (2) Initialize button | (6) Dirty Detection button |
| (3) Restore button | (7) Map Fault Analysis |
| (4) Read all EEPROM button | (8) STOP button |

Chapter 2

A Review of Mapping

Summary

This chapter gives detailed overview of mapping and some causes of mapping faults on a Signature loop. It is important for users to understand the mapping process in order to troubleshoot effectively.

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What is mapping?

The mapping process enables the system to determine the position and communication integrity of each device in the Signature loop with respect to the other devices.

Why map a system?

The electrical installation (wiring) is usually performed by installers. The wiring can be more easily verified if the system is mapped.

- The maintenance personnel can replace sensors without a service call if simple system maintenance is required. The loop controller restores a dirty/maintenance trouble if a detector is replaced with a sensor that matches the family type and position in the circuit that mapping is enabled. Using the SIGA-HDT to write a maintenance date to the detector can clear the maintenance trouble on the panel faster. It usually takes up to 24 hours to clear maintenance trouble on the panel when the maintenance date is not updated with the SIGA-HDT.
- Mapping improves overall system integrity.
- Mapping is valuable for troubleshooting field wiring / device issues on the SLC

The mapping process

All fire alarm systems that support the Signature Series SLC use the following initialization sequence.

- Creates a database containing the serial numbers of all devices communicating on the loop.
- Assigns a unique short address (SA) between 0 and 255 to each serial number.
- Detectors short address (SA) – 0 and 127.
- Modules short address (SA) – 128 – 255.
- Closes all isolator bases and isolator modules.

Once the system has determined that no more devices are in the new start process, the mapping procedure begins.

The Signature Series mapping command is a broadcast command sent to all devices. It instructs a single, specific device to draw current (annunciate) while all other devices in the SLC measure the current drawn (listen). Depending on its location in the circuit, a detector or module can measure and report the current to the panel or SIGA-HDT Installation Tool.

The procedure initiates the mapping command for each SLC device as the annunciating device creates a response table that allows the system to generate the map overview. Figure 3 shows how the SLC controller or SIGA-HDT would map devices 1 through 7. Table 1 shows the resulting map analysis.

Figure 3: Overview of mapping process

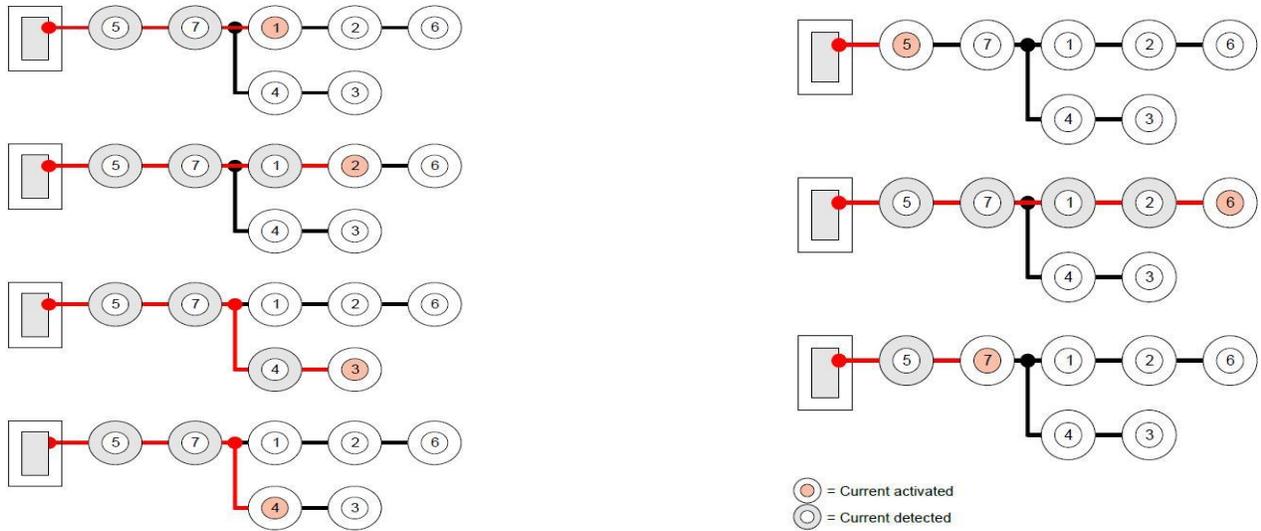


Table 1: Map analysis summary table

| | | Current detected | | | | | | |
|-------------------|---|------------------|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Current activated | 1 | O | | | | X | | X |
| | 2 | X | O | | | X | | X |
| | 3 | | | O | X | X | | X |
| | 4 | | | | O | X | | X |
| | 5 | | | | | O | | |
| | 6 | X | X | | | X | O | X |
| | 7 | | | | | X | | O |

O = Current activated
X = Current detected

Figure 4: Mapping detector 2

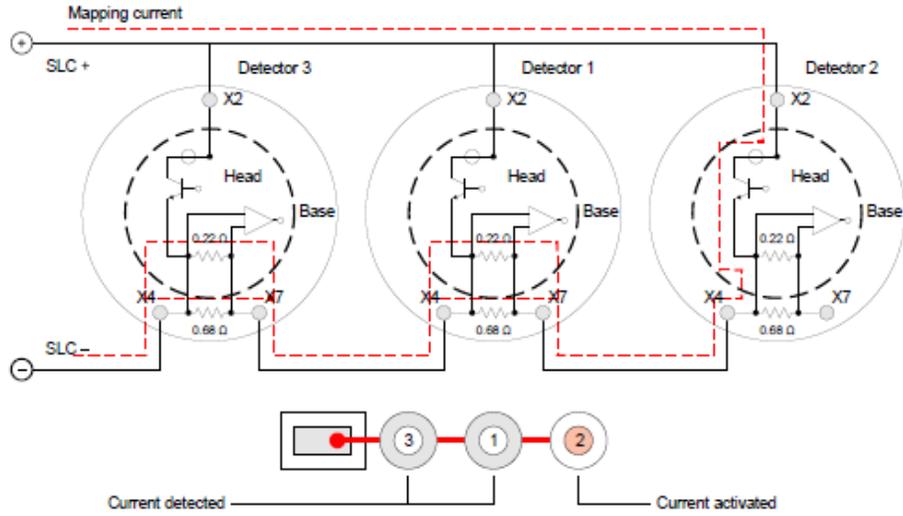
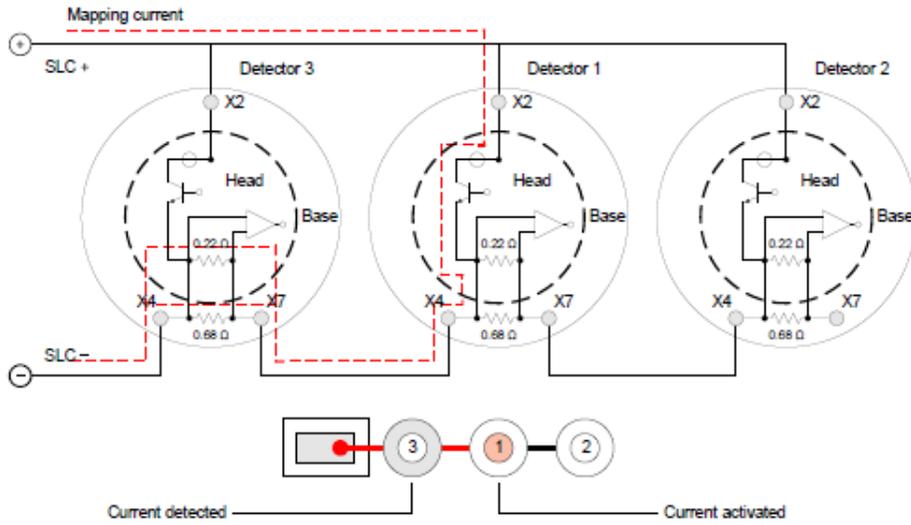


Figure 5: Mapping detector 1



Causes of map faults on a loop

What are the possible causes of map faults? The most common causes of Map Faults are:

1. Loose wire connections on detector bases, module terminals, at the SLC card, or at a T-tap. It's important to ensure that connections are secure and that the wire at a terminal is mechanically stable. Loose connections cause contact resistance variations due to temperature changes, and this results in an intermittent connection.
2. Over-tightening a detector base onto the back box, causing it to warp, resulting in bad or intermittent connections with the detector head.
3. Replacing like devices in a SLC that has been left balanced.
4. Replacing devices with models that differ from the ones removed.
5. Adding new devices onto an existing SLC.
- 6 Rewiring an existing SLC.
7. Defective devices.
8. More T-Taps in the SLC than the maximum allowed for the system.
9. Resistance or capacitance in the field wiring in excess of that supported by the system.
10. Reversed polarity. Connecting the SLC+ wire to the device SLC- terminal.

Note:

When you troubleshoot map faults, you should be prepared to investigate and eliminate any of these causes. The SIGA-HDT can help you isolate potential mapping faults as well as contact integrity to specific devices.

Chapter 3

Using the SIGA-HDT

Summary

This chapter provides detailed information about the SIGA-HDT in order to give the user a basic understanding of its operations. The SIGA-HDT can be used during installation of a new system or for diagnosing a system previously connected to a fire panel.

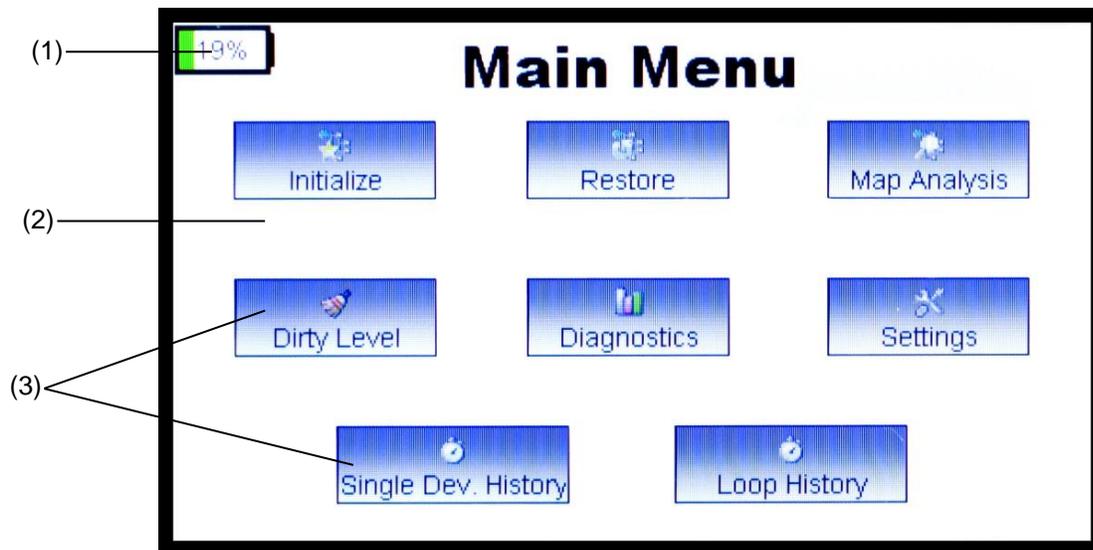
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Main Menu

The SIGA-HDT main menu displays all the buttons needed to aid installations and diagnosis of an Signature loop system.

Figure 6: Main Menu buttons



- (1) Battery Status
- (2) Touch screen interface
- (3) Function buttons

When using installation or diagnostic mode, the user must wait 30 seconds for all devices on the loop to power down before connecting to the panel or the SIGA-HDT. Disregarding this may cause problems with the detectors.

If the loop has not been initialized on the SIGA-HDT, the following steps are necessary:

1. Perform the **Initialize function** to build the SIGA-HDT database. The loop initialized database is saved to the SIGA-HDT memory
2. Perform other installation functions (Map Analysis and Dirty Level). Every time a function is performed in the loop, the SIGA-HDT will update its database to reflect the information from the function

If the loop was previously initialized and the loop was disconnected from the SIGA-HDT without any changes to the original loop, the following steps are necessary:

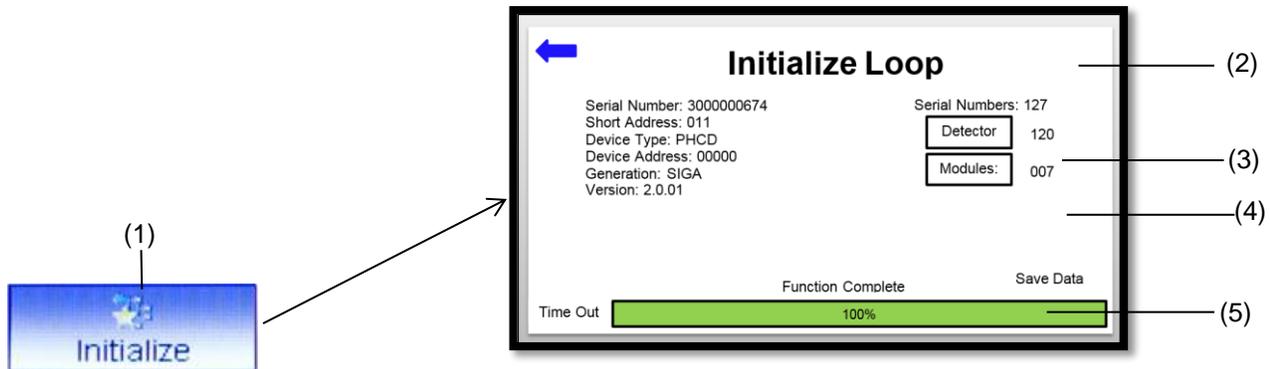
1. Perform the **Restore function** to verify the number of devices present on the loop
2. Perform other installation functions (Map Analysis and Dirty Level). Every time a function is performed in the loop, the SIGA-HDT updates its database to reflect the information from the function

Note:

1. A new database is created and saved each time the loop is initialized
2. Always connect the SIGA-HDT to a charger when power falls below 20% in order to keep the functions working correctly

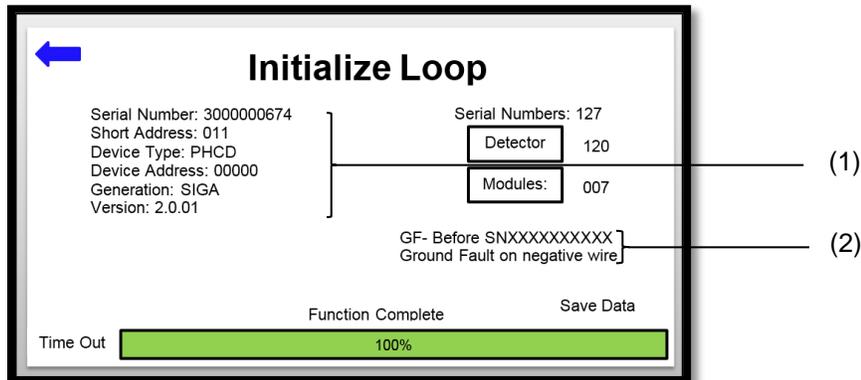
Initialize Loop Function

Figure 7: Initialize loop function



- (1) Initialize button
- (2) Initialize loop screen
- (3) Number of detectors initialized
- (4) Modules button
- (5) Timeout bar

Figure 8: Initialize loop Page



- (1) Last initialized device information
- (2) Ground fault detection status

The initialize loop function enables the device to perform some initial actions such as resetting all devices and opening all isolators. This function uses the device serial number to assign new short addresses, read device address, version numbers, device types, shorts on the SLC, and checks for ground fault on the SLC loop. The initialized data is stored in the “Stored Database Info” page of the display and can be accessed by pressing the Loop History button.

The Initialize Loop Process:

1. Press the **Initialize** button on the touch screen
2. Short addresses are assigned to detectors and modules on the loop
3. Details of each device are displayed as the function progresses. A counter displays the total devices, along with a counter for detectors, modules, and/or device errors.
4. The SIGA-HDT sends a command to all device to close their isolators and will attempt to find all devices again
5. The timeout bar shows when initialization is complete
6. SIGA-HDT erases the existing data in its memory and saves the new device data to memory. If save is successful, the “Saved Data” is displayed
7. User may press the “X” button/icon on the top right corner to stop the function at any time during the initialization process
8. Press the back button to go to the previous screen
9. User may press the module or device counter button when execution is complete and a new screen with a counter for the device types will appear. The back button on this screen will take the user back to the Initialization screen

Ground Fault Detection:

1. Using a wire, connect terminal 10 of the 10-POS to Chassis ground (or Earth ground).
2. Press the Initialize button on the GUI.
3. Ground fault would be displayed if it exists at the SIGA-HDT, otherwise nothing would be displayed.

Note:

1. Number of detectors and modules are shown after the initialize process is complete
2. Detectors and Modules buttons appear after processing is complete. Press either button to navigate to the detector or module type counters
3. Ground fault status would be displayed after the initialization process is complete and if there exist a ground fault.

Device Errors Function

This function gives a user more information about an error present during initialization so that those errors can be addressed.

Figure 9: Initialized Loop with Device Error

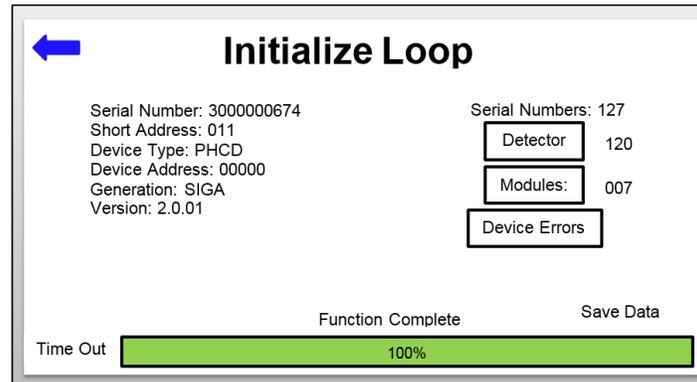
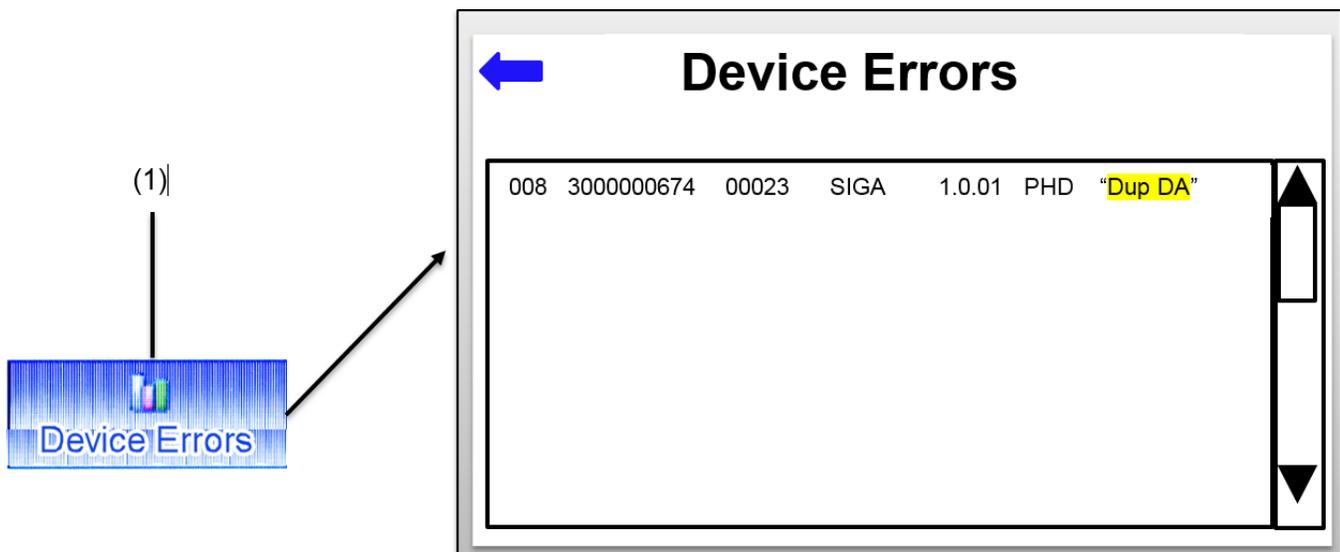


Figure 9 shows a completed initialization with a Device Errors button. The Device Errors button only appears when there is an error on a device during initialization. Press the Device Errors button to see more details about the device with error.

Figure 10: Device Error Screen



The Device Errors Process:

1. Press the **"Diagnostics"** menu button on the Main Menu
2. Press the **"Device Errors"** button and the Device errors info page will display
3. Review error information and press the **"Back arrow"** to return to the previous page

Figure 11: Restore loop function

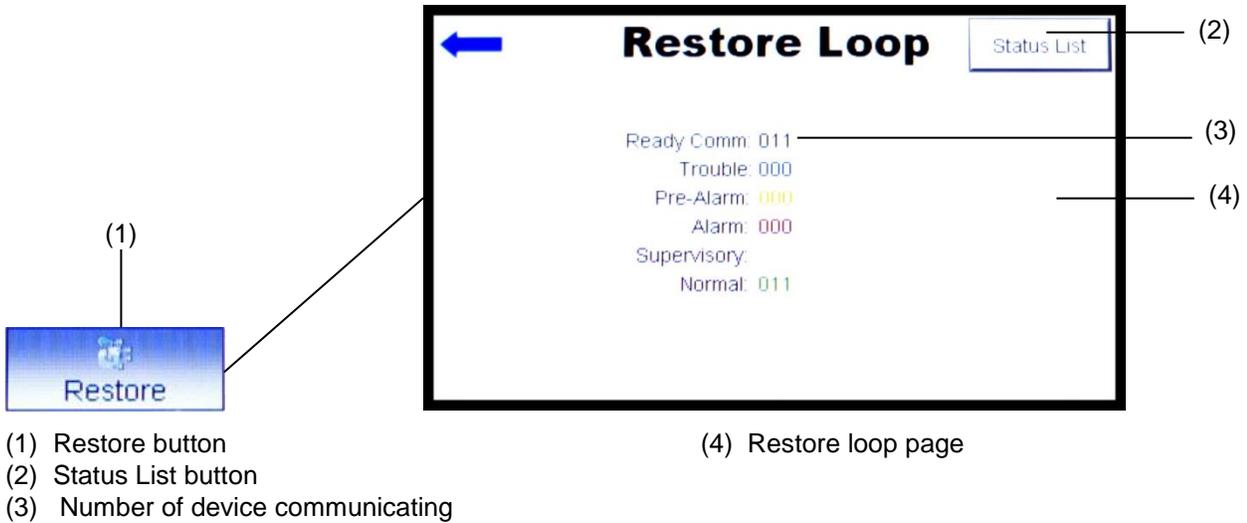


Figure 12: Restore loop Page

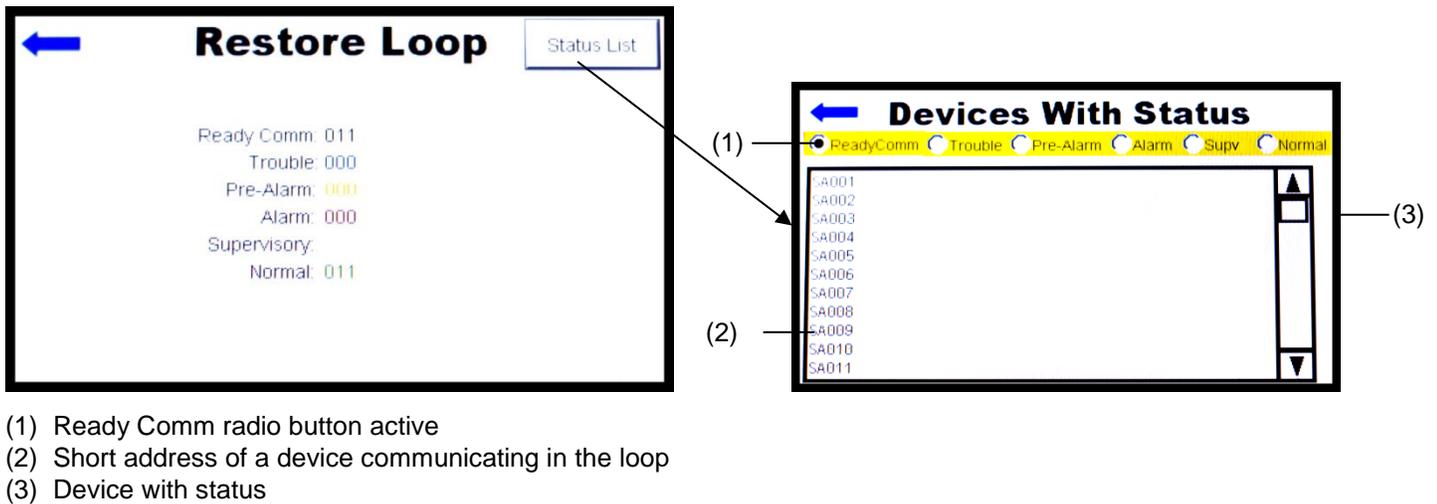


Table 2: Device status description table

| Status | Description |
|------------|---|
| Ready Comm | Total number of devices communicating in the loop |
| Trouble | Devices in trouble |
| Pre-Alarm | Devices that are in pre-alarm |
| Alarm | Devices in alarm |
| Supv | Devices with active supervisory |
| Normal | Devices in normal state |

The Restore Loop Process:

1. Press **Restore** button on the touch screen Figure 11.
2. Confirm if the number of devices on the **Ready Comm.** match the expected devices counts on the SLC

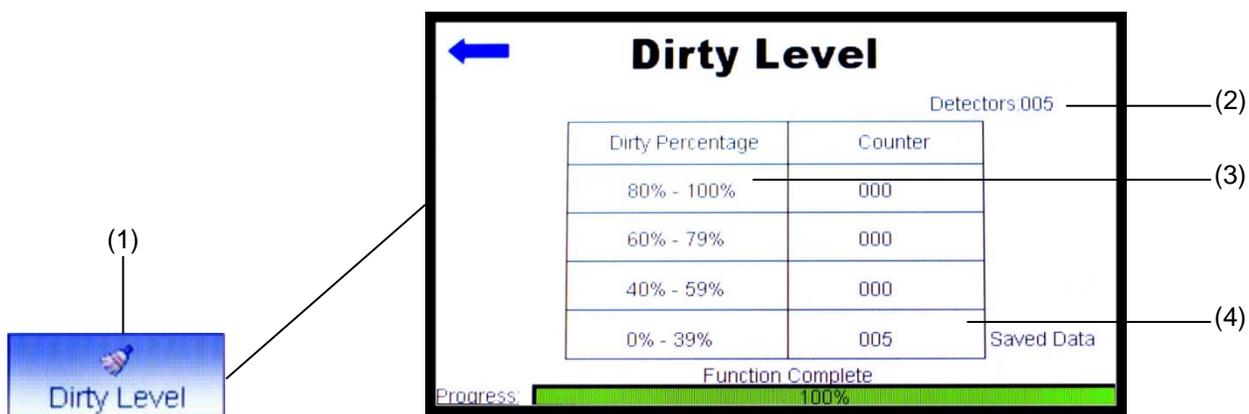
Note:

1. User may press the **status List** on the upper right corner of the restore loop screen to view the device status (Figure 12)
2. Press to select any of the device status radio buttons to display a list of devices in that category (Figure 12)
3. Restore loop runs continuously without the screen going to sleep or timing out. Press the **back** button to return

Dirty Level Function

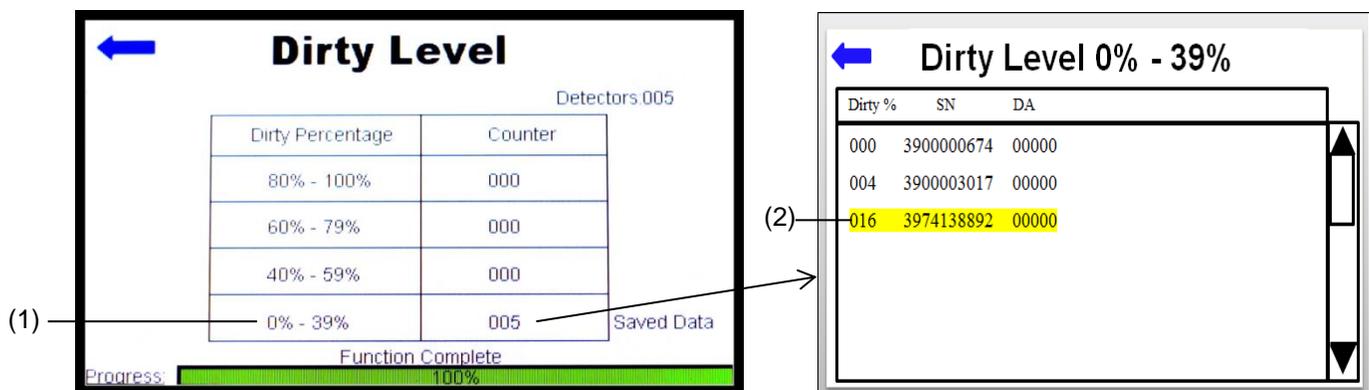
This function is only associated with photo detectors and the function enables the user to determine the dirty level of each photo detector on the loop. After the successful execution of this function, the SIGA-HDT erases the old database of Dirty Levels and replaces it with the new Dirty Level data.

Figure 13: Dirty level Function



- (1) Dirty level button
- (2) Total number of photo detectors
- (3) Dirty level percentage
- (4) Number of detectors with specified dirty level

Figure 14: Dirty Level Page



- (1) Percent dirty level range
- (2) Percent dirty for highlighted photo detector

Dirty Level Process:

1. Press **Dirty Level** button on Main Menu (Figure 13)
2. Counter increments as each photo detector is read and displays dirty level information (Figure 13)
3. User may press the “X” (cancel button) to abort the operation
4. Function Complete will be displayed when execution is successful and data saved
5. Press the counter cell associated with the dirty percentage to be investigated (Figure 13)
6. Press the scroll bar to see more devices on the screen (if more than 10 devices)
7. Press a row to highlight a detector and the detector LED will start blinking or goes steady
8. Press the back button to return to the previous screen

Note:

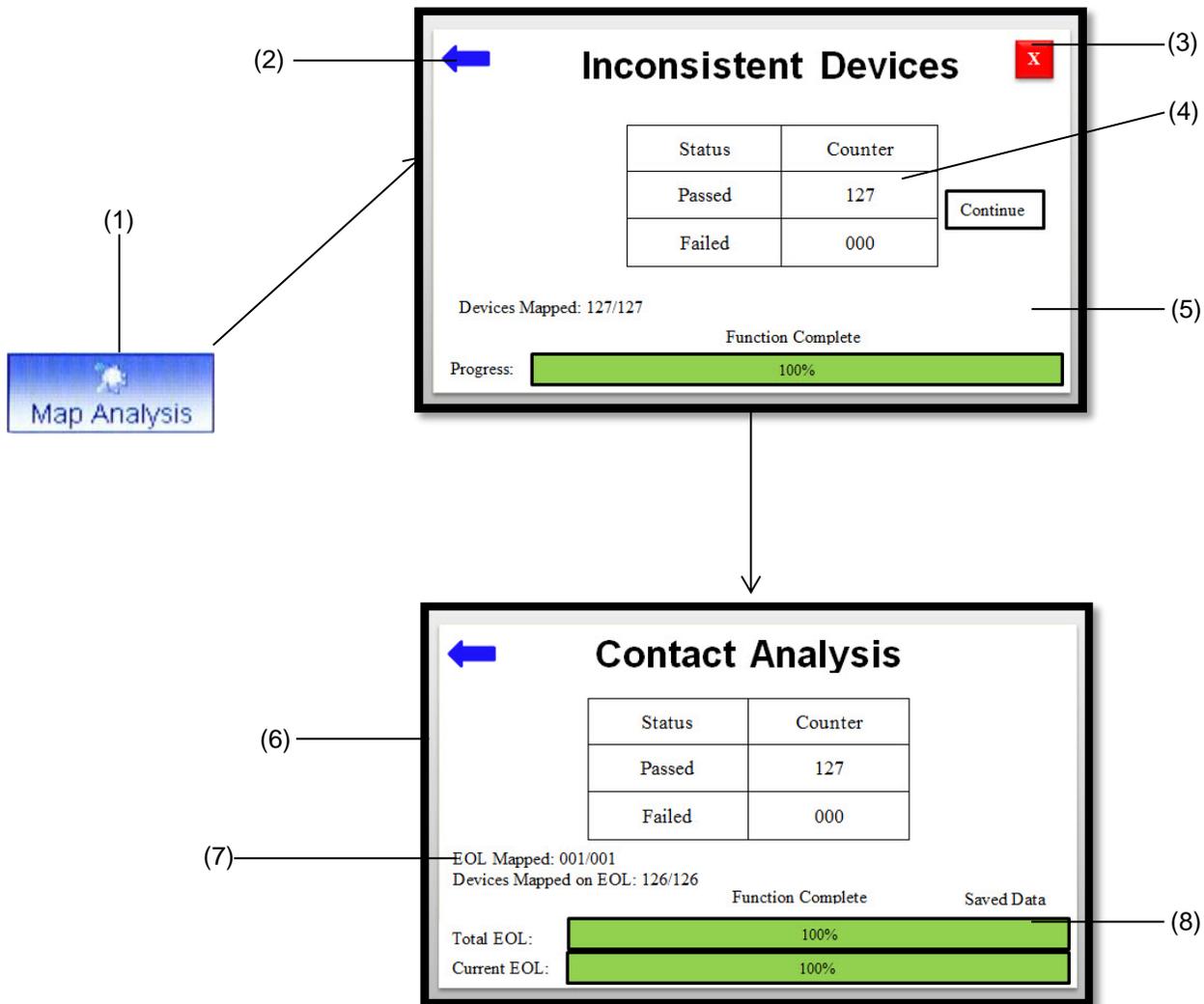
The counter cells can be pressed to see more details of the detectors within the dirty percentage range.

Map Analysis Function

The SIGA-HDT provides two methods of investigating a new or existing loop installation and the SIGA-HDT helps to pinpoint specific devices that are causing map faults or have the potential to cause a future map fault. The map fault analysis function performs the following two diagnostic tests:

- Mapping Consistency
- Contact Analysis

Figure 15: Map analysis function



- (1) Map analysis button
- (2) Back button
- (3) Abort button
- (4) Number of units that passed inconsistent analysis
- (5) Inconsistent device page
- (6) Contact analysis page
- (7) Number of End of Line (EOL) mapped
- (8) Total End of Line progress bar

Map Consistency

The map consistency function maps each device on the Signature loop three times and compares the responses of all three readings to see if there is a mismatch. If a device is not responding consistently, it is flagged as failed and an investigation is required. The possible list of problems associated with inconsistent responses is discussed in the “Causes of Map Faults in a Signature loop” section. The inconsistent response screen shows the status of the devices being mapped and their corresponding counters as shown in (Figure 15). When the function first starts its execution, all devices will be displayed as passed. Subsequently, failed inconsistent devices would be subtracted from passed counter and added to the failed counter.

Note:

1. The initialize function must be performed first for a new or existing loop in order for the SIGA-HDT to have a database to work with
2. The user may see different responses from run to run for the inconsistency response and the panel may not show a map fault for this inconsistent response

Contact Analysis

The contact analysis function tests the response measured by “listening” device(s) when the “annunciating” device is activated. The response is an indirect measurement of the contact resistance and can be used to identify existing mapping issues or devices that have the potential to cause an issue in the future. The user should refer to the list of possible problems discussed in the “A Review of Mapping” section for further information.

Contact analysis maps each end of line device and measures the current through each device on that line.

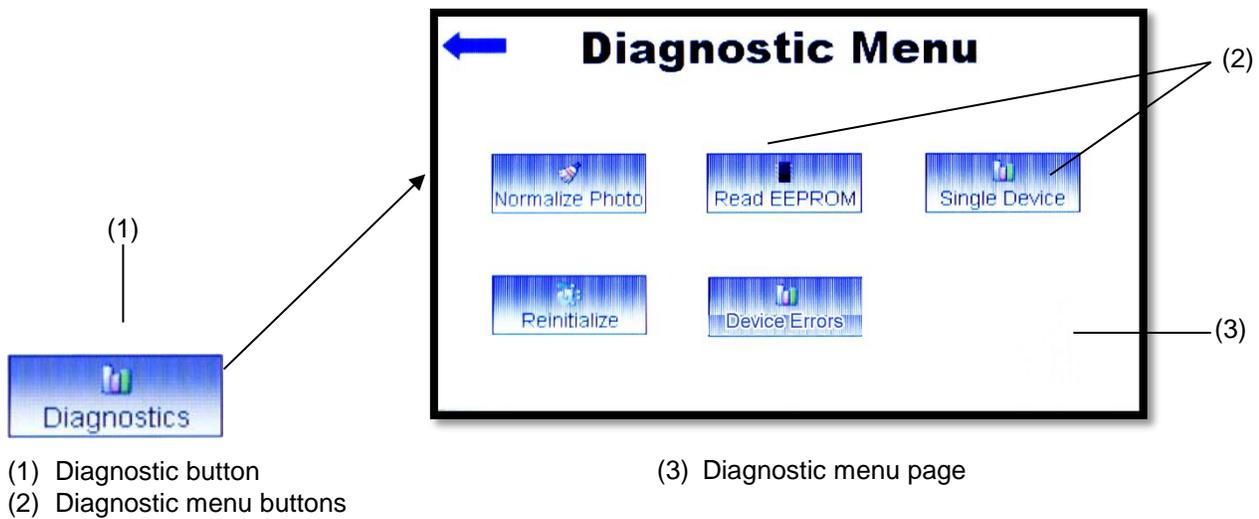
Map Analysis Process:

1. Press the **Map Analysis** button on the main menu.
2. The display screen shows the progress from the Inconsistent Device analysis to the Contact Analysis if mapping was successful.
3. If inconsistent device analysis fails, the mapping would not progress to **Contact Analysis** and an Advance button would be displayed. Users are advised to resolve issues with inconsistencies without pressing the advance button.
4. Select the failed or passed device counter to display detailed information of the devices. The highlighted device will flash its red LED.
5. If the user wants to advance beyond the inconsistent device function, they can select the Advance button at any time. In order to successfully discover the End of Line (EOL) devices, the user needs to allow the complete execution of the inconsistent response function.
6. Once the mapping is complete, the previously mapped data would be erased and the current mapped data saved to the SIGA-HDT memory. The screen will show “**Saved Data**” once the data has been successfully saved.

Diagnostic Menu

The **Diagnostic Menu** holds functions that enable a user to run diagnostics on the Signature devices on the loop system. The functions below can be performed within the diagnostic menu screen.

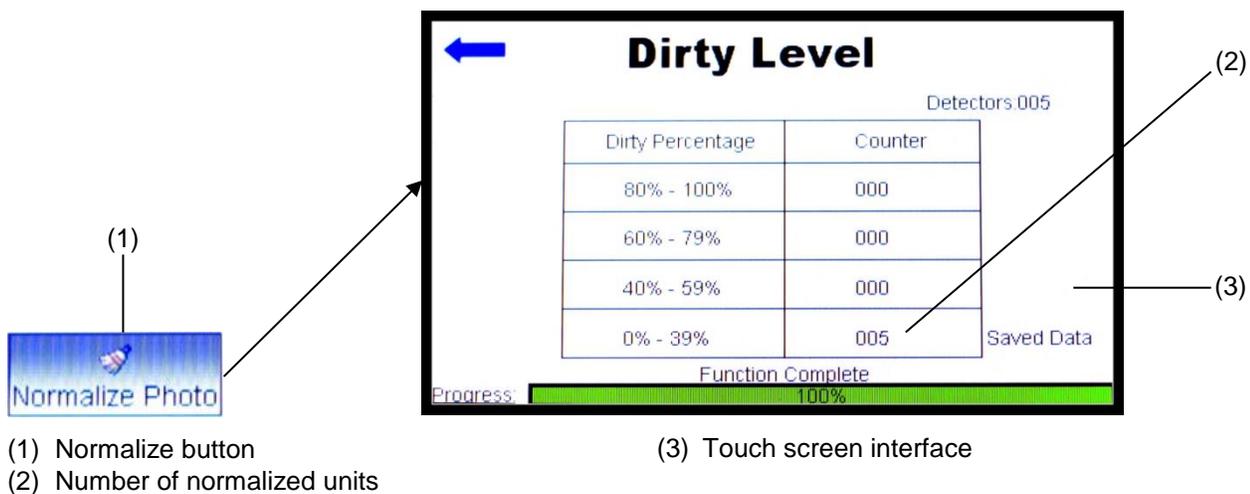
Figure 16: Diagnostic function



Normalize Photo Function

This function normalizes (writes the new clean air count into memory) the photo value of the detector but it is most particularly helpful when a detector is cleaned after it was determined to be dirty. After cleaning the detector using the approved tools or method, the user can connect the detector(s) back to the loop and initiate this function to normalize the photo value.

Figure 17: Normalize Function



The Normalize Photo Process:

1. Press the “**Diagnostic**” button on the Main Menu
2. Press “**Normalize Photo**” button after detectors have been cleaned
3. On the “Counter” column of the “Dirty Level” table, press the desired counter to view the new dirty level of the photo detectors that have been normalized

Note:

The **Normalize Photo** function only applies to photo detectors. This is the same as the Recalibrate feature on the iOpanels.

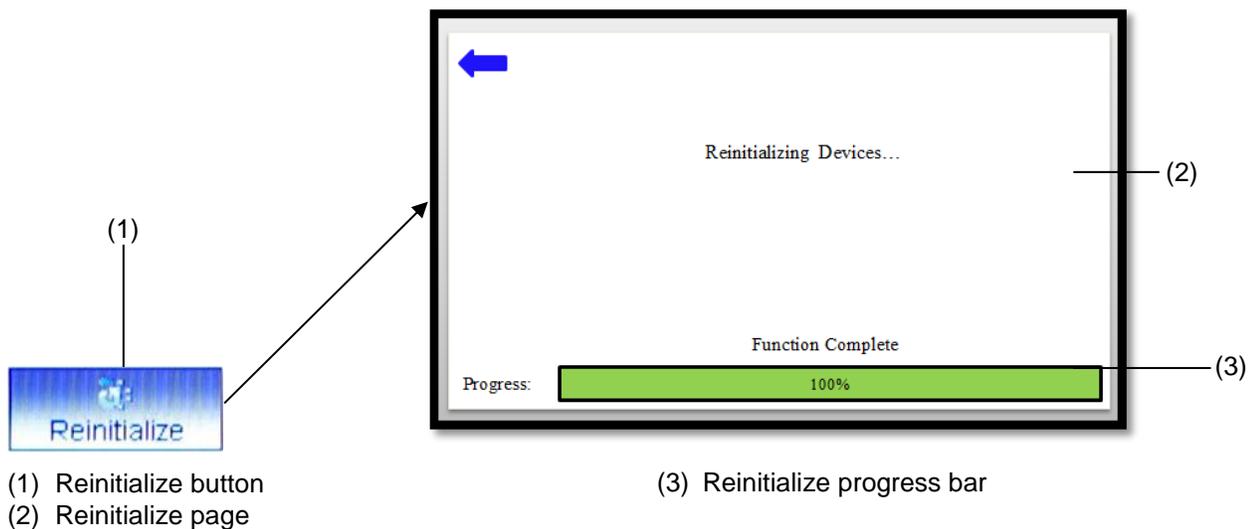
Read EEPROM Function

The Read EEPROM function is an advanced function which may be requested by technical support or engineering. Refer to Chapter 6 “Advanced Functions” for further details.

Reinitialize Function

This function is useful if the user needs to reset all device addresses on the loop to zero (0).

Figure 18: Reinitialize Function



The Reinitialize Process:

1. Press the **Reinitialize** button
2. Press the back arrow to return to the **Diagnostic Menu** when complete
3. Press the **Initialize** button to see updated device addresses

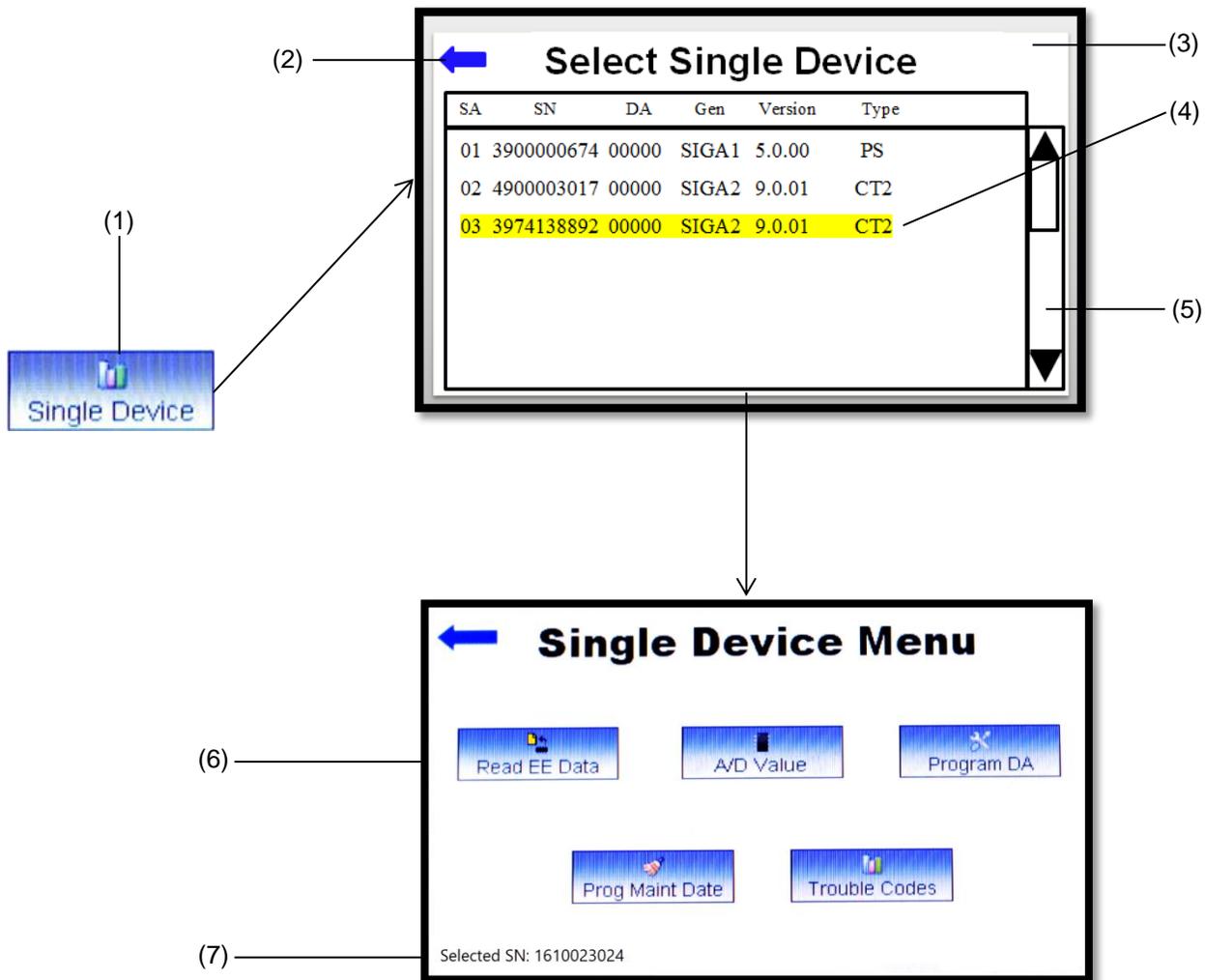
Note:

Do not use this function if you do not intent to change device addresses.

Single Device Function

The single device function allows a user to diagnose a single device within a loop or outside a loop. Figure 19 shows the single device button, the select single device page, and the sub-single device menu of the single device function. The single device function consists of five (5) sub-functions that include: Read EE data, Photo A/D value, Program Device Address, Program Maintenance date, and Trouble Codes.

Figure 19: Single Device functions



- (1) Single device button
- (2) Back button
- (3) Select single device page

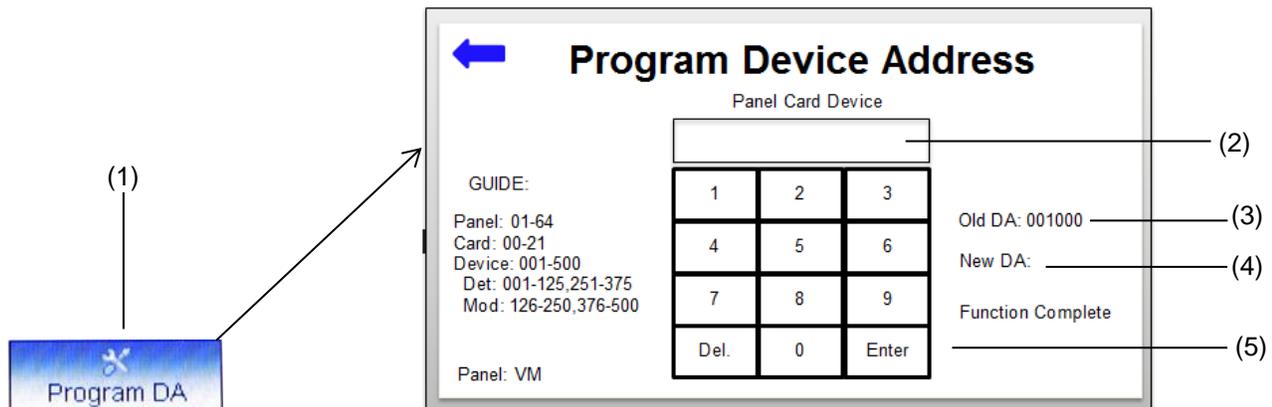
- (4) Highlighted device selected
- (5) Vertical scroll bar
- (6) Single Device menu page
- (7) Selected device serial number

Single Device Process:

1. Press the **Diagnostic** button from main menu page
2. Press **Single Device** button on the page that appears
3. Select the single device based on its serial number/ short address/ device address

Program Device Address (DA)

Figure 20: Program Device Address Function



- (1) Program device address button
- (2) Number of normalized units
- (3) Old device address
- (4) New device address after function is completed
- (5) Enter keypad button to complete function

This function is active for detectors and dual-channel devices

1. Press the “**Program DA**” button to execute this function
2. Select the device that needs to be programmed
3. Enter the New Device Address using the key pad that appears
4. Follow the Device Addressing Guide on the screen to program the new address
5. Press Enter to complete action
6. Press the back arrow to return the “**Single Device Menu**” when complete

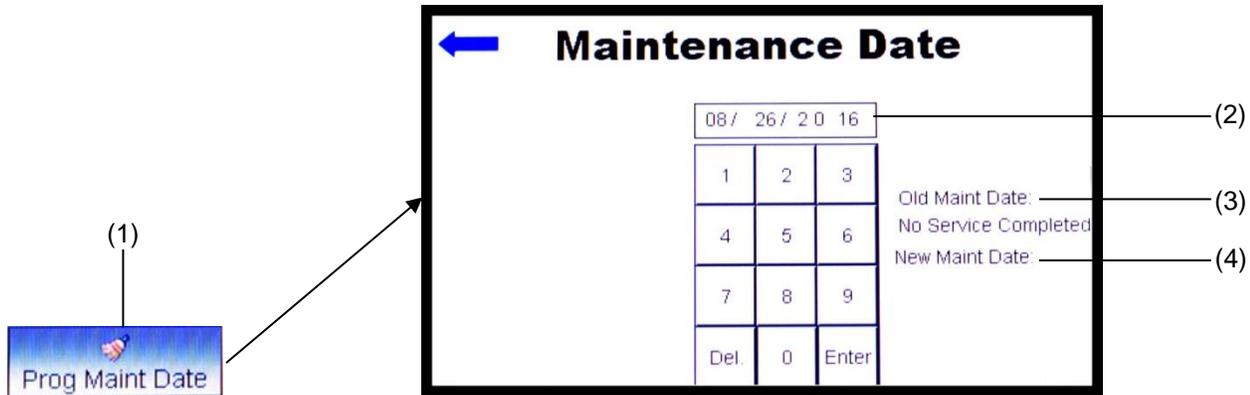
Note:

1. The user can only program the first address of two channel modules and the second address is programmed automatically
2. The User needs to select the applicable panel type on the settings screen

Program Maintenance Date

This function is useful when a user performs maintenance on a photo detector and need to update the maintenance date register on the detector.

Figure 21: Program Maintenance Date Function



- (1) Program maintenance date button
 (2) Current date populated

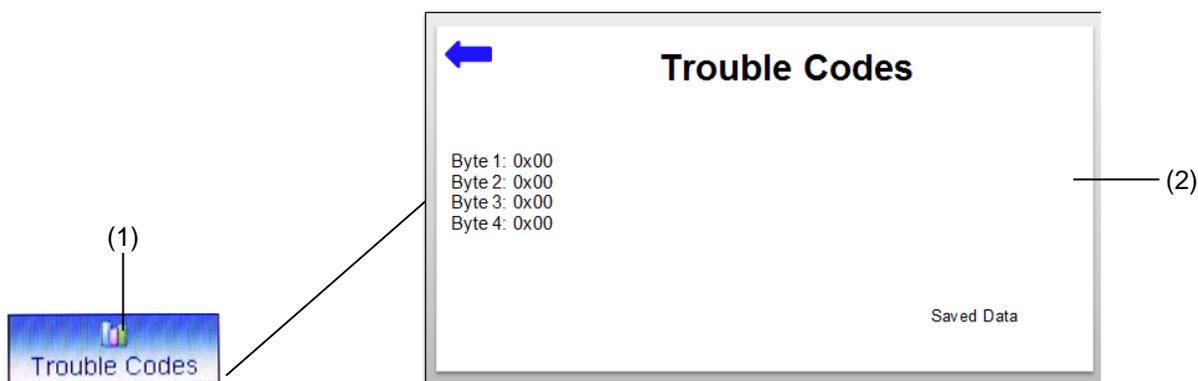
- (3) Old maintenance date
 (4) New maintenance date

1. Press the **Program Maint Date** button
2. Delete current date by pressing the “Del” key on the key pad if date is incorrect
3. Enter the new date (Format MM/DD/YYYY) using the key pad (Figure 21).
4. Press Enter to complete action
5. Press the back button to return the **Single Device Menu**

Trouble Codes

The trouble code function enables the user to understand the trouble condition, the possible cause, and possible solution to resolve the trouble. Trouble codes are displayed during the restore loop execution.

Figure 22: Trouble Codes Function



- (1) Trouble Codes button
 (2) Trouble codes page

1. If trouble was identified during the restore loop
2. Press the “**Trouble Codes**” button
3. Read trouble code description and refer to the trouble code section of this manual for solution
4. Press the back arrow to return to the “**Single Device Menu**”

Note:

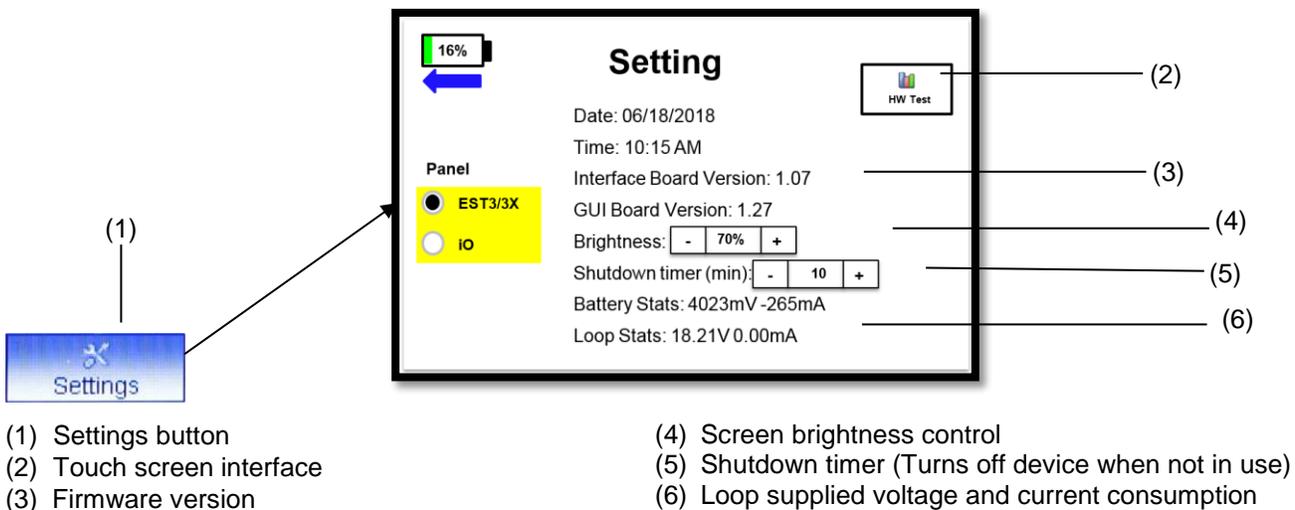
Refer to the Appendix A, TROUBLE CODES for the list of trouble codes associated with detectors and modules.

Settings

The Settings screen displays current date and time. The SIGA-HDT needs to be connected to the computer software to sync the time and date. The interface and GUI board versions along with the battery status, loop output voltage and current are displayed on this page. Press the “+” or “-“ to increase or decrease the screen brightness or shutdown timer respectively. The screen brightness is between 0% and 100% and default is set to 60%. The default shutdown timer is 10 minutes and the Timer setting is between 10 and 70 minutes.

The HW Test button is advanced tool which may be requested by technical support or engineering.

Figure 23: Settings Function



Note:

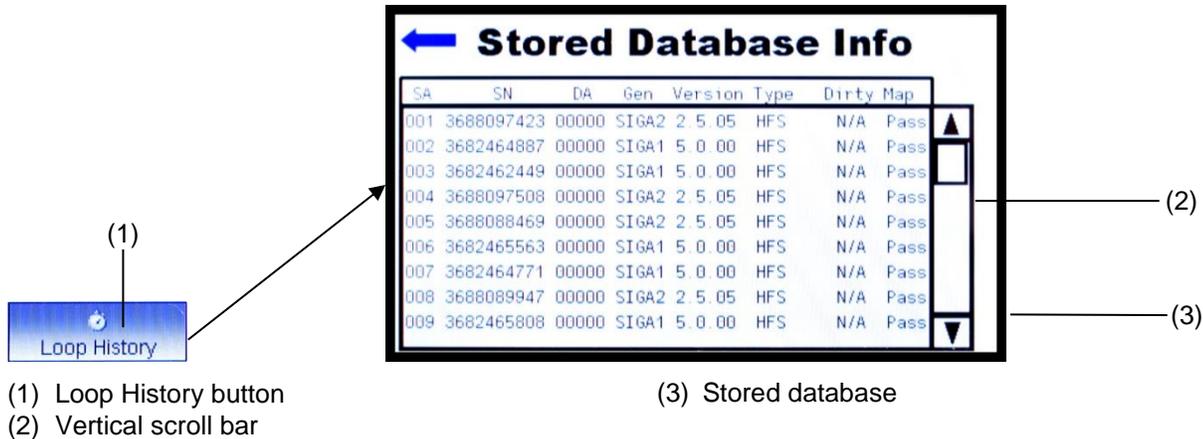
1. Whenever the Lithium ion battery is disconnected or replaced from the SIGA-HDT, it is necessary to connect to a computer to have the system clock synchronize to the correct time and date

When the SIGA-HDT is first received, it is necessary to charge to full capacity in order to get the accurate battery percentage.

Loop History

The **Loop History** function takes the user to the Stored Database Screen; this screen shows the device information stored in the memory of the SIGA-HDT. If no actions (Initialize, map analysis, etc.) have been performed previously, no data is displayed in the database.

Figure 24: Loop History Function



The following data would be populated for each device if the functions below were performed:

1. Initialize

- Short Address (SA), Serial Number (SN), Device Address (DA), Generation (Gen), Version, and Detector Type (Type)

2. Dirty Level

- Photo detector dirty levels (0 – 100%)

3. Map Analysis

- Map (Pass/Fail)

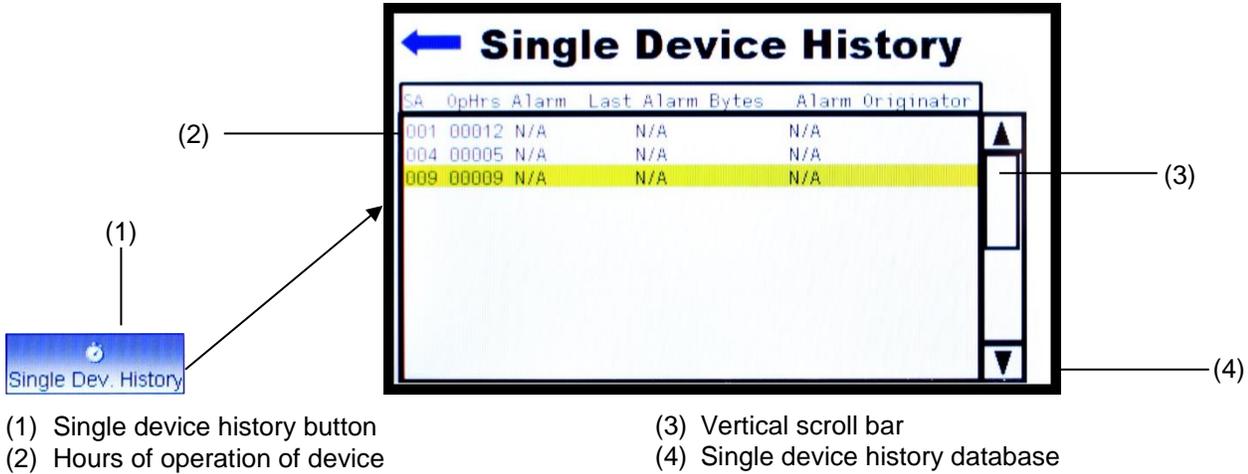
Note:

1. An N/A will be displayed if a particular function was not performed or is not applicable.
2. When you select a device, the LED of that device will be active (blinking or steady).

Single Device History

The “**Single Device History**” displays data only when the single device **Read EE Data** function was performed. The database stores each single device’s Short Address (SA), Operation Hours (OpHrs), Alarm, Last Alarm Bytes, and Alarm Originator. When there is no alarm status, N/A is displayed on the Alarm, Last Alarm Bytes, and Alarm originator respectively.

Figure 25: Single Device History Function

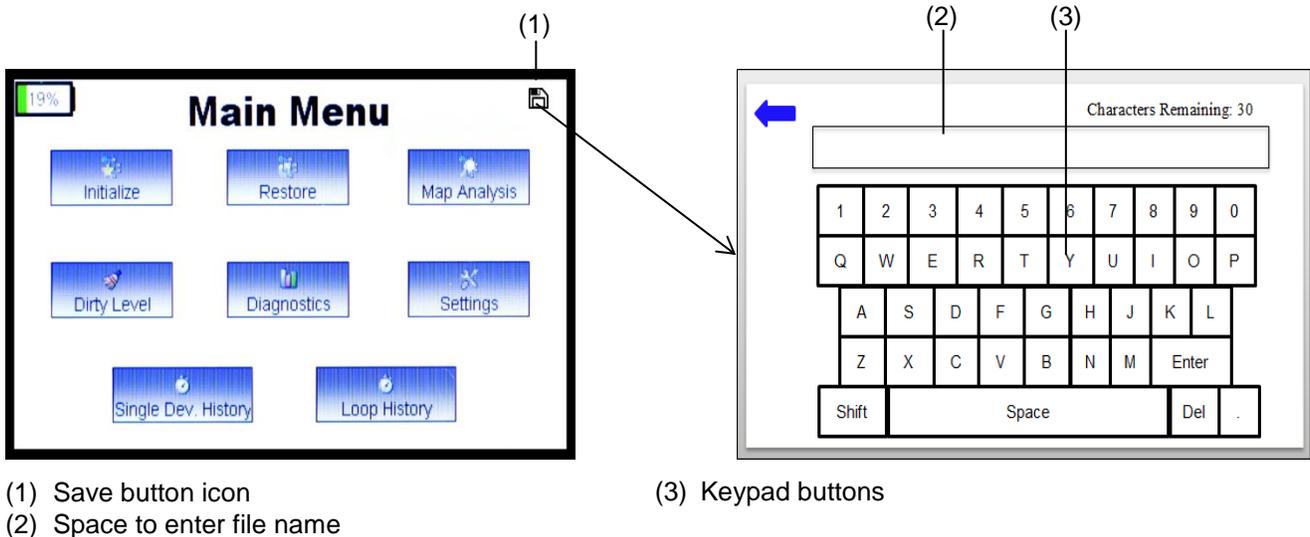


Refer to **Read EE Data** in Chapter 5 to understand how to read single device’s EE data.

Saving Data to USB Flash Drive

The following steps show a user how to save loop data to a USB flash drive. Each SIGA-HDT is packaged with a USB flash drive that can be used to store loop data information.

Figure 26: Single Device History Function



1. Connect the/a USB flash drive to the SIGA-HDT USB port
2. A “**Disk**” icon will appear (Figure 26)
3. Press the disk icon
4. Enter a name for the file to save by using the keypad that appears (30 characters maximum input)
5. Press enter to complete saving the data
6. Confirm icon appears (“100% progress bar” and “Data saved to USB” text)
7. Unplug the USB and access the report from a computer

Note:

1. Do not plug both a USB device and charging cable to the SIGA-HDT at the same time. This will cause damage to the micro USB connector on the SIGA-HDT and may result in intermittent contact issue when usb is plugged
2. The default format of the USB device that comes in the box of the SIGA-HDT is a FAT. If the save icon does not appear when a USB flash device is inserted, format the USB flash to FAT using a Windows PC. Make sure to transfer all your files from the USB flash device before formatting because all files in the drive will be deleted.

Figure 27: SIGA-HDT Report Data

```

Getting the loop information...
Database created: 09/08/2016 01:29 PM
Detector Count: 13 | Module Count: 6 | Total Count: 19
----- (1)
collecting Device Information...

Devices Found:
-----
[s001] D000 "3688097423" SIGA2 v2.5.05 HFS (Manufactured: 05/18/2016)
[s002] D000 "3682464887" SIGA1 v5.0 HFS (Manufactured: 03/11/2016)
[s003] D000 "3682462449" SIGA1 v5.0 HFS (Manufactured: 03/11/2016)
[s004] D000 "3688097508" SIGA2 v2.5.05 HFS (Manufactured: 05/18/2016)
[s005] D000 "3682464856" SIGA1 v5.0 HFS (Manufactured: 03/11/2016)
[s006] D000 "3682462401" SIGA1 v5.0 HFS (Manufactured: 03/11/2016)
[s007] D000 "3974138892" SIGA2 v2.5.05 PS (Manufactured: 05/26/2016)
[s008] D000 "3688101052" SIGA2 v2.5.05 HFS (Manufactured: 05/18/2016)
[s009] D000 "3682465440" SIGA1 v5.0 HFS (Manufactured: 03/11/2016)
[s010] D000 "3974138731" SIGA2 v2.5.05 PS (Manufactured: 05/26/2016)
[s011] D000 "3967935088" SIGA1 v5.0 PS (Manufactured: 05/07/2016)
[s012] D000 "3682463859" SIGA1 v5.0 HFS (Manufactured: 03/11/2016)
[s013] D000 "3688101496" SIGA2 v2.5.05 HFS (Manufactured: 05/18/2016)
[s129] D000 "4808232045" SIGA2 v8.7.00 CT1 (Manufactured: 05/23/2016)
[s130] D000 "4808228833" SIGA2 v8.7.00 CT1 (Manufactured: 05/23/2016)
[s131] D000 "5206708644" SIGA1 v7.2 CR (Manufactured: 06/22/2016)
[s132] D000 "5206690765" SIGA1 v7.2 CR (Manufactured: 06/22/2016)
[s133] D000 "5077798157" SIGA1 v7.2 CC1 (Manufactured: 06/10/2016)
[s135] D000 "5000000005" SIGA1 v1.0 CC1 (Manufactured: 01/01/2015)
----- (2)

Dirty Levels:
-----
[s007] D000: 000 %
[s010] D000: 000 %
[s011] D000: 000 %
----- (3)

End of Line Devices:
-----
[s135] D000 "5000000005" SIGA1 v1.0 CC1 (Manufactured: 01/01/2015)
----- (4)

Executing Contact Analysis...

Mapping End of Line Device:
[s135] D000 "5000000005" SIGA1 v1.0 CC1 (Manufactured: 01/01/2015)
SA DA Q V DIF
-----
001 000 100 088 012
002 000 102 090 012
003 000 094 085 009
004 000 098 084 014
005 000 098 089 009
006 000 099 090 009
007 000 099 085 014
008 000 092 082 010
009 000 097 088 009
010 000 097 083 014
011 000 098 089 009
012 000 098 086 012
013 000 093 082 011
129 000 097 109 -12
130 000 098 111 -13
131 000 098 111 -13
132 000 099 112 -13
133 000 095 107 -12
Device Count: 26
Total End of Lines Detected: 1
----- (5)

Mapping Consistency Report
-----
Detectors are Consistent.
----- (6)

Contact Analysis Report
-----
Contact Analysis Complete. No Faulty Devices Found
-----

Ground Fault Detection...
No Ground Fault detected at SIGA-HDT
----- (7)

Checking trouble on devices...
No trouble detected

Analysis complete!

```

- (1) Total number of devices found in the loop
- (2) Devices found and their information
- (3) Dirty level of photo detectors
- (4) End of Line device with information
- (5) Mapping contact analysis result

- (6) Complete mapping result
- (7) Ground fault detection result

Chapter 4

Using the SIGA-HDT PC Software

Summary

This chapter provides detailed information about the PC Software application that comes with the SIGA-HDT. This application can be installed from the USB flash drive found in the SIGA-HDT box or it can be downloaded and installed from <http://edwardsfiresafety.com>.

This chapter will provide information on the installation of the PC software, the steps to update the SIGA-HDT GUI and Interface firmware, and the functionality of the different buttons of the software.

Content

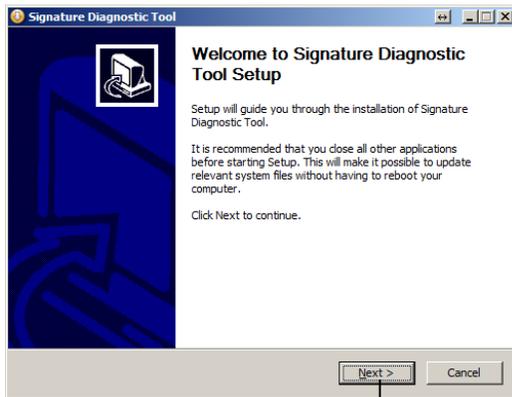
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| Updating the SIGA-HDT Device | 33 |
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Installing the SIGA-HDT PC Software

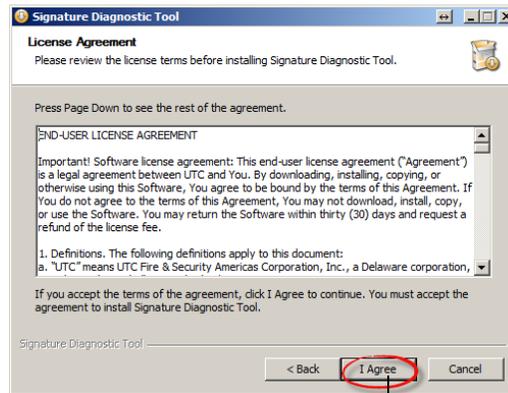
The SIGA-HDT comes with a PC software that is used for firmware update as well as some basic functions such as Initialization, map, map fault analysis, importing data from device, saving a report to your PC, etc. The steps below will guide the user on the installation of the PC software

1. Remove the USB flash device from the SIGA-HDT Box and insert to a computer.
2. Navigate to the USB flash drive on your computer.
3. Double click on "Install_SIGA-HDT.exe" file to start installation.

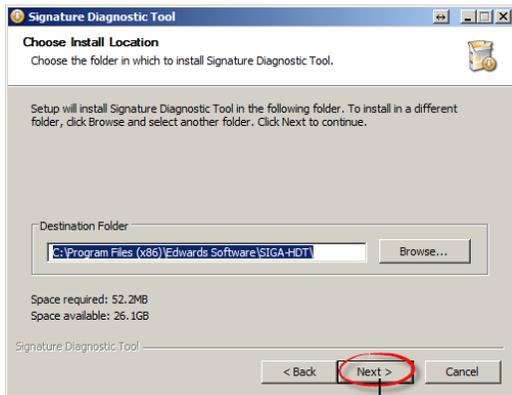
Figure 28: PC Software Installation



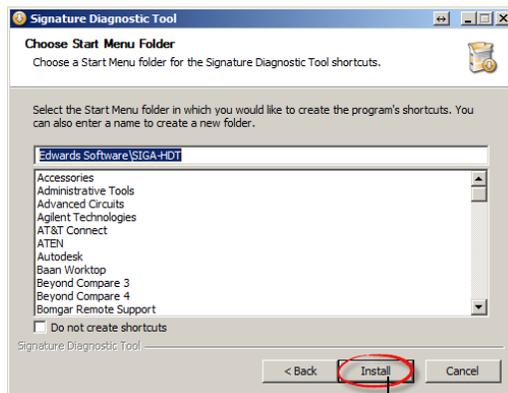
(1)



(2)



(3)



(4)

- (1) Next button to start installation
- (2) Agree button

- (3) Next button to confirm location
- (4) Install button to start the installation

Updating the SIGA-HDT Device

The SIGA-HDT has two microcontrollers that can be updated if there is a new update out in the field. User can update either the interface firmware or the GUI firmware as required.

Figure 29: Interface Firmware Update

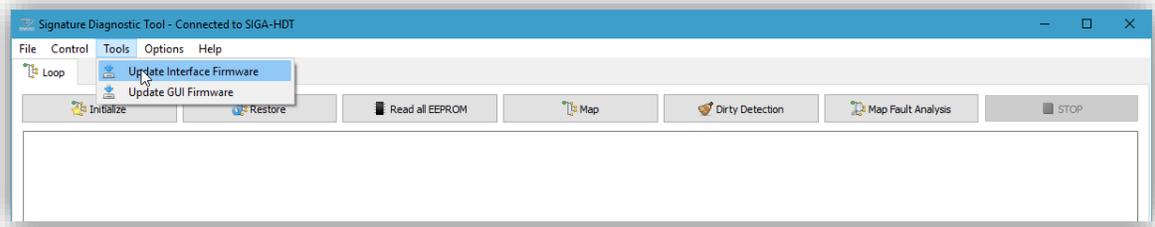
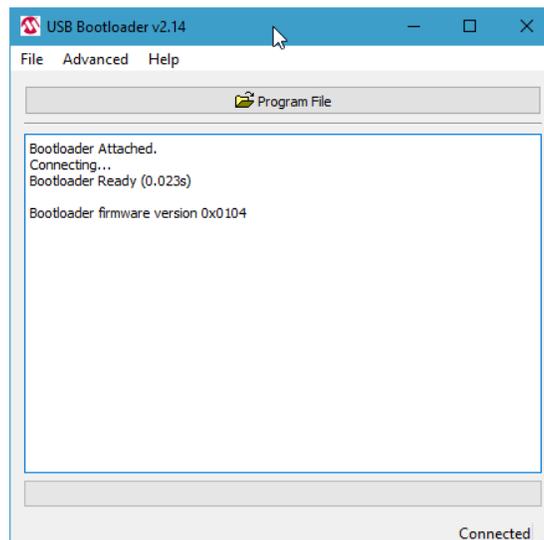


Figure 30: USB Interface Bootloader



Updating Interface Firmware

1. Connect the USB cable that comes with the SIGA-HDT – Connect Type B side to the device and type A side to your PC computer
2. Press the start button on the device to power up the unit
3. Double click on the Signature Diagnostic Tool software on your PC desktop
4. Under “Tools” menu select update Interface Firmware.
5. Click Program File button on the window that pops up, once the screen displays “Bootloader” Ready.
6. Select the firmware hex file downloaded from My-Eddie.com website and wait for the progress bar to show 100% with the screen display “Erase/Program/Verify sequence completed successfully!”
7. Finally, close the update window and the SIGA-HDT will restart automatically.

Updating the GUI Firmware

Figure 31: GUI Firmware Update

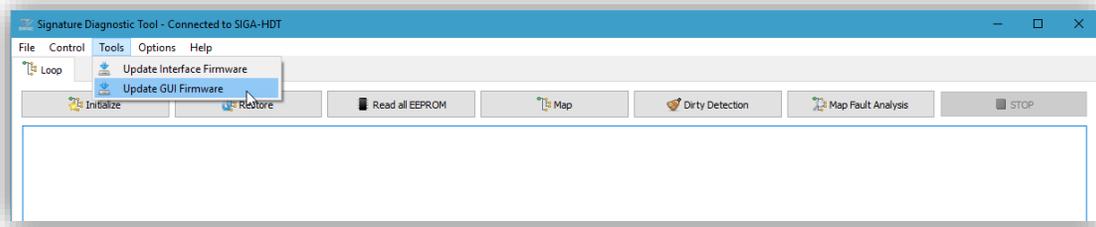
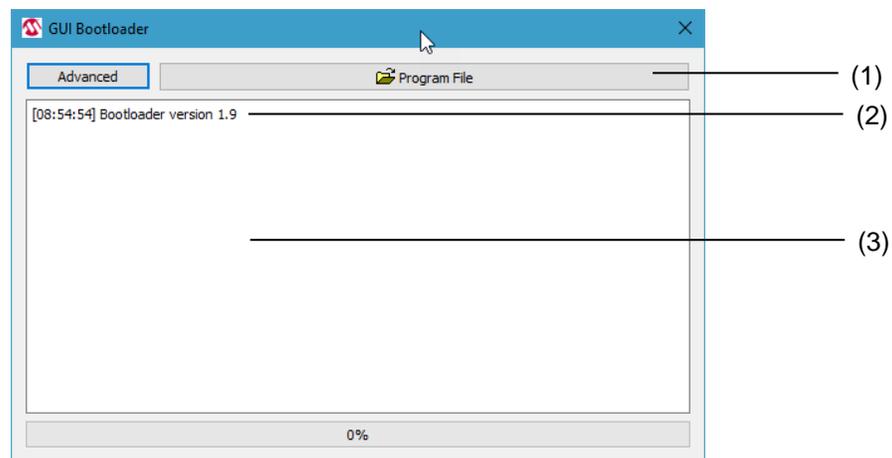


Figure 32: GUI Bootloader



- (1) Program File button
- (2) Bootloader version

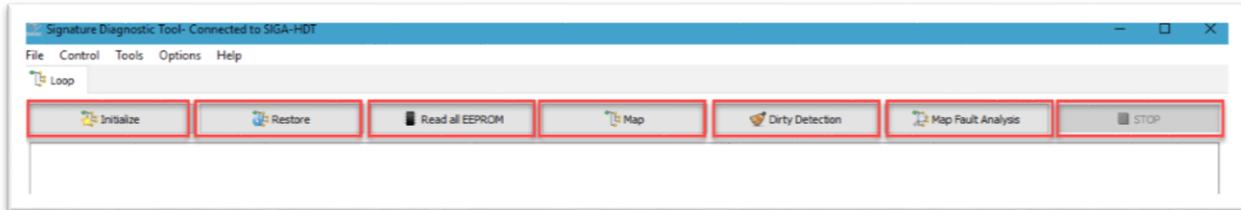
- (3) Activity page

1. Connect the USB cable that comes with the SIGA-HDT
2. Press the start button on the device to power up the unit
3. Double click on the Signature Diagnostic Tool software on your PC desktop
4. Under the Tools menu select update GUI Firmware.
5. The screen will display Bootloader as shown in Figure 32. If the screen displays “**Fails to get a response**”, the user needs to click the “**Advanced**” button to display the **Reset to Boot button**. Refer to Chapter 5 “Troubleshooting” for guidance on how to troubleshoot issues with firmware update.
6. Click **Program File** button on the window that pops up, once the screen displays Bootloader Ready.
7. Select the GUI Firmware hex file downloaded from My-eddie.com website and wait for the progress bar to show 100% with the screen display “Erase/Program/Verify sequence completed successfully!”
8. Finally, the user can close the small window and the SIGA-HDT should restart.

Functions (Buttons)

There are a total of seven (7) loop buttons on the SIGA-HDT PC software that can be used for executing specific functions. Each function during execution can be aborted by using the “STOP” button function. The Initialize function is the first function that must be executed before other functions can be utilized.

Figure 33: SIGA-HDT Function bar

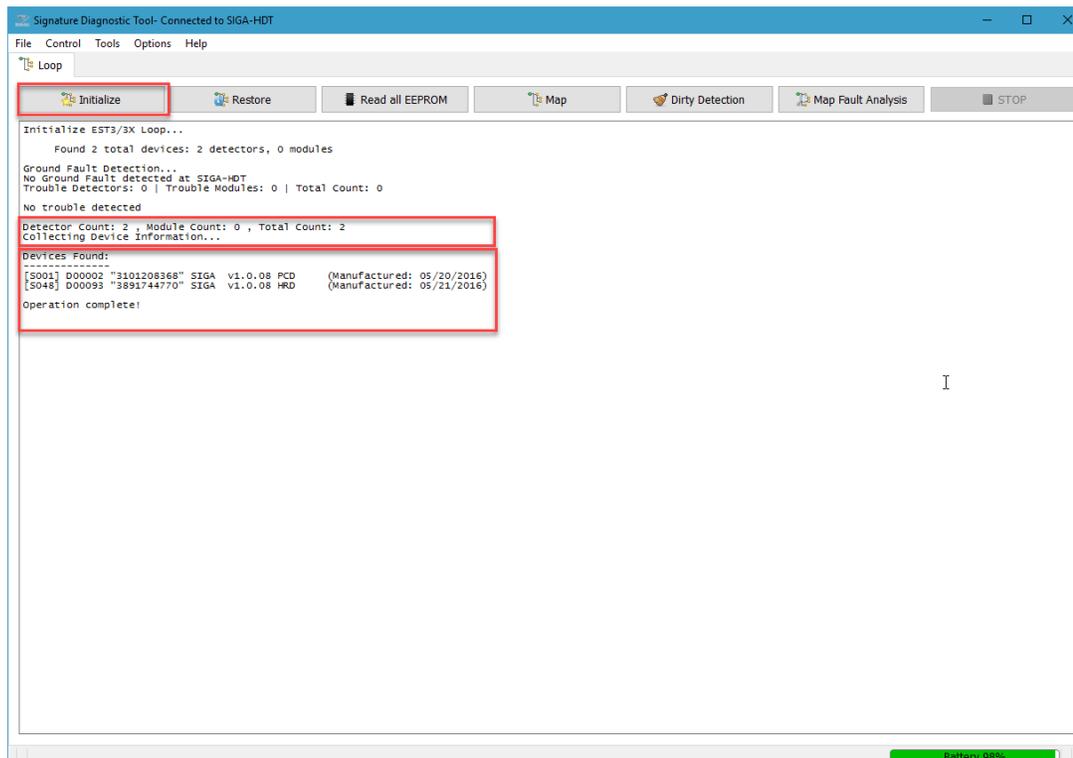


Initialize

1. Click on the **Initialize** button and wait until all devices on the loop are seen on the information area
2. Wait until you see “Operation complete” on the information area
3. Verify that all devices expected are initialized; troubleshoot the loop if necessary

The **Initialize** function on the PC Software shows the number of devices found on the loop with device info such as serial number, device address, short address, firmware version, and manufacture date.

Figure 34: Initialize Function



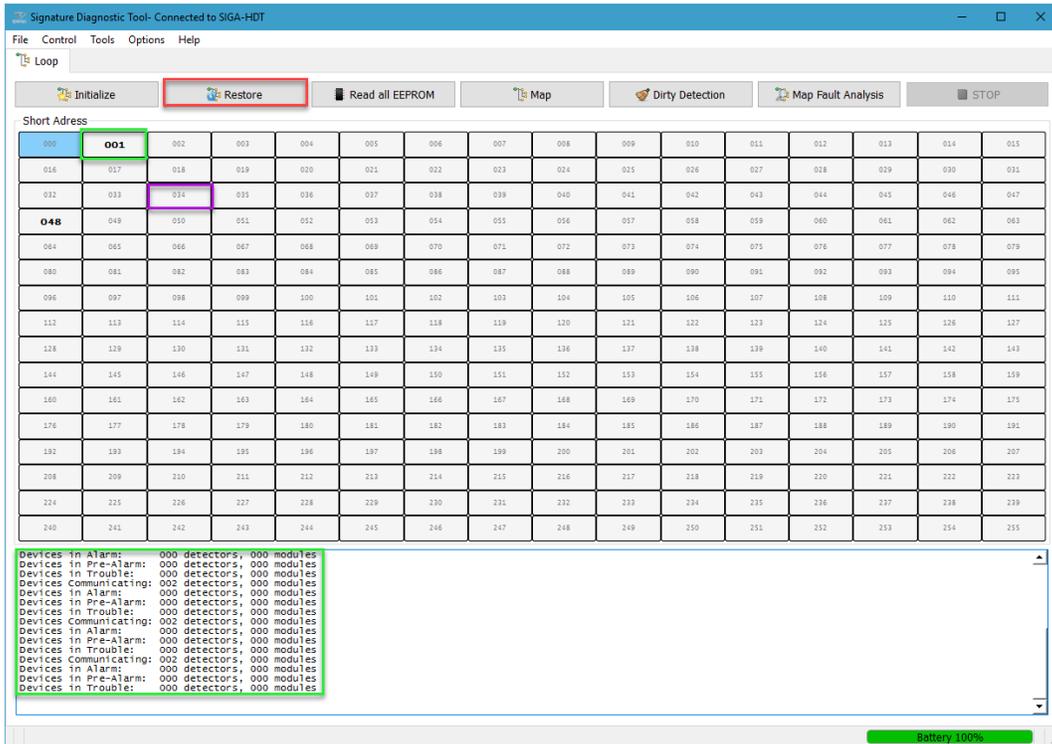
Restore

1. Click on the **Restore** button and wait until all devices on the loop are seen on the information area
2. Verify that all devices expected are initialized; troubleshoot the loop if necessary.
3. Click on the “STOP” button to stop the process.

The **Restore** loop function executes its operation by displaying the list of devices currently communicating, devices in Alarm, devices in Pre-Alarm, and/or devices in Trouble.

The green rectangular box indicates active device short address and the purple box indicates device short address that are not active on the loop.

Figure 35: Restore Function



Read all EEPROM

This function gives a user the capability to read all device register values present on the loop. This data is only useful to an Edwards engineer for advanced troubleshooting. Note that technical support agent could request that you run this function and send the report to them.

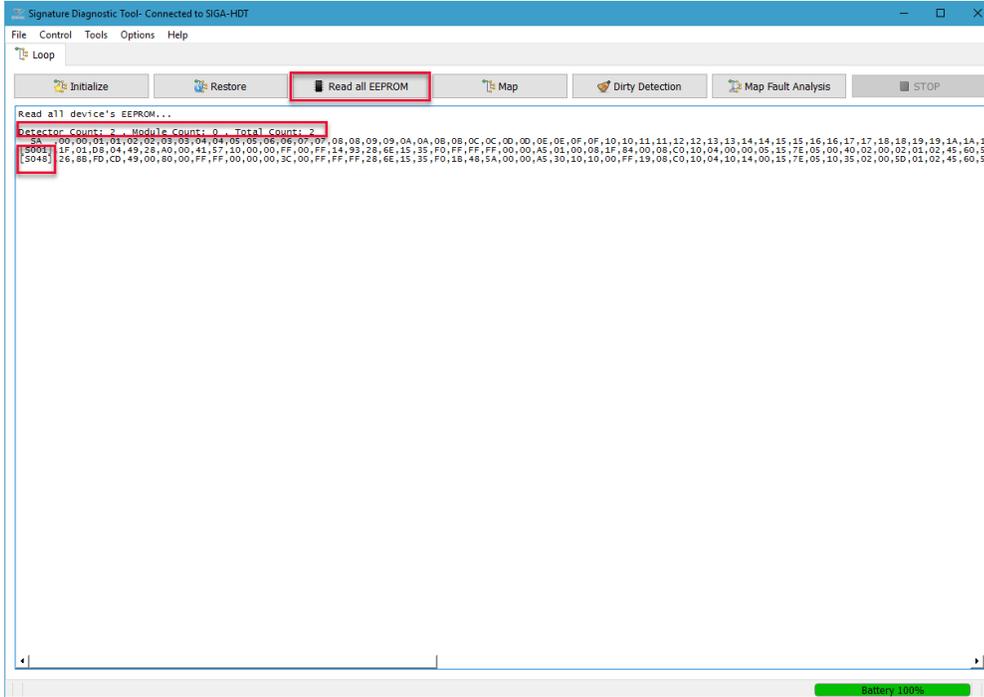
To execute this function,

1. Initialize the loop first if you have not done so
2. Click on **Read all EEPROM** button
3. Wait for the function to execute (Time varies depending on the number of units on the loop)

Note:

The EEPROM info page on the software displays the total number of devices on the loop.

Figure 36: Read all EEPROM



Map

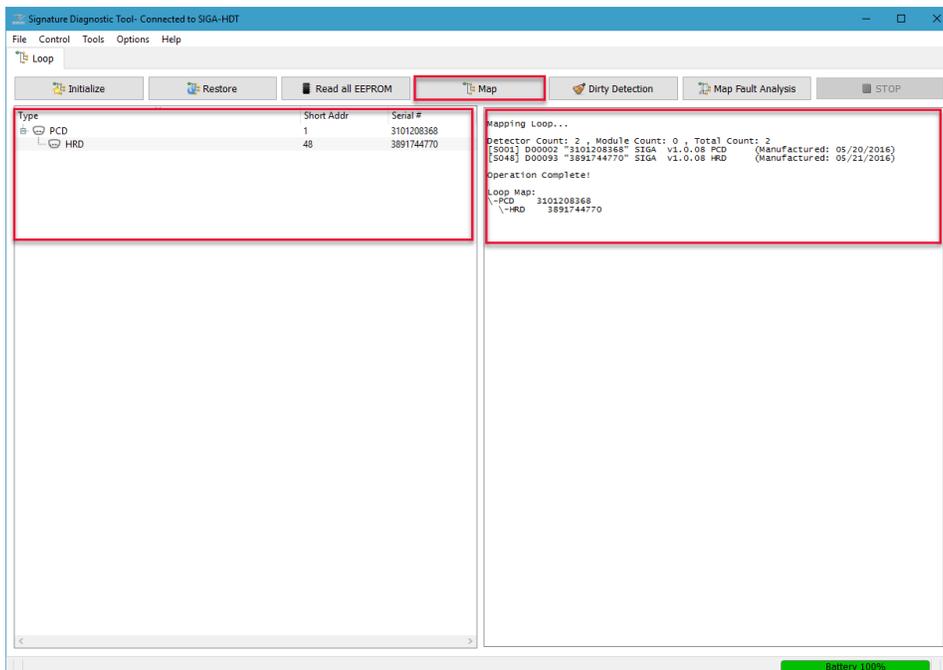
This feature/function creates a map of the devices connected to the loop and it also displays a tree diagram of all devices with their serial numbers, short addresses, device types etc.

The information area on your left Figure 37 shows the map tree information with the ability to expand and compress the end of line(s) device(s). The information area on the right Figure 36 shows additional device information such as device manufacture date, serial number, firmware version, etc. The information on the right of Figure 37 can be copied to word processor (Notepad, excel etc.)

To execute this function,

1. Click on the **Initialize** button first to bring all devices on the loop to the database of the tool
2. Click on the **Map** button start function execution
3. Wait for function to complete execution

Figure 37: Map Tree

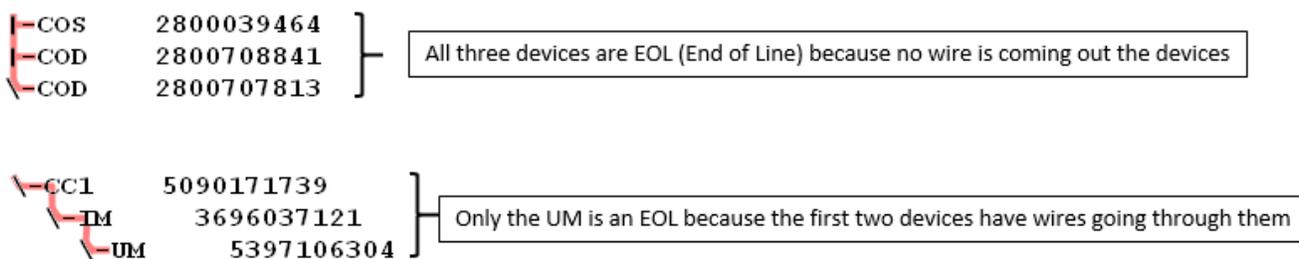


Understanding the map tree Report.

For the map-tree report on the exported device report, the symbols "|" and "\" are representation of wires between devices. They can either signify an EOL (End of Line) or a regular wire to another device. An EOL device is one that does not have a wire coming out of it to another device.

See below figure for explanation:

Figure 38: Map Tree Report Explanation



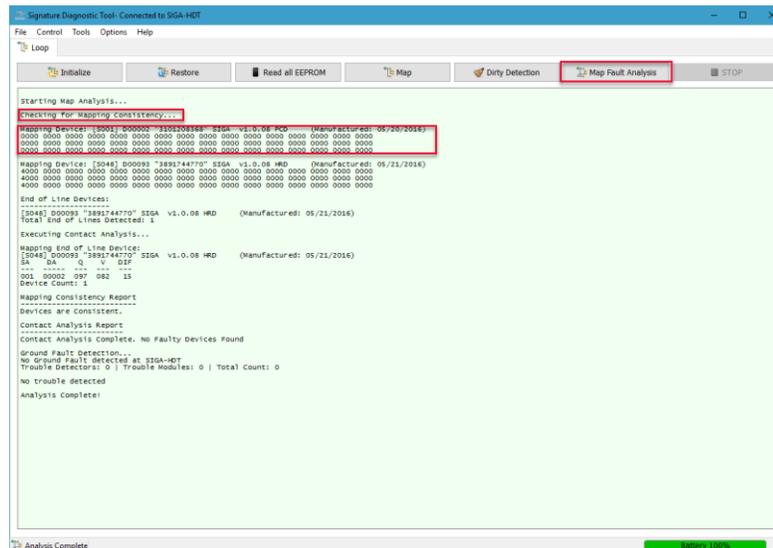
Map Fault Analysis

The **Map Fault Analysis** function on the PC software is similar to the GUI function on the device and execute mapping consistency and contact analysis respectively. Additional information is also displayed in the information area of the Map Fault Analysis. Refer to page 17 to understand the map fault analysis.

To execute this function,

1. Click on **Map Fault Analysis** button to execute function (Loop must be initialized first)
2. Wait until function is complete
3. Copy or Save **Map Fault Analysis** report as required

Figure 39: Map Fault Analysis Function



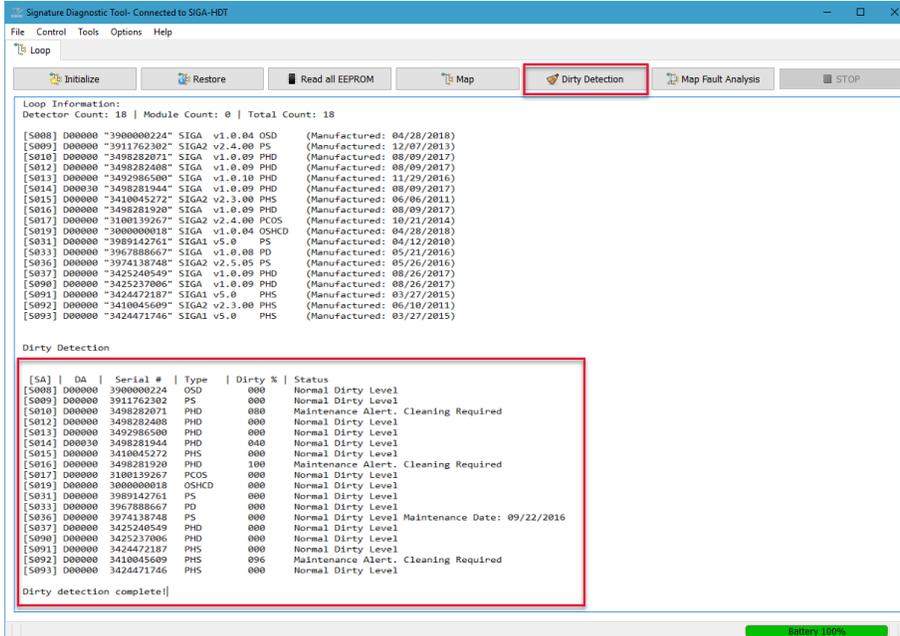
Dirty Detection

The **Dirty Detection** button on Signature Diagnostic Tool PC software reads the dirty levels of all photo detectors on the loop and display the dirty percent on the information area of the software.

To execute this function,

1. Click on **Dirty Detection** on the Signature Diagnostic tool PC software
2. Wait until function is complete

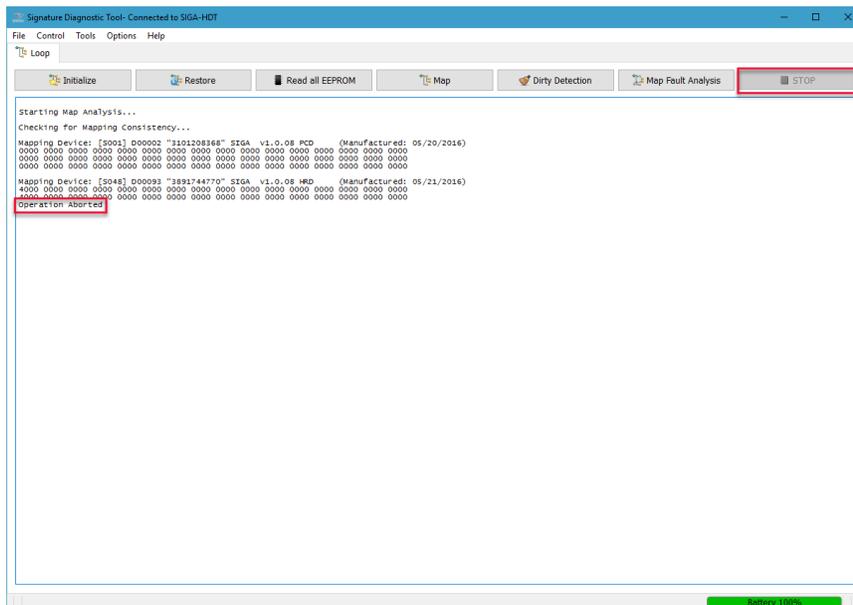
Figure 40: Dirty Detection Function



STOP

The STOP button enables a user aborts any function that was being executed. To use this button function, click on it while any of the other functions are running.

Figure 41: STOP Function



Importing Data from the SIGA-HDT

Each SIGA-HDT comes with Windows PC software (Signature Diagnostic Tool (P/N 7351009) which can be used to import data from the SIGA-HDT. The user can import three categories of data:

1. Device(s) EEPROM Data
2. SIGA-HDT Report Data
3. Single Device Data

The SIGA-HDT Report contains all the device information, the dirty level for each photo detector on the loop and the mapping data as shown in Figure 27.

Device(s) EEPROM Data Process

1. Open the PC Software (Signature Diagnostic Tool) installed on your desktop
2. Connect the SIGA-HDT to the windows computer using the USB charging cable SIGA-HDT
3. Power up the device if not powered
4. Click on “File”, navigate to “**Import SIGA-HDT Data**” and then click “**Devices EEPROM**”
5. Wait for import to complete before exiting

SIGA-HDT Import Report Process

The process of importing data from the SIGA-HDT to the PC software is straight forward and relatively easy. This function imports the loop data saved in the SIGA-HDT internal memory to the Signature Diagnostic Tool software.

Figure 42: SIGA-HDT Import Report Process

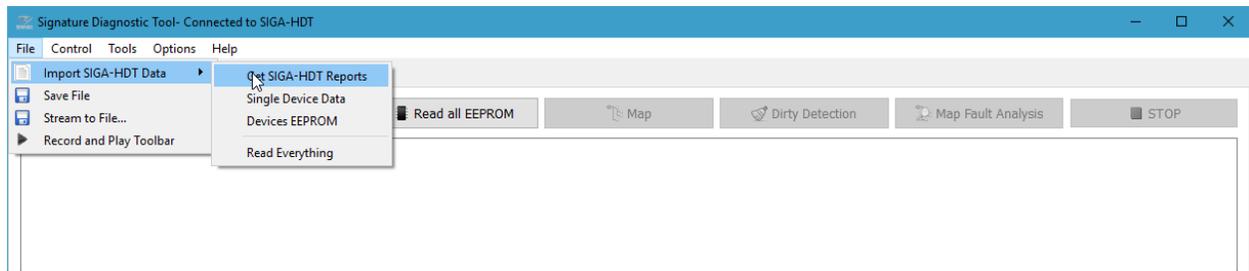
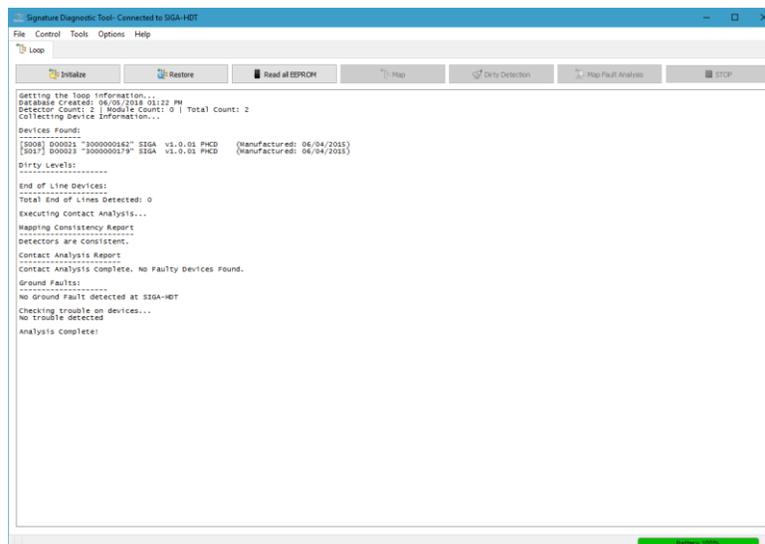


Figure 43: SIGA-HDT Report Data



The steps below show the process:

1. Open the PC Software (Signature Diagnostic Tool) installed on your desktop
2. Connect the SIGA-HDT to the windows computer using the USB charging cable SIGA-HDT
3. Power up the device if not powered
4. Click on “File”, navigate to “**Import SIGA-HDT Data**” and then click “**Get SIGA-HDT Reports**”
5. Wait for import to complete before saving report or exiting software.

Single Device Data Process

This function imports the single device history data saved in the SIGA-HDT internal memory to the Signature Diagnostic Tool software.

Figure 44: Single Device Report Process

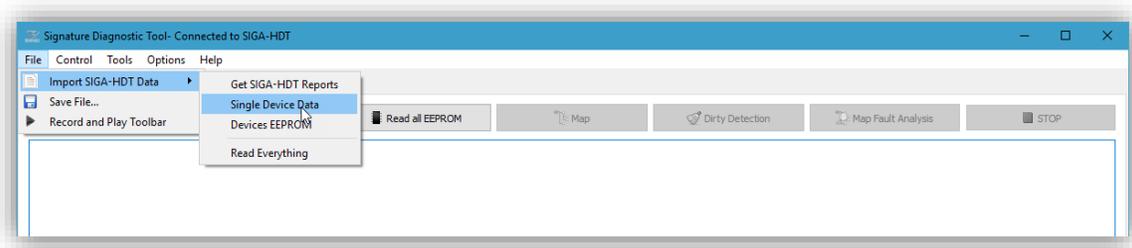
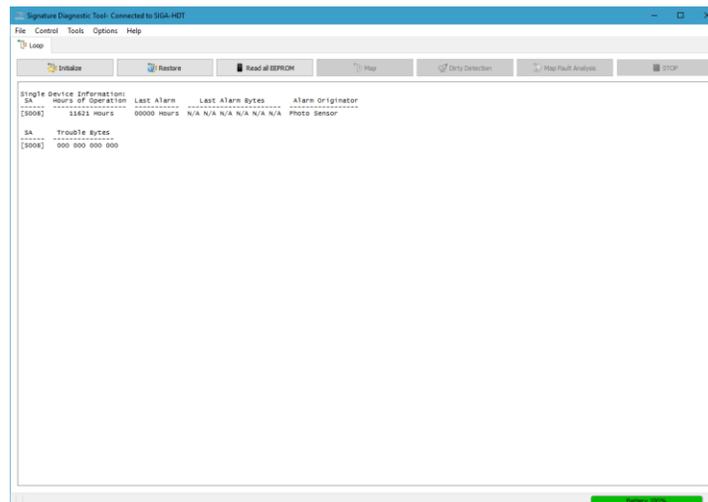


Figure 45: Single Device Report Data



The steps below show the process:

1. Open the PC Software (Signature Diagnostic Tool) installed on your desktop
2. Connect the SIGA-HDT to the Windows computer using the USB charging cable
3. Power up the device if not powered
4. Click on "File", navigate to "Import SIGA-HDT Data" and then click "Single Device Data"
5. Wait for import to complete before exiting

Saving Imported Data to PC

The data imported to the Windows PC software (P/N 7351009)) can be saved to Windows PC computer.

Figure 46: Saving Imported Report

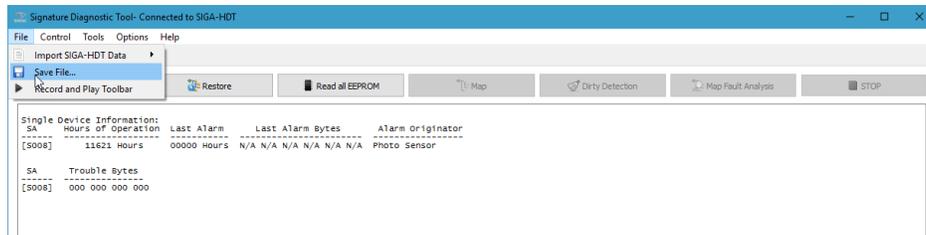
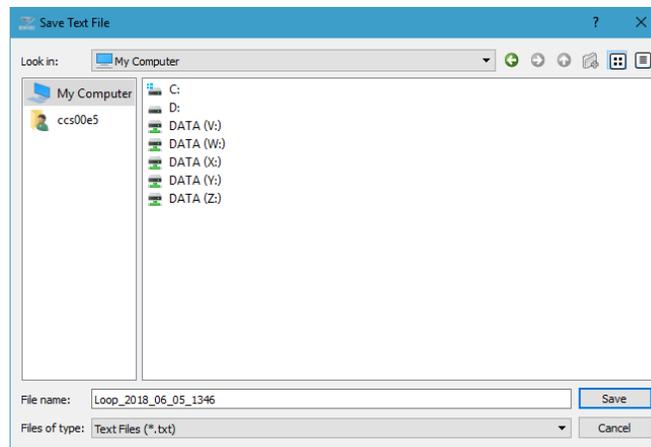


Figure 47: Report Location



Saving imported Data Process

The user can save imported device data in the Siganture Diagnostic Tool software to a computer by following the steps below.

1. Open the PC Software (Signature Diagnostic Tool) installed on your desktop
2. Connect the SIGA-HDT to the Windows computer using the USB charging cable
3. Power up the device if not powered
4. Import loop report as explained in the **Importing Data** section
5. Click on “**File**” and select “**Save File...**”
6. Enter the location to save file to and click save

Chapter 5

Troubleshooting

Summary

This chapter covers troubleshooting cases when certain issues arise on the loop or during firmware update.

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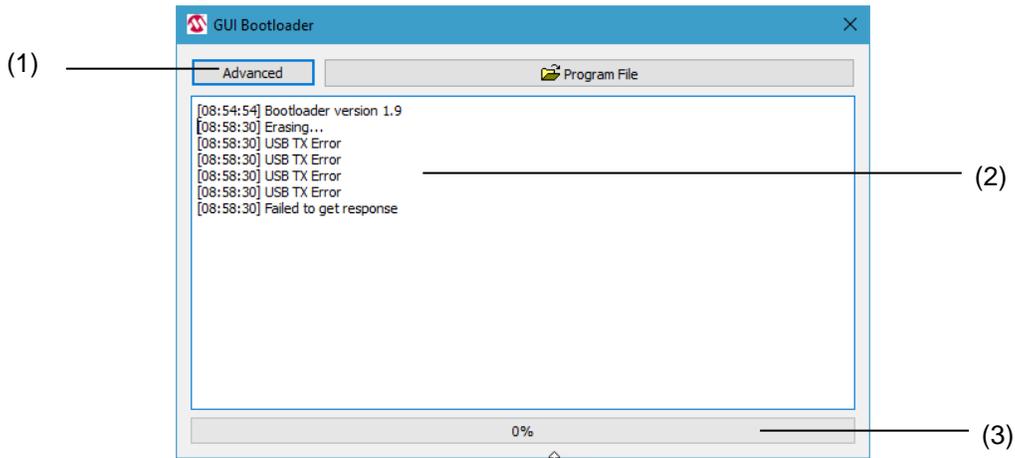
False End of Line Device 51
Ground Fault Detection 54
Device Error: 54

GUI Bootloader non-responsive

No Response from GUI Bootloader

If there is no response from the GUI Bootloader and a user is unable to update the firmware, the user can reset the Bootloader by following the steps below:

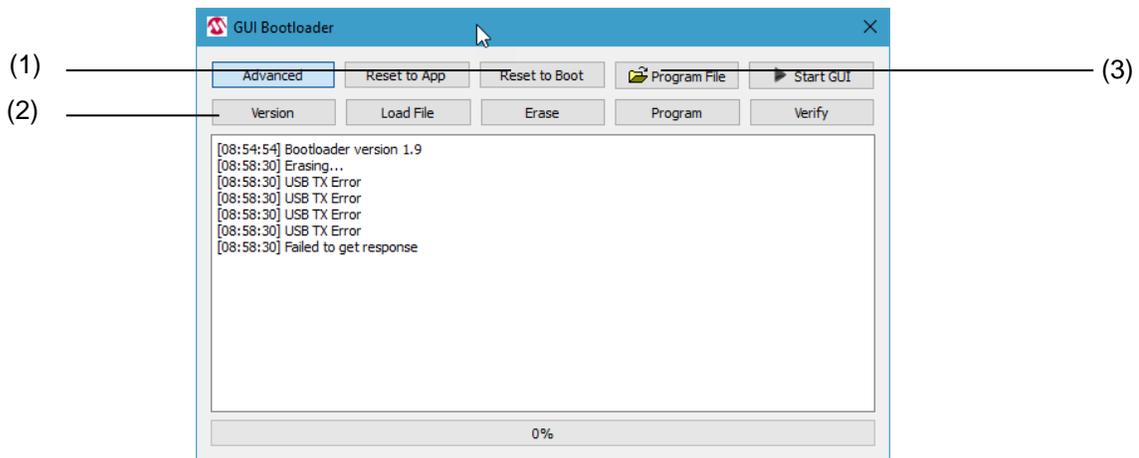
Figure 48: GUI Bootloader Advanced Option



- (1) Advanced button
- (2) Bootloader response

- (3) Firmware update progress bar

Figure 49: Active Advanced Screen



- (1) Reset button
- (2) Touch screen interface

- (3) Program File button

Troubleshooting Steps:

1. Click on “Advanced” button (Figure 48)
2. Click on “Reset to Boot” button (Figure 49)
3. Click “Version” to verify that the version number is displayed
4. Program File button becomes active

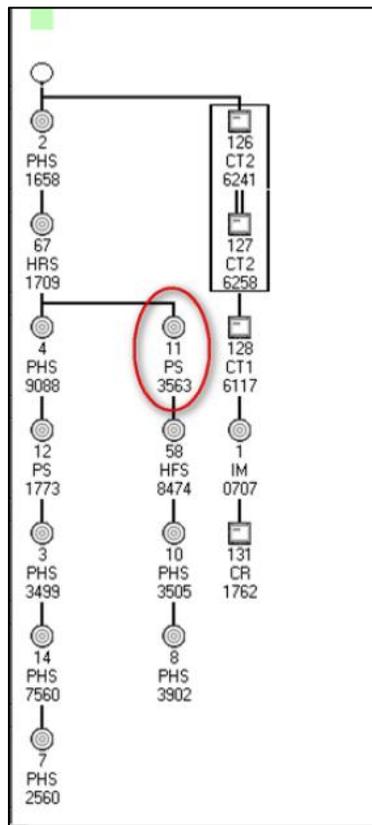
5. Click on “Program File” and locate the firmware hex file to start the update
6. Close GUI Bootloader when complete

Low current difference value

Map

In this troubleshooting example, both analysis methods (map consistency and contact analysis) are used for a simple class B circuit with modules and T-taps to detect devices with low current difference (DIF). Devices reporting a DIF value of 5 or less need to be investigated.

Figure 50: Low current difference device



Reports

Devices with a current DIF value of less than or equal to 5 are flagged as *failed*. They are also shown in the report summary imported from the SIGA-HDT.

Figure 51: Report for low current difference devices

```
Executing Contact Analysis...
Mapping End of Line Device:
[S135] D000 "5000000005" SIGA1 v1.0 CC1 (Manufactured: 01/01/2015)
SA DA Q V DIF
-----
001 000 100 088 012
002 000 095 090 005 <-- FAILED
003 000 094 085 009
004 000 098 084 014
005 000 098 089 009
006 000 099 090 009
007 000 099 085 014
008 000 092 082 010
009 000 097 088 009
010 000 097 083 014
011 000 098 089 009
012 000 098 086 012
013 000 093 082 011
129 000 097 109 -12
130 000 098 111 -13
131 000 098 111 -13
132 000 099 112 -13
133 000 095 107 -12
Device Count: 26
Total End of Lines Detected: 1

Mapping Consistency Report
-----
Detectors are consistent.

Contact Analysis Report
-----
[S002] D000 "3682464887" SIGA1 v5.0 HFS
Contact Analysis Complete.

Ground Fault Detection...
No Ground Fault detected at SIGA-HDT

Checking trouble on devices...
No trouble detected

Analysis complete!
```

Reversed IN/OUT wiring

When wired correctly, detectors report a positive DIF; modules report a negative DIF.
 When the IN- and OUT- of a device are reversed, the opposite is true.
 Incorrectly wired detector bases report a negative DIF.
 Incorrectly wired modules report a positive DIF.

Figure 52: Reversed base report

```

E2 Low Fault Current - Notepad
File Edit Format View Help
Executing Contact Analysis...
Mapping End of Line Device:
[0004] D007 "310122580" S0GA2 v2.3 PMS
SA DA Q V DIF
D01 D01 67 67 -8 (1)
D02 D02 68 68 9
D11 D04 68 57 13
D12 D02 62 5A 8
D16 D14 59 54 9
DNO D21 3F 54 11
Device Count: 6

Mapping End of Line Device:
[0014] D008 "310213902" S0GAL v4.0 PMS
SA DA Q V DIF
D02 D11 63 58 5
D03 D07 6A 61 9
D07 D16 6A 5C 8
D12 D10 63 57 12
D13 D01 62 59 9
Device Count: 5

Mapping End of Line Device:
[0013] D111 "310811702" S0GAL v7.1 CR
SA DA Q V DIF
D09 D06 65 62 12
D10 D10 65 60 -12
D12 D12 5C 68 -12 (2)
Device Count: 3

Mapping Consistency Report
*****
Detectors are consistent.

Contact Analysis Report
*****
[0002] D011 "3911013503" S0GAL v5.0 PMS
Analysis Complete!
  
```

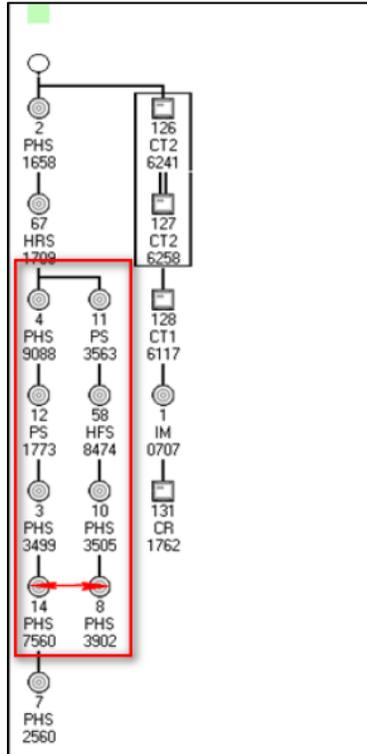
- (1) A negative DIF result is reported for a detector with reversed IN and OUT connections
- (2) Negative DIF results are also reported for correctly wired modules

Loop-in-a-loop

Map

A loop-in-a-loop occurs when two devices on a separate T-tap are wired together. The devices in the inner loop report half their normal DIF value. Contact analysis is useful in detecting a loop-in-a-loop.

Figure 53: Devices wired together to form a loop-in-a-loop



Reports

All devices in a loop within a loop are flagged as failed in the report. Devices outside the loop are not flagged.

Figure 54: Report for a loop-in-a-loop

```

Executing Contact Analysis...
Mapping End of Line Device:
[s135] D000 "5000000005" SIGA1 v1.0 CC1 (Manufactured: 01/01/2015)
SA DA Q V DIF
-----
001 000 100 088 012
002 000 095 090 005 <-- FAILED
003 000 085 088 -03 <-- FAILED
004 000 098 084 014
005 000 098 089 009
006 000 099 096 003 <-- FAILED
007 000 099 085 014
008 000 092 082 010
009 000 097 088 009
010 000 097 083 014
011 000 098 089 009
012 000 098 086 012
013 000 093 082 011
129 000 097 109 -12
130 000 098 111 -13
131 000 098 111 -13
132 000 099 112 -13
133 000 101 107 -06 <-- FAILED
Device Count: 26
Total End of Lines Detected: 1

Mapping Consistency Report
-----
detectors are consistent.

Contact Analysis Report
-----
[s002] D000 "3682464887" SIGA1 v5.0 HFS
[s003] D000 "3682462449" SIGA1 v5.0 HFS
[s006] D000 "3682462401" SIGA1 v5.0 HFS
[s135] D000 "5000000005" SIGA1 v1.0 CC1
Contact Analysis complete.

Ground Fault Detection...
No Ground Fault detected at SIGA-HDT
checking trouble on devices...

```

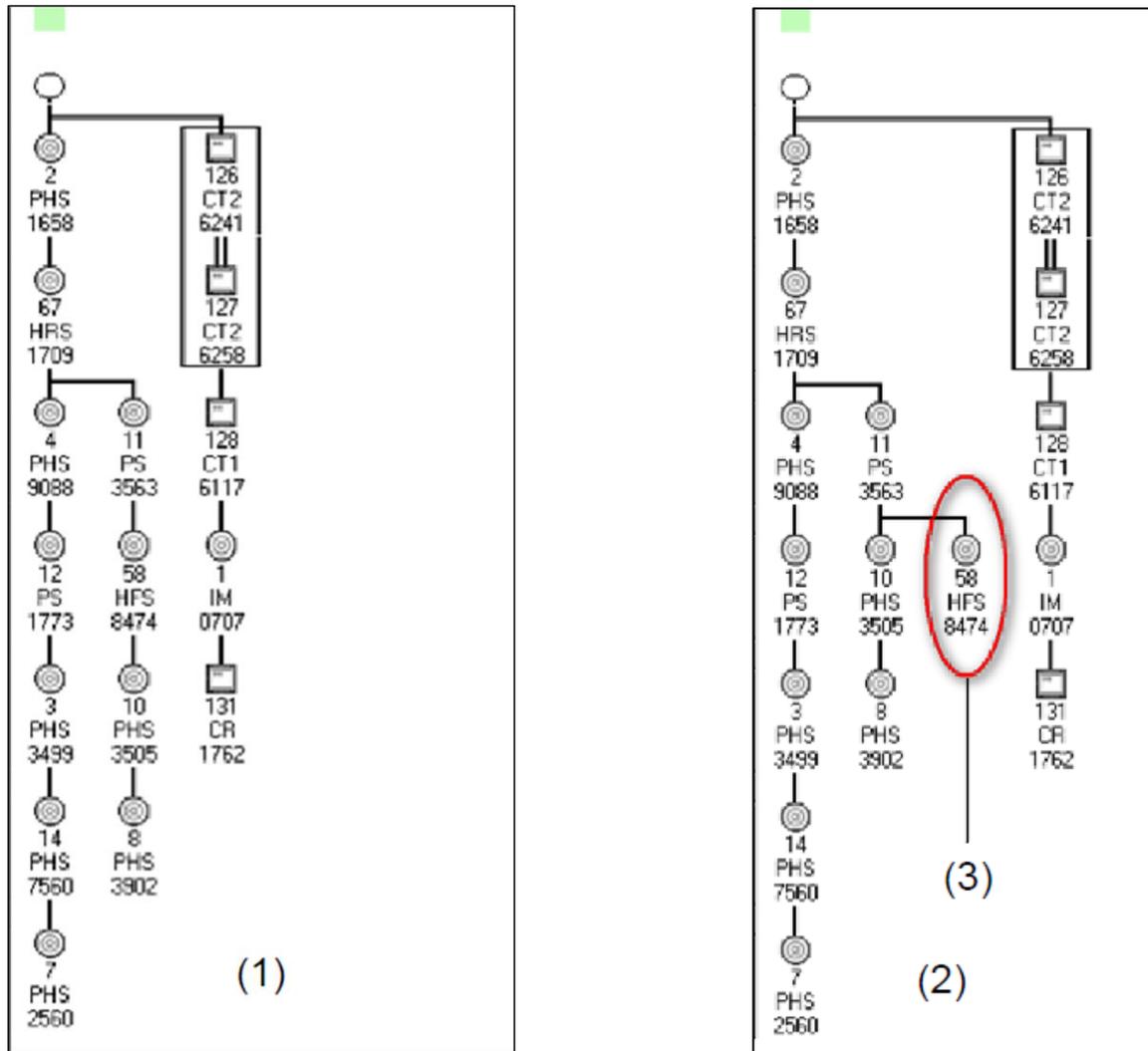
False End of Line Device

In this troubleshooting example, the contact analysis method is used for a simple class B circuit with modules and T-Taps.

The mapping analysis report shows an unexpected end-of-line device, but this is only apparent when compared to the expected (original) CU or SDU map and statistics.

Map

Figure 55: Maps showing a false T-tap and end-of-line device



- (1) Original map
- (2) False T-tap and end-of-line map

- (3) False end-of-line device

Reports

The following process can be used to investigate a device with false T-tap and end-of-line device in the map.

To troubleshoot false end-of-line devices:

1. Use the original CU or SDU map (prior to the map fault or map mismatch trouble) to get the end-of line device addresses (from the map) and the T-tap count (from the map loop statistics)
2. Uploaded the current map from the SLC that is reporting the map fault or map mismatch trouble
3. Use the current map to get the end-of-line device address (from the map) and the T-tap count (from the map statistics)
4. Use the SIGA-HDT report (the sections of the end-of-line device) to identify the device addresses that are not actual end-of-line devices
5. Investigate the devices identified as false end-of-lines for the issues listed in “Causes of map faults” on page 8.

Figure 56: Maps showing a false T-tap and end-of-line device

```

Ex7 False T-tap.txt - Notepad
File Edit Format View Help
0000 0000 0000 0040 0000 0000 0000 0000 0000 0000 7000 0000 0000 0000 0000 0000 0000
0000 0000 0000 0040 0000 0000 0000 0000 0000 0000 7000 0000 0000 0000 0000 0000 0000

Building Device Database...
Searching for End of Line Devices...
End of Line Devices:
-----
[0004] D007 "3410122560" SIGA2 v2.3 PHS
[S007] D058 "3602248474" SIGA1 v5.0 HFS
[S014] D008 "3400433902" SIGA1 v4.0 PHS
[S143] D131 "5298841762" SIGA1 v7.1 CR
Total End of Lines Detected: 4

Executing Contact Analysis...
Mapping End of Line Device:
[S004] D007 "3410122560" SIGA2 v2.3 PHS
SA DA Q V DIF
--- --- --- --- ---
003 003 67 6F -8
005 067 6A 61 9
011 004 64 57 13
013 002 62 5A 8
018 014 5D 54 9
040 012 5F 54 11
Device Count: 6

Mapping End of Line Device:
[S007] D058 "3602248474" SIGA1 v5.0 HFS
SA DA Q V DIF
--- --- --- --- ---
002 011 63 5B 8
005 067 6A 61 9
013 002 62 5A 8
Device Count: 3

Mapping End of Line Device:
[S014] D008 "3400433902" SIGA1 v4.0 PHS
SA DA Q V DIF
--- --- --- --- ---
002 011 63 5B 8
005 067 6A 61 9
007 058 64 5C 8
012 010 63 57 12
013 002 62 59 9
Device Count: 5

Mapping End of Line Device:
[S143] D131 "5298841762" SIGA1 v7.1 CR
SA DA Q V DIF
--- --- --- --- ---
057 001 63 57 12
129 126 61 6D -12
130 126 61 6D -12
131 128 5C 68 -12
Device Count: 4

Mapping Consistency Report
-----
Detectors are consistent.

Contact Analysis Report
-----
Contact Analysis Complete. No Faulty Devices Found

Analysis Complete!

```

- (1) Device address 58 does not belong in the EOL device group
- (2) Device address 58 was analyzed as an end-of-line device error

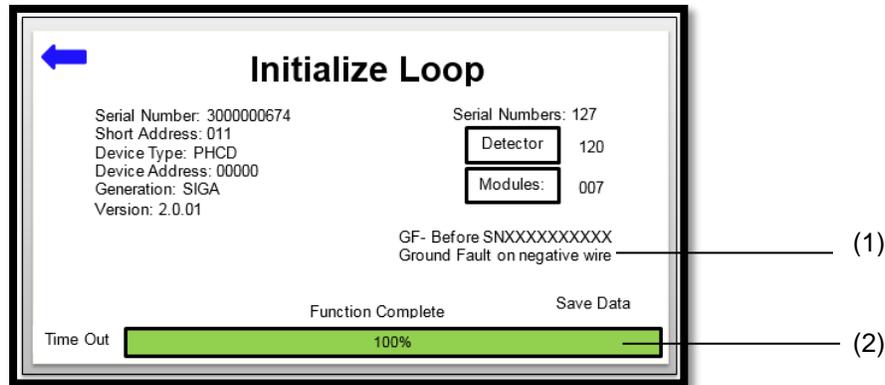
Ground Fault Detection

There are two ways the SIGA-HDT notifies users of a **Ground Fault**. The ground fault status is only displayed on the **Initialize Loop** page during initialization and when there is a ground fault at the SIGA-HDT.

First, connect Pin10 of the HDT terminal block to Chassis ground of your panel.

1. The SIGA-HDT checks the terminal blocks of the SIGA-HDT for possible ground faults
2. The SIGA-HDT checks for negative ground fault each time an isolator closes

Figure 57: Ground Fault check during Initialization



- (1) Ground Fault on negative wire with isolation base
- (2) Timeout bar

Note:

1. The SIGA-HDT also notifies a user of a positive ground fault display as "Ground Fault on positive wire."
2. The SIGA-HDT notifies a user of a negative ground fault if there is no isolator base, displayed as "Ground Fault on negative wire".
3. The negative ground fault when there is an isolator base also displays the serial number before after the ground fault.

Device Error:

The SIGA-HDT displays an Error button including error counts during initialization only when an error exist. Below are the steps needed to access the device errors:

1. Press the "Device Error" button that appears to view all errors
2. Review error description and troubleshoot as required.

Figure 58: Device error during initialization.

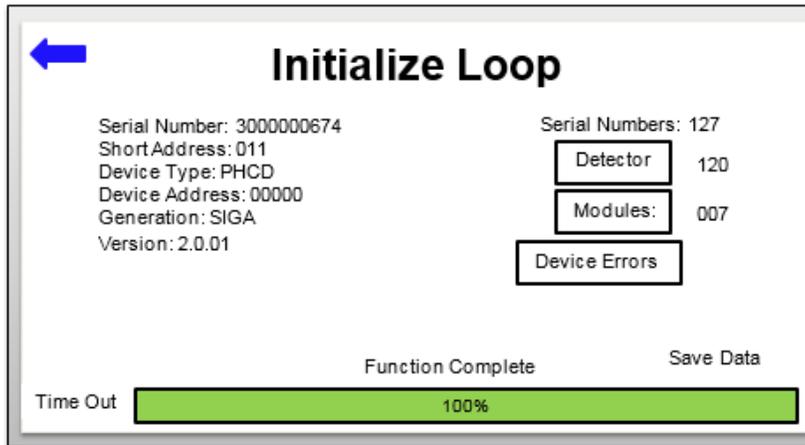
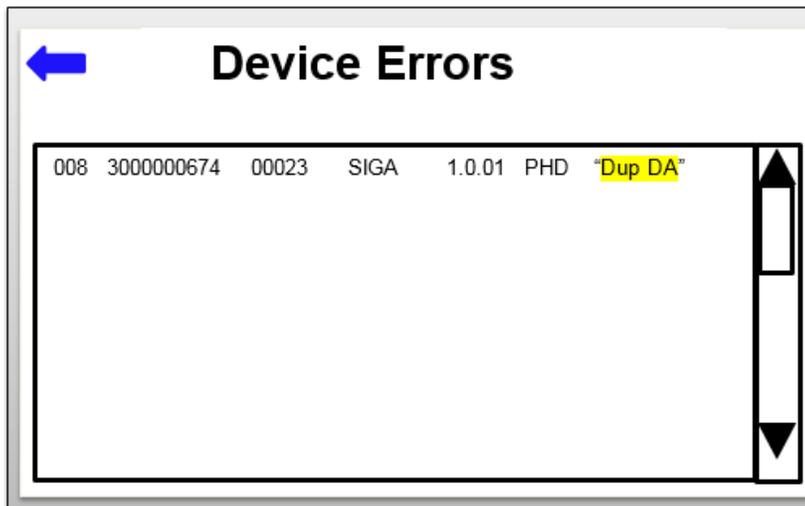


Figure 59: Device error list

**Note:**

1. The yellow highlighted text indicate the description of the device error
2. Dup DA means Duplicate Device Address
3. GF means Ground Fault
4. Comm Error means communication error which is a result of bad device communication
5. Short Error means there is a short on the wire

Chapter 6

Advanced Functions

Summary

The chapter covers advanced functions needed by technical support for advanced troubleshooting.

Content

Read Device EEPROM 58
Read EE Data 60

A/D Value 61

Read Device EEPROM

The Read EEPROM function is an advanced function which may be requested by technical support or engineering. The data produced by this function may be requested by technical support or engineering to remotely resolve an issue. This function allows a user to read EEPROM from the entire loop or from a single device.

Figure 60: Read EEPROM Function

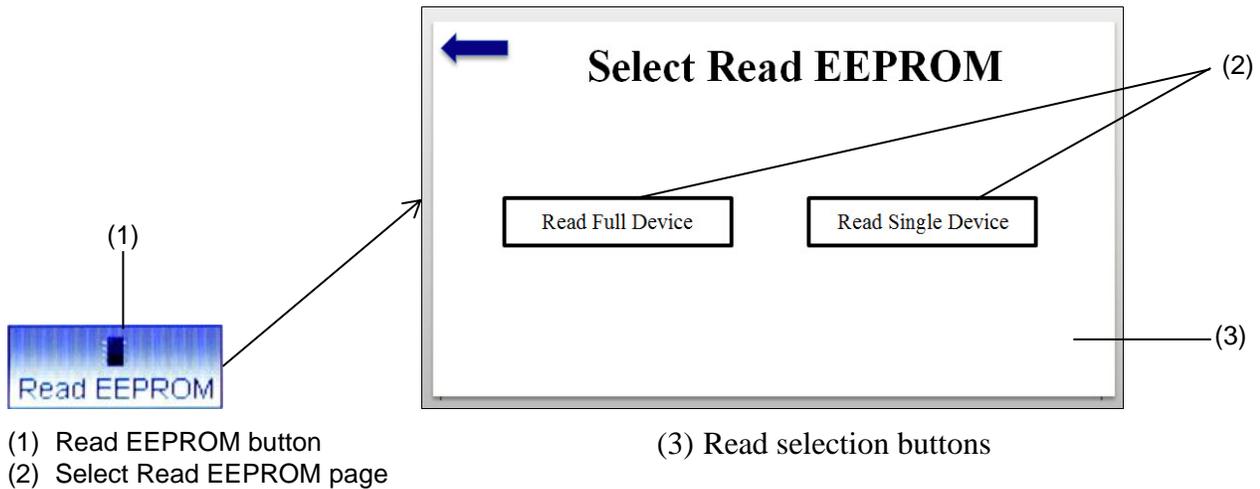
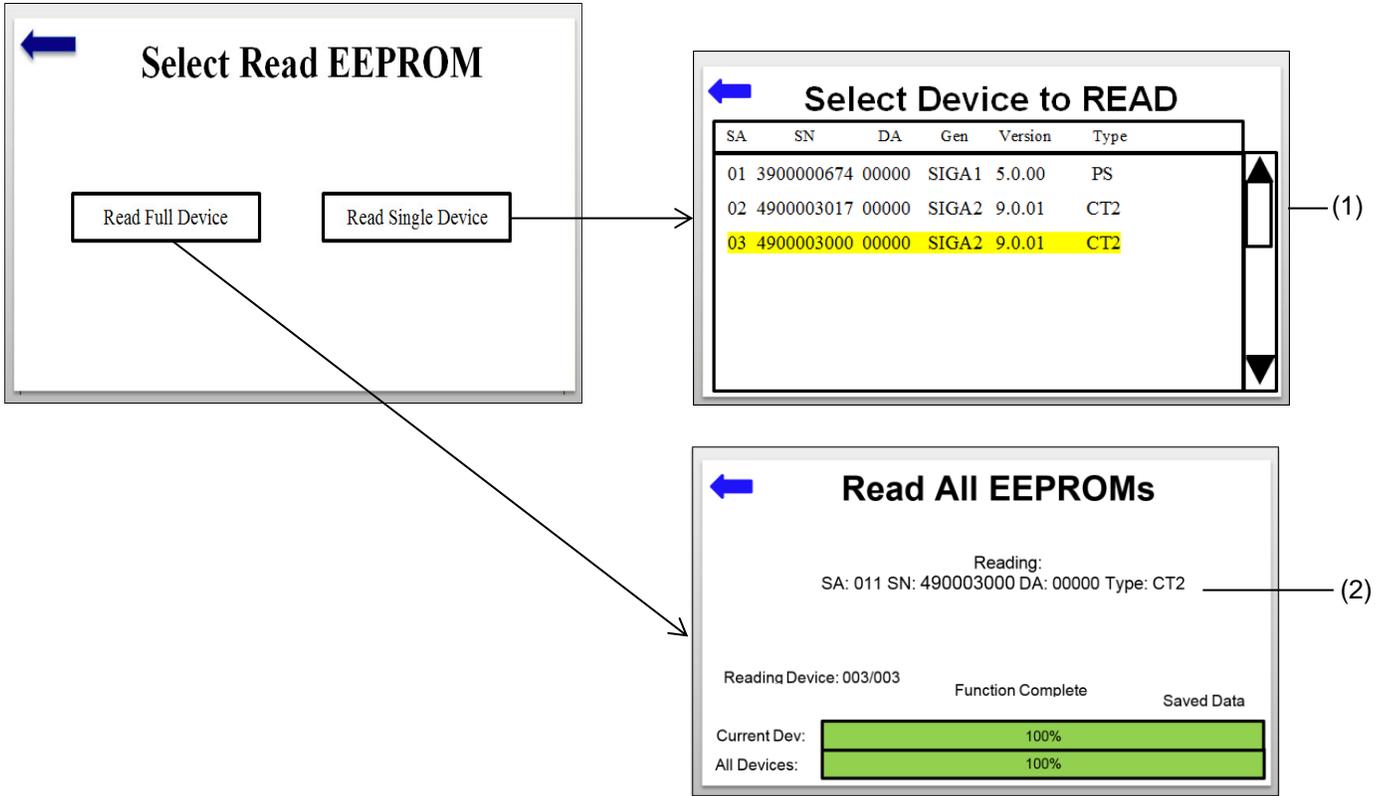


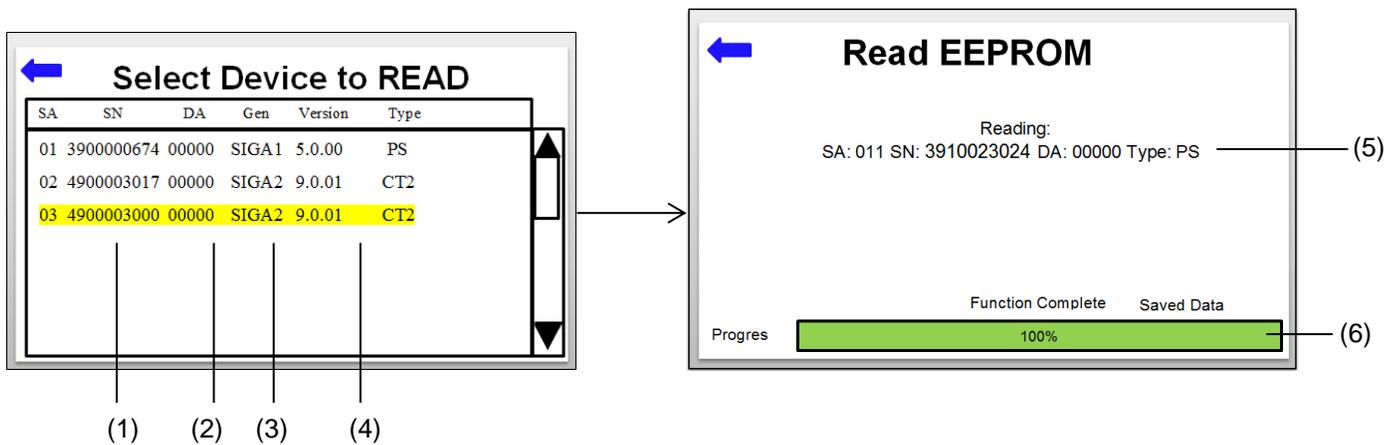
Figure 61: Select Read EEPROM Function



- (1) Select single device list page
- (2) Read all EEPROMs page

- (3) Current device information

Figure 62: Read EEPROM Function



- (1) Serial number of unit
- (2) Device address
- (3) Generation of unit

- (4) Unit firmware version
- (5) Unit type
- (6) Save Data text

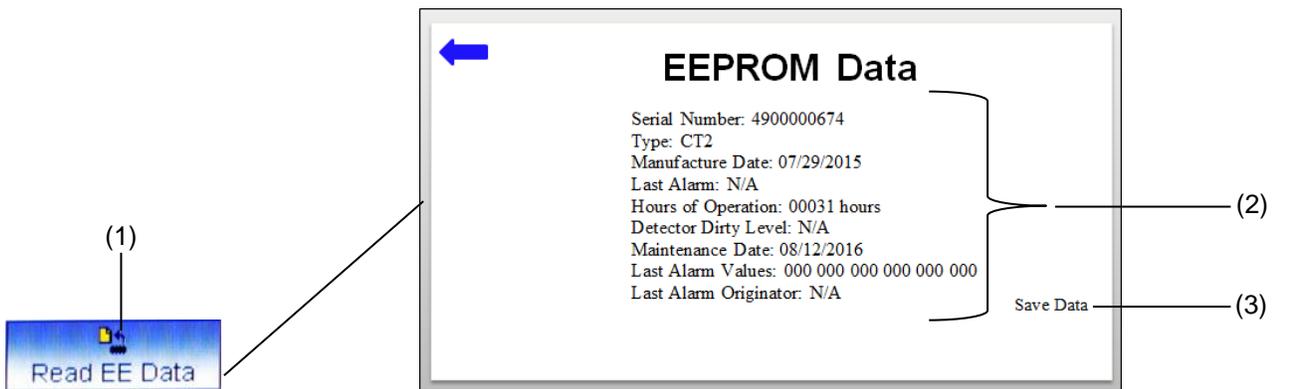
The Read EEPROM Process:

1. Press the **Diagnostic** button on the main menu screen
2. Press Read EEPROM
3. To Read Full Loop
 - Press **Read Full EEPROM** button to execute the read EEPROM of full loop (more than one device)
4. To Read Single Device
 - Press the Read Single Device button on the Select Read EEPROM page
5. Select the device to be read (Figure 51) and the process of reading the EEPROM will start immediately

Read EE Data

The Read EE Data function is an advanced function which may be requested by technical support or engineering.

Figure 63: Read EE Data Function



- (1) Read EE button
- (2) Unit EEPROM information

(3) Confirmation of data saved to SIGA-HDT database

1. Press the **Read EE Data** to perform this function
2. Press the back button to return to **Single Device Menu** when data has been saved

Note:

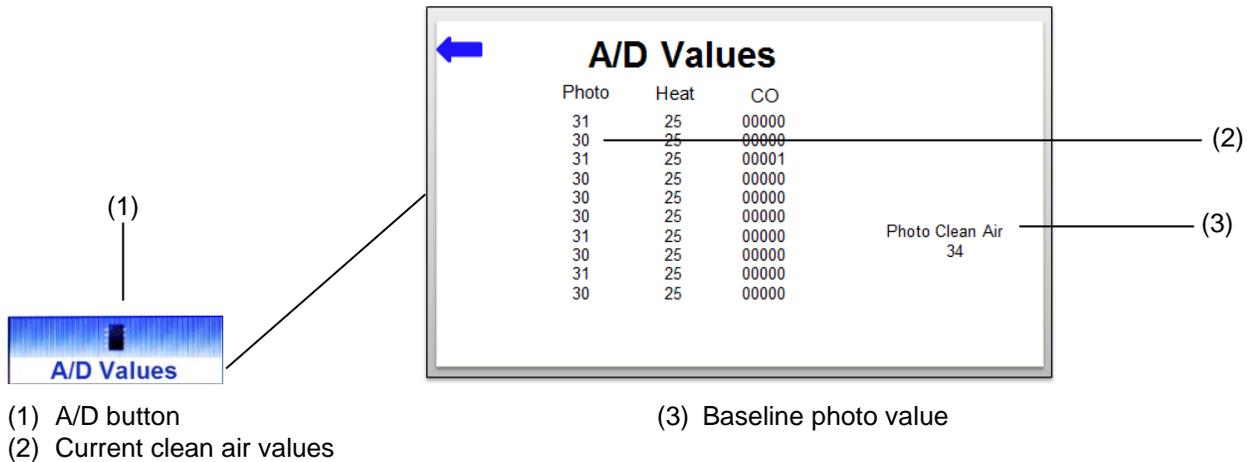
1. Many of the single device functions are advanced functions used by technical support or engineering to provide additional support to users in the field
2. This function displays some information such as the device serial number, device type, last Alarm hour, hour of operations, and dirty level

A/D Value

A/D Value

The A/D values of a detector is an advanced function that may be requested by technical support or engineering in order to determine if the current A/D values of a detector are too high.

Figure 64: A/D Function



1. Press the “**A/D Value**” to execute this function

Note:

This function takes twelve (12) dynamic readings, each of the Photo, Heat, and/or CO values of the selected detector. The baseline photo clean air value programmed into the detector at the factory is also displayed. This function allows an advanced user to see how the current photo clean air, heat, and/or CO values are drifting.

Appendix A

Trouble Codes

Summary

Appendix A gives detailed description of the trouble conditions for detectors and modules and how to resolve them.

Content

Detectors' trouble codes 65

Modules' trouble codes 66

Device Error Code 67

PC Software Errors 67

Detectors' trouble codes

| Trouble Condition | Possible Cause | Possible Solution |
|--|--|--|
| EEPROM empty | EEPROM falsely programmed | Replace the detector |
| EEPROM timeout | EEPROM defective | Replace the detector |
| Wrong type of det. Programmed | EEPROM falsely programmed or not programmed | Replace the detector |
| EEPROM verify error | EEPROM defective | Replace the detector |
| Outside light error | Foreign materials in the light chamber, or direct light is radiating into the chamber | Clean detector, or eliminate the direct light source |
| Quiescent value threshold O sensor exceeded | Detector is dirty | Clean detector |
| Quiescent value threshold O sensor not met | Detector is dirty | Clean detector |
| Filtered O test value too big | Electrical defect on the device base | Check the wiring of the base or replace the base |
| Filtered O test value too small | Electrical defect on the device base | Check the wiring of the base or replace the base |
| Ion chamber test value slope too steep | Electrical defect in the ion chamber, or programmed quiescent value too small | Replace the detector |
| Quiescent value threshold I sensor exceeded | Detector is dirty | Clean detector |
| Quiescent value threshold I sensor not met | Detector is dirty | Clean detector |
| I test value too small | Detector is defective | Replace the detector |
| T test value too big | Electrical defect on the device base | Check the wiring of the base or replace the base |
| T test value too small | Electrical defect on the device base | Check the wiring of the base or replace the base |
| A/D convert.timeout | A/D converter defective | Replace the detector |
| SOC amplif. too small | Ion sensor failure | Replace the detector |
| SOC decay too fast | Ion sensor failure | Replace the detector |
| SOC decay too slow | Ion sensor failure | Replace the detector |
| Quiescent current too large dur. vector mes. | Devices on the SLC data circuit are drawing too much current during the mapping procedure | Check the wiring of the detector or replace the module |
| Quiescent current too small dur. vector mes | Devices on the SLC data circuit are not drawing enough current during the mapping procedure. Excessive circuit resistance | Check the wiring of the detector or replace the module |
| Short on Relay base | Relay base is defective | Replace the base |
| Relay or isolator does not switch | Relay/Isolator base is defective | Replace the base |
| Relay or isolator toggled | Relay base is defective External electrical noise | Exchange the base or remove shield/noise source |
| Short circuit on external D line | Short circuit on SLC line | Locate and remove cause of short |

| | | |
|--|---------------------------|-----------------------------------|
| Open circuit on external D line | Short circuit on SLC line | Locate and remove cause of short |
| Error with transmitted light measurement | Detector is dirty | Clean the detector |
| Det. has switched into short circ | Short circuit on SLC line | Locate and remove cause of short |
| CO not calibrated | EEPROM defective | Replace the detector |
| CO end of life | Reached EOL | Replace the CO sensor or Detector |
| CO sensor failed | Detector is defective | Replace the detector |
| CO communication (UART) failed | Detector is defective | Replace the detector |

Modules' trouble codes

| Trouble Condition | Possible Cause | Possible Solution |
|--------------------------|--|---|
| EEPROM empty | EEPROM not programmed | Replace detector |
| EEPROM timeout | EEPROM defective | Replace the detector |
| AD timeout | | |
| EEPROM verify error | EEPROM defective | Replace the detector |
| Line monitor trouble | Monitor input circuit was outside normal range | Check the wiring of the Loop Controller data circuit |
| Class A trouble | Open or shorted input/output circuit | Check the wiring of the input/output circuit |
| Third wire trouble | Actual voltage on the 3rd wire used to supply 24 VDC to the SIGA-UM is < 22 VDC or > 27 VDC | Check the power supply output Check the wiring of the module |
| Memory fail | The module's on-board RAM is faulty | Replace the modules |
| Vector too big | Devices on the SLC data circuit are drawing too much current during the mapping procedure | Short or low resistance shunt on SLC data circuit |
| Vector too small | Devices on the SLC data circuit are not drawing enough current during the mapping procedure. Excessive circuit resistance | Check the wiring of the module or replace the module |
| CH1/CH2 open circuit | See Module in Trouble on Host Controller in Appendix B | See Module in Trouble on Host Controller in Appendix B |
| CH1/CH2 short circuit | See Module in Trouble on Host Controller in Appendix B | See Module in Trouble on Host Controller in Appendix B |
| CH1 relay trouble | See Signature Series Module Troubleshooting Matrix Below | See Signature Series Module Troubleshooting Matrix Below |
| CH1/CH2 ground fault | See Module not responding correctly in Appendix B | See Module not responding correctly on Appendix B |

Device Error Code

| Trouble Condition | Possible Cause | Possible Solution |
|--|--|--|
| Communication Error (Comm error) | Faulty Device, wiring, bad contacts on base, EMF | Check wiring, devices, and contacts |
| Short Error | Wire short | Remove any short on wire |
| Ground Fault error | Ground Fault on positive or negative wire | |
| Duplicate Device Address (Rotary only) | Rotary setting | Adjust rotary dial to remove duplicate |

PC Software Errors

| Errors Condition | Description | Possible causes | Possible Solution |
|-------------------|--|---|---|
| Voltage mismatch | SIGA-HDT's output voltage doesn't match the desired voltage. | Potential short on loop. Possible defective device(s) on the loop Too many devices connected to loop | Remove short if any is present Identify and remove any defective device Remove any excess devices than recommended |
| Current too high | SIGA-HDT's output current is too high | Potential short on loop. Possible defective device(s) on the loop Too many devices connected to loop | Remove short if any is present Identify and remove any defective device Remove any excess devices than recommended |
| Multiple Response | Two or more devices responding to a command simultaneously | Two are more devices have the same short address or serial number | Remove any duplicate device address or number |
| Parameter invalid | Invalid communication | Invalid command sent by GUI board to Interface board | Send HDT tool to technical or quality support |
| Bad Command | Invalid communication | Invalid command sent by GUI board to Interface board | Send HDT tool to technical or quality support |
| No Start Bit | No response from device(s) | Intermittent connection to device Particular device is no longer on the loop Device is defective Wire from controller to device too long | Check device to make sure proper connection is made Verify presence of devices Remove possible defective device Reduce wire length to first device if possible |
| No Stop Bit | No response from device(s) | Intermittent connection Defective device(s) | Check device to make sure proper connection is made Remove possible defective device(s) |
| Bad Parity | Bad parity response from device | Two or more devices have the same short address or serial number Defective device on loop | Remove any duplicate device address or number Remove possible defective device(s) |

Appendix B

Signature Series Module

Troubleshooting Matrix

Summary

Appendix B shows the troubleshooting matrix for the Signature series modules.

Content

Troubleshooting Matrix 69

Troubleshooting Matrix

| Module Not Responding Correctly | | | | | | | | |
|---|-----|----|-----|-----|-----|----|-----|--|
| CC1 | CC2 | CR | CT1 | CT2 | MM1 | UM | WTM | Possible Causes |
| X | X | X | X | X | X | X | X | Module installed in wrong location or improperly addressed |
| X | X | X | X | X | X | X | X | Module not entered into Loop Controller database |
| X | X | - | X | X | - | X | - | Incorrect personality code loaded into module. |
| - | - | - | - | X | - | X | - | Personality code for unused portion of module not set to 0. Personality Codes 1, 2, 3, 4, 8, 13, 14, & 16) |
| - | - | - | - | - | - | X | - | Jumper JP1 set incorrectly. (P-Code 8) |
| - | - | - | - | - | - | X | - | 24 VDC for smoke power low or missing. (Personality Codes 3, 14, 20, & 21) |
| - | - | - | - | X | - | X | X | Inputs 1 & 2 swapped. (Personality Codes 1, 2, 3, & 4) |
| - | X | - | - | - | - | - | - | Signal sources 1 & 2 swapped. (Personality Code 7) |
| X | X | X | X | X | X | X | X | Ground Fault on data circuit or (-) side of input/output circuit |
| Module in Trouble on Host Controller | | | | | | | | |
| X | - | - | X | X | X | X | X | Module missing or mis-wired on Loop Controller data circuit. |
| X | - | - | X | X | X | X | X | Mapping error. Module not loaded into Loop Controller database. |
| X | - | - | X | X | X | X | X | Ground Fault on input or output circuit. |
| X | X | - | - | - | - | X | - | Output circuit open, shorted, mis-wired, polarized device installed in reverse, incorrect or missing EOL resistor. |
| - | - | - | X | X | X | X | X | Missing or incorrect EOL resistor. (Personality Codes 1, 2, 3, 4, 13, 14, 16, 20, 21) |
| - | - | - | - | - | - | - | - | Internal module fault. |
| - | - | - | - | - | - | X | - | 24 VDC for smoke power low or missing. (Personality Codes 13, 14, 20, & 21) |
| Module Incorrectly in Alarm/Active on Host Controller | | | | | | | | |
| - | - | - | X | X | X | X | X | Initiating Device Circuit shorted or initiating device incorrectly installed. |
| - | - | - | X | X | X | X | X | Incorrect EOL resistor value (too low) |