

Spectrex SharpEye™ 40/40C & 40/40D Series

HART™ Manual



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1 Introduction

This manual describes how operators can use HART® handheld field communicators to configure the SharpEye 40/40 Flame Detectors to suit customer needs, perform firmware upgrades, and find troubleshooting information and functionality.

This manual also describes the HART hand-held communicator software and provides instructions on how to install, operate, and maintain the software.

2 Installation

2.1 Download the HART[®] device driver (DD)

To download the HART device driver:

Procedure

1. Go to [Spectrex.net](https://www.spectrex.net).
2. Navigate to the relevant product page.
3. Scroll down to **Documents and Drawings**.
4. Click **SOFTWARE DOWNLOADS && DRIVERS**.
5. Download the relevant file.

2.2 Load device driver (DD) on HART[®] hand-held communicator

Procedure

1. Load the DD on the HART hand-held communicator.
2. Select **Setup**.

3 Operating the HART® hand-held communicator

From the main screen, you have three options:

Figure 3-1: Main screen

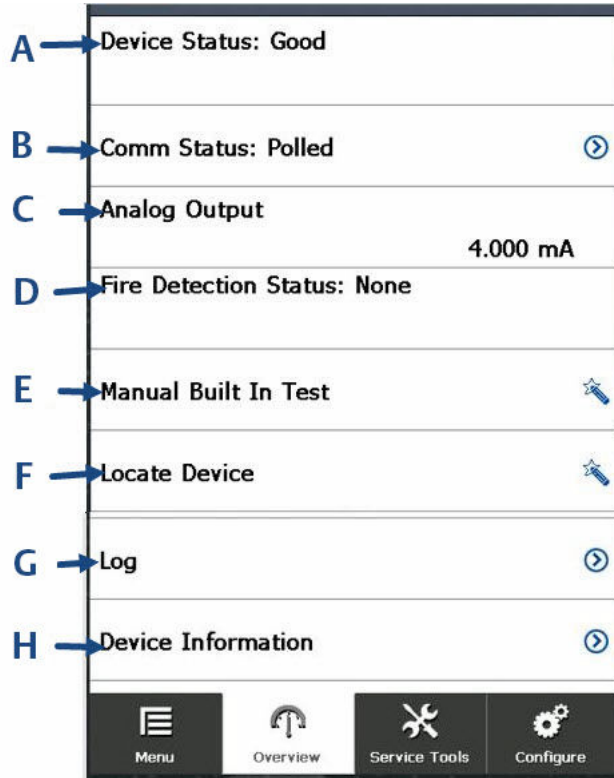


- A. Overview: Opens **Overview** screen.
- B. Service Tools: Opens **Service Tools** screen.
- C. Configure: Opens **Configure** screen.

3.1 Overview screen

The **Overview** screen gives a summary of the device information.

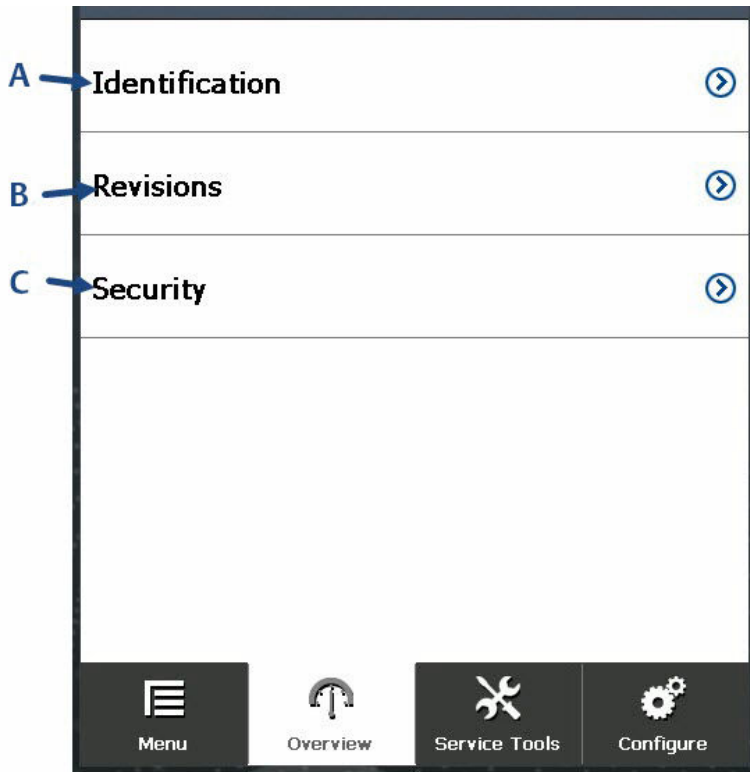
Figure 3-2: Overview screen



- A. *Device Status*: Available options are Good, Failure, and Maintenance Required.
- B. *Comm Status*: Displays communication method. This is polled.
- C. *Analog Output*: Displays a value between 1 mA and 20 mA when the device is turned on.
- D. *Fire Detection Status*: Indicates whether the device has detected fire. Available options are None and Detected.
- E. *Manual Built In Test*: Click to perform built in test.
- F. *Locate Device*: Click here to make the device light-emitting diode (LED) blink to locate a connected device.
- G. *Log*: Shortcut to **Log** screen.
- H. *Device Information*: Displays **Device Information** screen. When you open the **Device Information** screen from the **Overview** screen, all fields are read only.

3.2 Device information screen

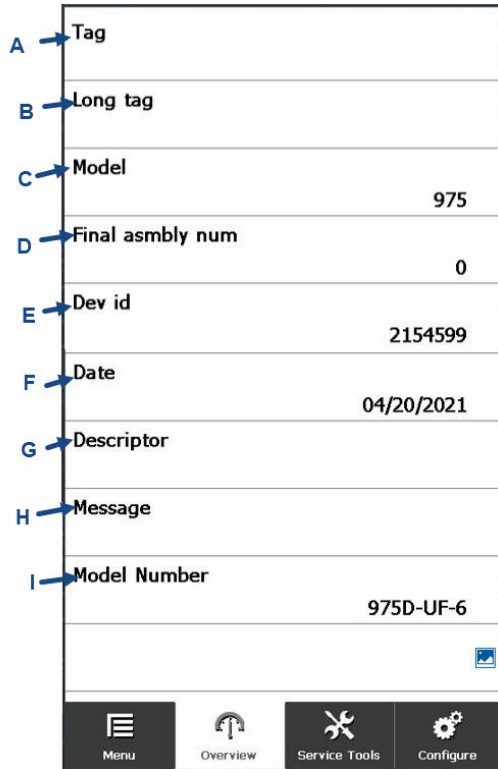
Figure 3-3: Device information screen



- A. *Identification*: Opens **Identification** screen.
- B. *Revisions*: Opens **Revisions** screen.
- C. *Security*: Opens **Security** screen.

3.2.1 Identification screen

Figure 3-4: Identification screen



- A. Tag
- B. Long tag
- C. Model
- D. Final assembly num (Final assembly number)
- E. Dev id (Device identification)
- F. Date
- G. Descriptor
- H. Message
- I. Model Number

Note

When you access the **Identification** screen from the **Overview** screen, all fields are read only.

3.2.2 Revision numbers screen

Figure 3-5: Revision numbers screen

A →	Universal rev	7
B →	Fld dev rev	1
C →	Hardware rev	1
D →	Software rev	1
E →	DD Revision	1

The screenshot shows a mobile application interface. At the top, there is a table with five rows. Each row has a letter (A-E) with an arrow pointing to the first column. The first column contains revision names, and the second column contains numerical values. Below the table is a dark navigation bar with four icons and labels: a list icon for 'Menu', a refresh icon for 'Overview', a wrench icon for 'Service Tools', and a gear icon for 'Configure'.

- A. Universal rev: Universal revision
- B. Fld dev rev: Field device revision
- C. Hardware rev: Hardware revision
- D. Software rev: Software revision
- E. DD Revision: Device driver revision

3.2.3 Security screen

Figure 3-6: Security screen

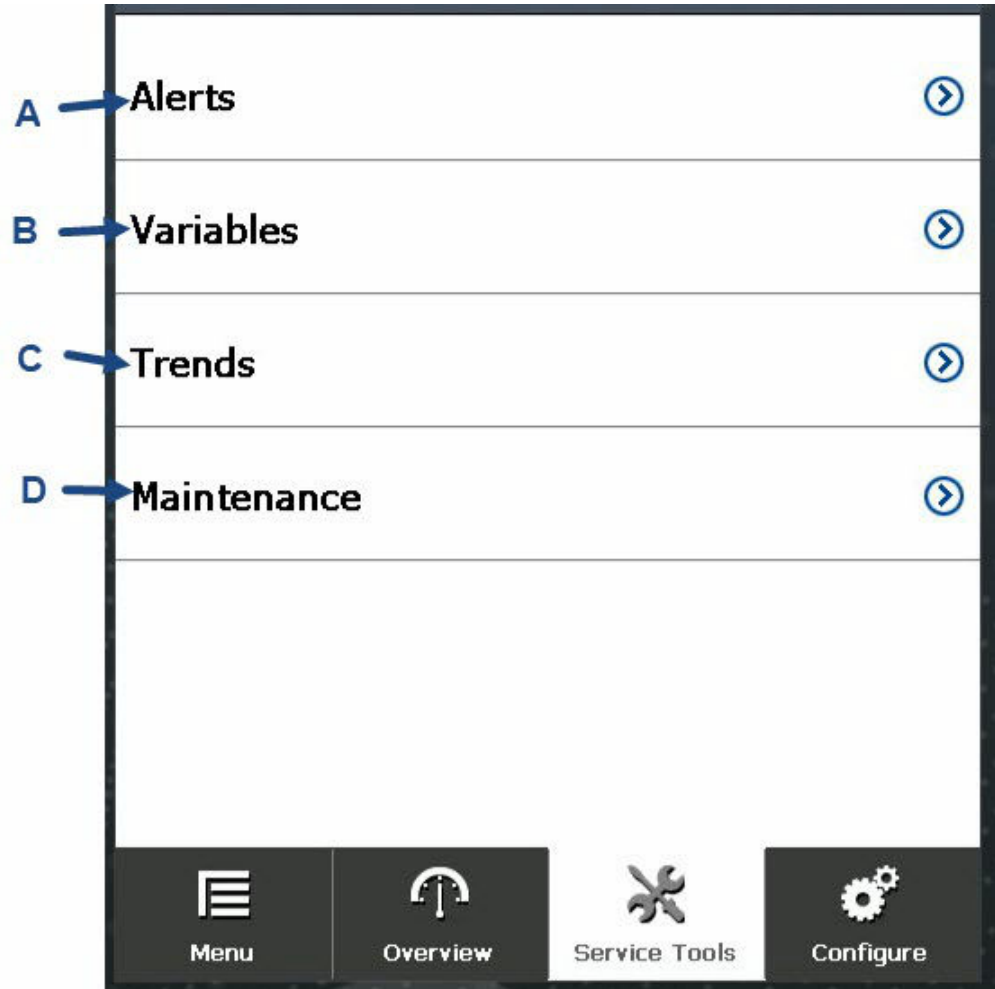


- A. Device lock status.
- B. Password Protection: Enabled or Disabled.

3.3 Service tools screen

The **Service Tools** screen provides links to sub-screens, in which you can view and edit service-related device parameters.

Figure 3-7: Service tools screen

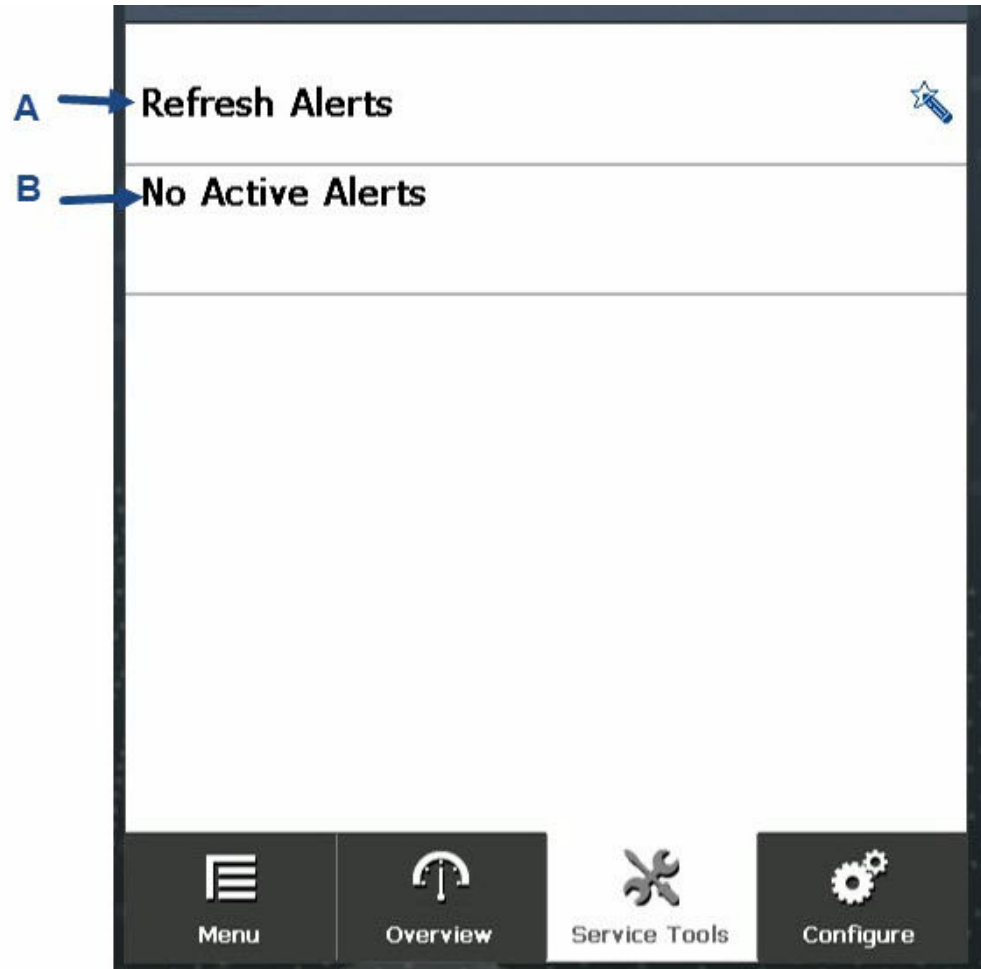


- A. Alerts
- B. Variables
- C. Trends
- D. Maintenance

3.3.1 Alerts screen

The **Alerts** screen provides information about device alerts and enables you to reset any active alerts.

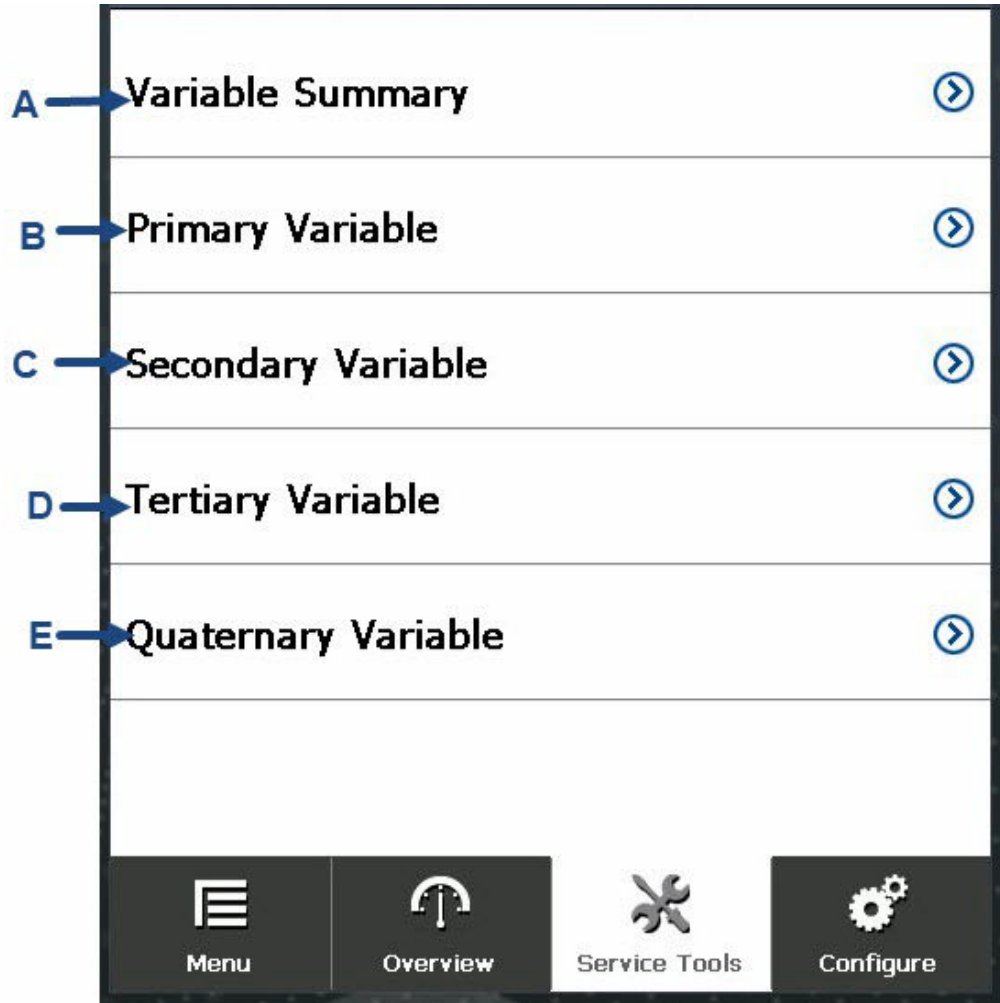
Figure 3-8: Alerts screen



- A. Refresh Alerts: Tap to refresh alert status.
- B. Displays alert status: No Active Alerts in this example.

3.3.2 Variables screen

Figure 3-9: Variables screen

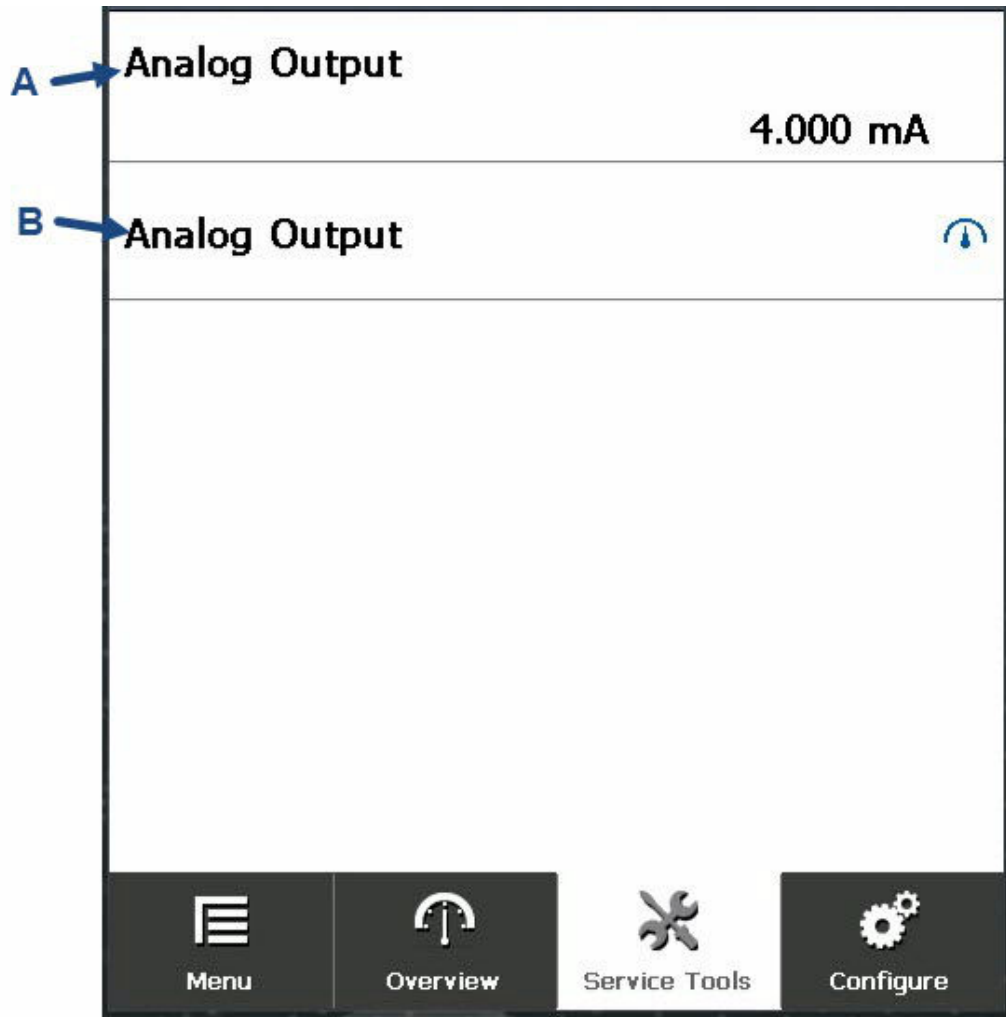


- A. *Variable Summary: Displays a summary of all variables.*
 - Analog output
 - Electronic temperature
 - Supply voltage
- B. *Primary Variable: Opens screen where you can select analog output variables.*
- C. *Secondary Variable: Opens screen where you can select temperature-related variables.*
- D. *Tertiary Variable: Opens screen where you can select voltage-related variables.*
- E. *Quaternary Variable: Opens screen where you can select heater-related variables.*

Primary variable screen

The **Primary Variable** screen displays the analog output.

Figure 3-10: Primary variable screen

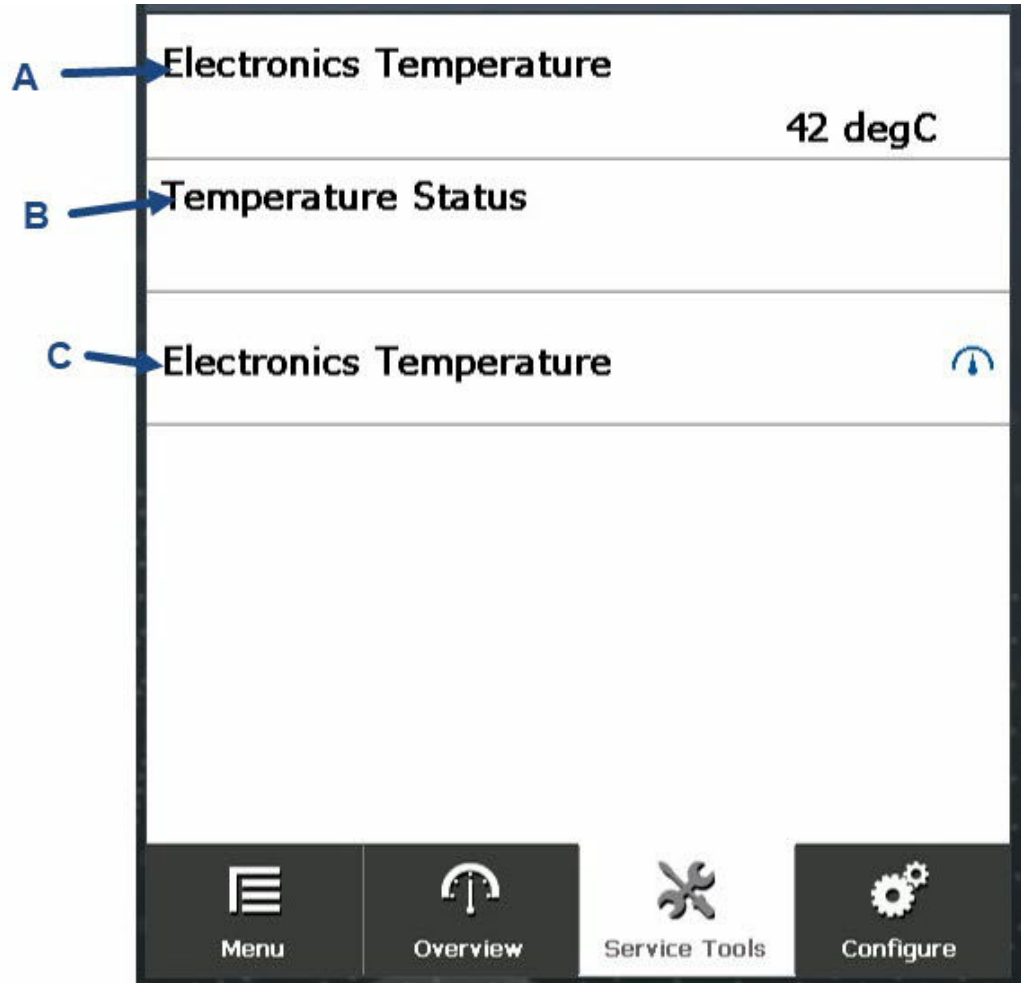


- A. Analog Output: Displays analog output.
- B. Analog Output gauge: Tap to display **Analog Output Gauge** screen.

Secondary variable screen

The **Secondary Variable** screen displays electronics information.

Figure 3-11: Secondary variable screen

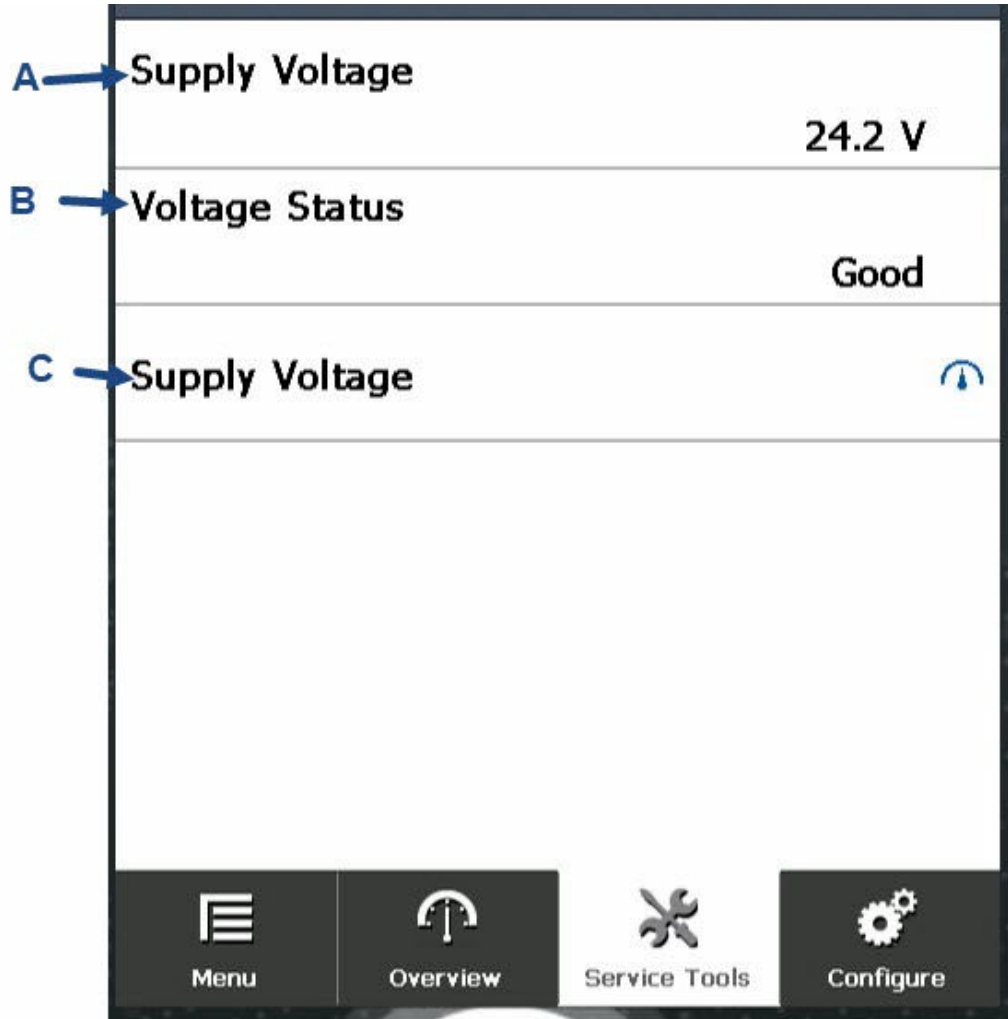


- A. *Electronics Temperature: Displays electronics temperature.*
- B. *Temperature Status: Displays how well the temperature is being read.*
- C. *Electronics Temperature gauge: Tap to display **Electronics Temperature gauge** screen.*

Tertiary variable screen

The *Tertiary Variable* screen displays voltage information.

Figure 3-12: Tertiary variable screen

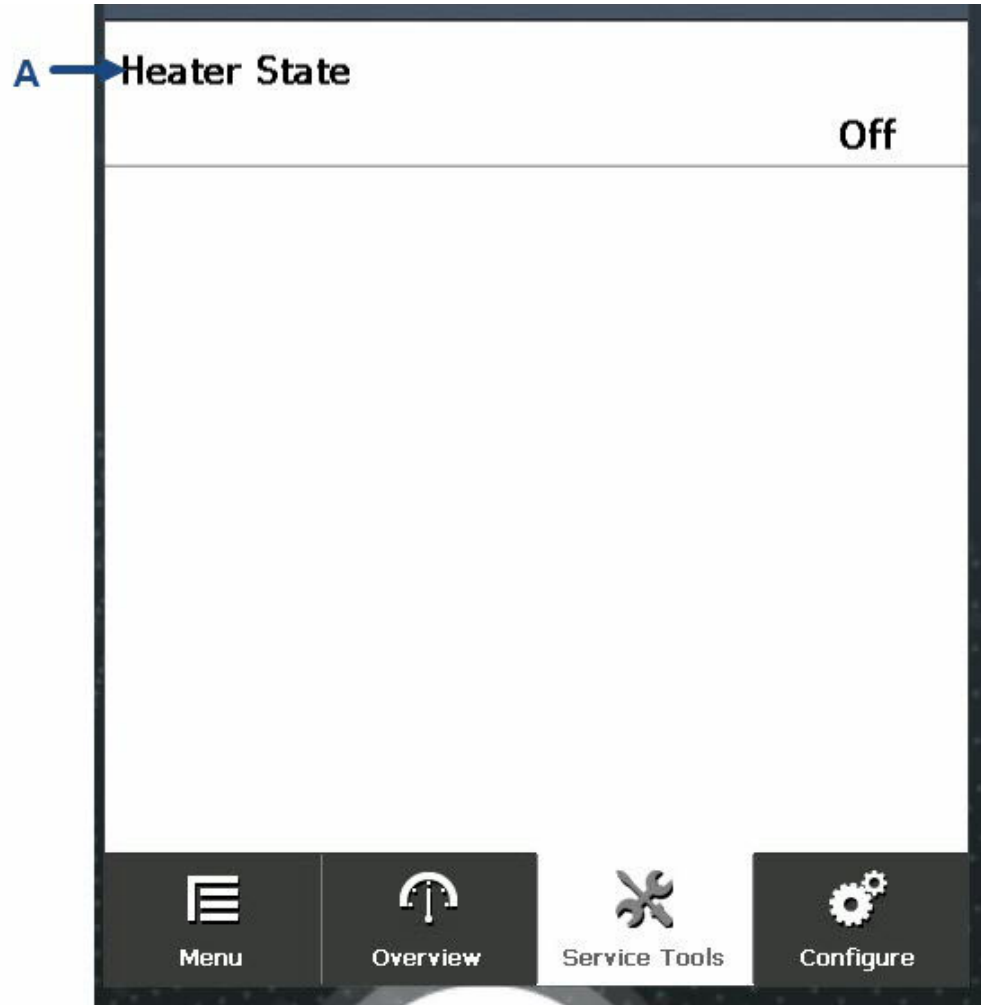


- A. *Supply Voltage*: Displays current supply voltage.
- B. *Voltage Status*: Displays how well the voltage is being read.
- C. *Supply Voltage gauge*: Tap to display the **Supply Voltage Gauge** screen.

Quaternary variable screen

The **Quaternary Variable** screen displays heater information.

Figure 3-13: Quaternary variable screen

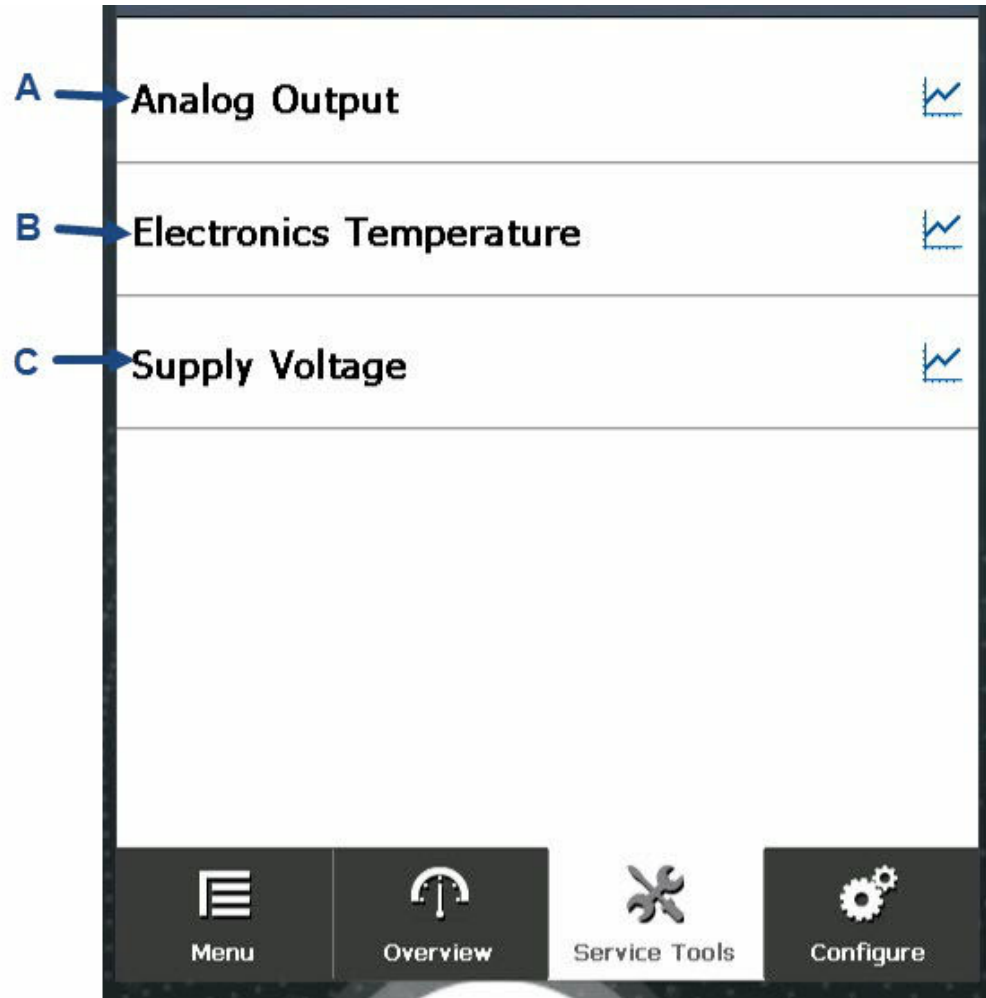


A. Heater State: Displays heater state - On or Off.

3.3.3 Trends screen

From the **Trends** screen, you can view the variables listed on a graph.

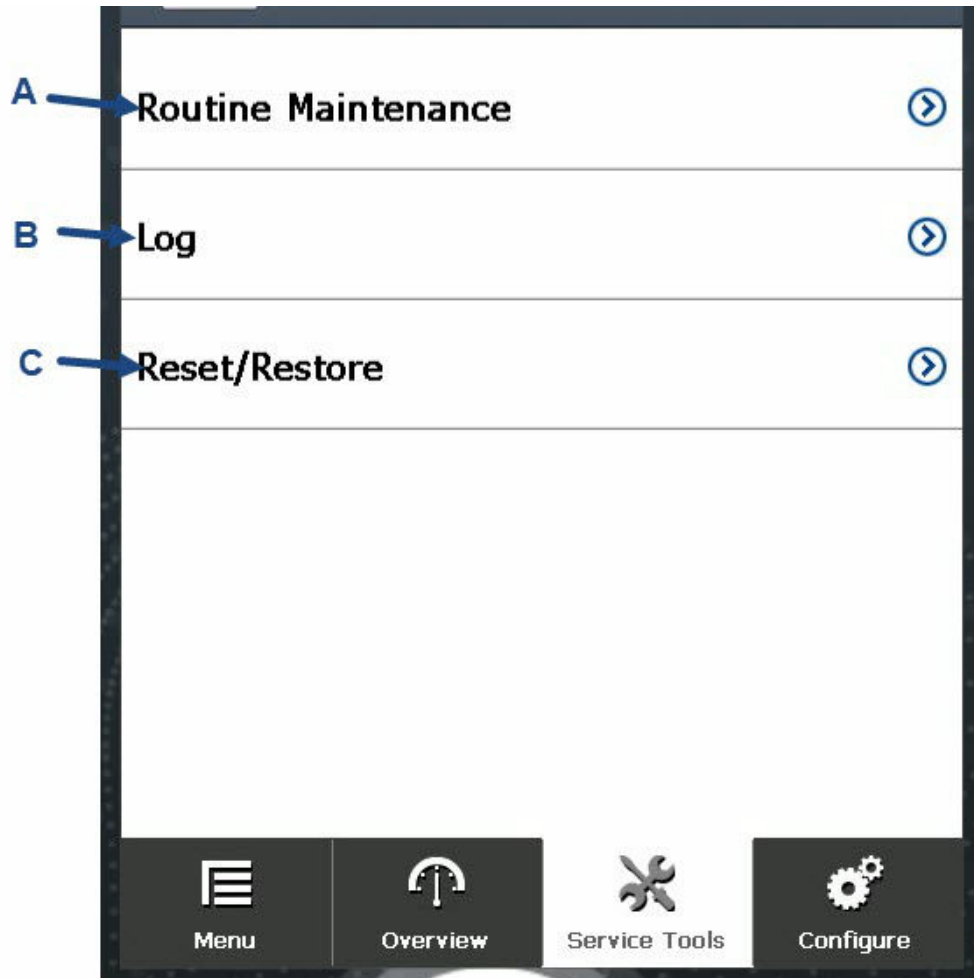
Figure 3-14: Trends screen



- A. *Analog Output: Displays the analog output on a graph.*
- B. *Electronics Temperature: Displays the electronics temperature on a graph.*
- C. *Supply Voltage: Displays the supply voltage on a graph.*

3.3.4 Maintenance screen

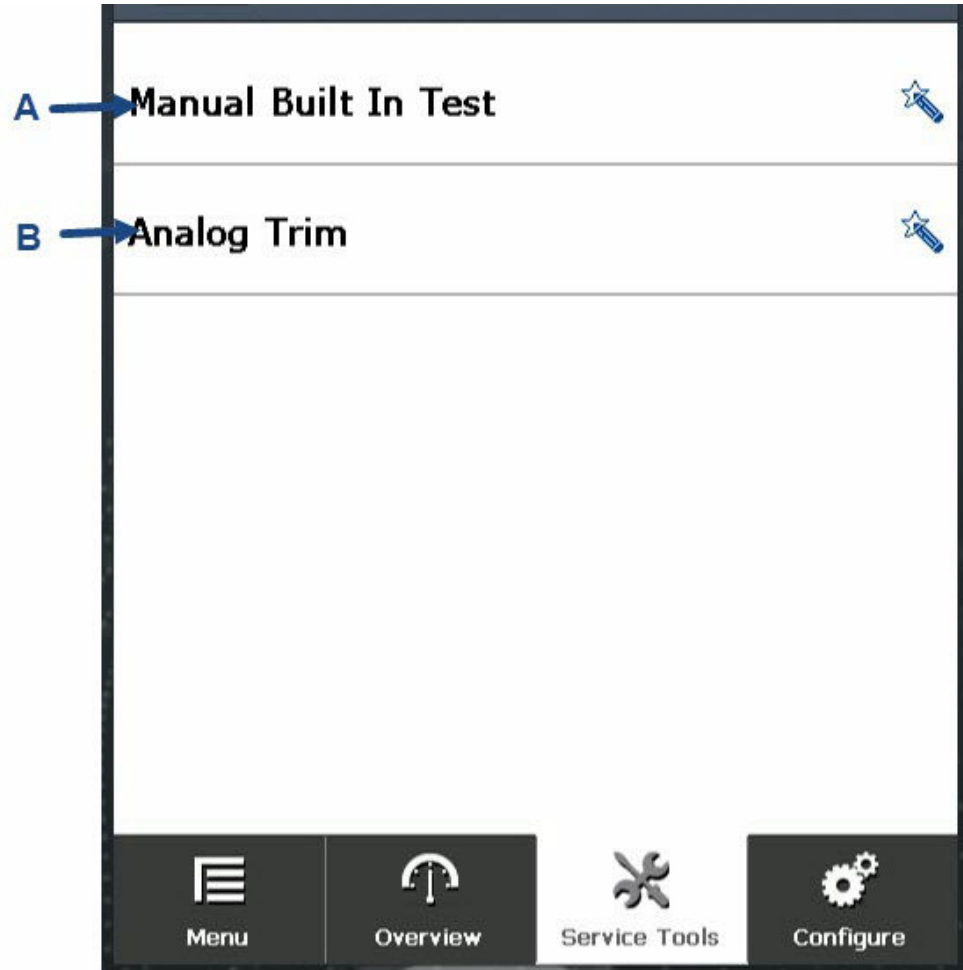
Figure 3-15: Maintenance screen



- A. Routine Maintenance: Opens screen with routine maintenance functions.
- B. Log: Opens screen with event logs.
- C. Reset/Restore: Opens a screen from which you can reset the detector.

Routine maintenance screen

Figure 3-16: Routine maintenance screen



- A. *Manual Built In Test: Performs manual built-in test.*
- B. *Analog Trim. Calibrates 4-20 mA.⁽¹⁾*

(1) *With the analog trim function, you can round multimeter values to a 4-mA fixed value. Tap Analog Trim and then enter and confirm the multimeter reading.*

Log screen

The **Log** screen provides information about the logs and navigation options.

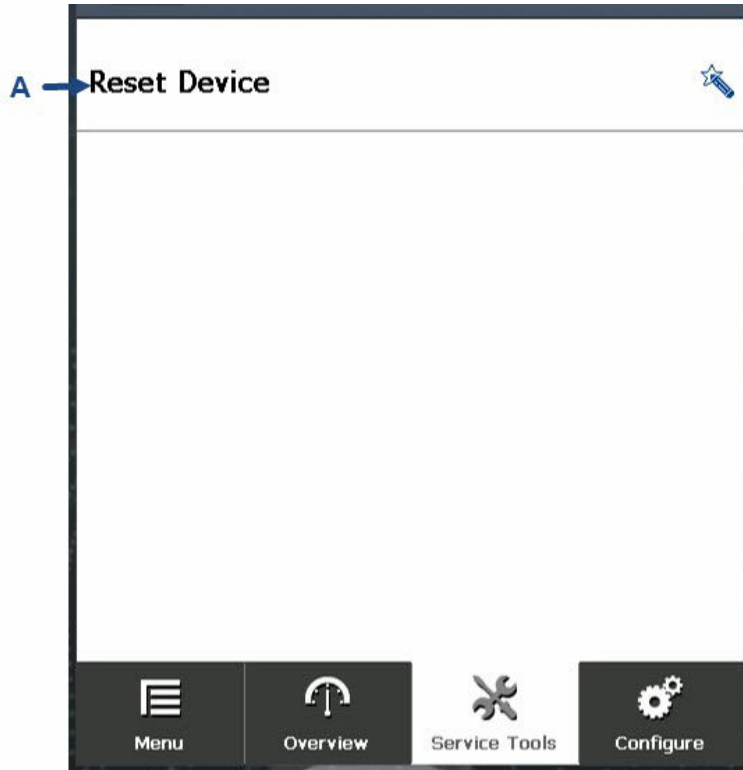
Figure 3-17: Log screen



- A. *Operating Time: Amount of time device has been powered up.*
- B. *Previous Log Records: Displays previous log records.*
- C. *Last Log Records: Displays the latest **Log Record** screen.*
- D. *Next Log Records: Displays the next **Log Record** screen.*
- E. *Device Log: Displays the log in a table.*

Reset/Restore screen

Figure 3-18: Reset/Restore screen

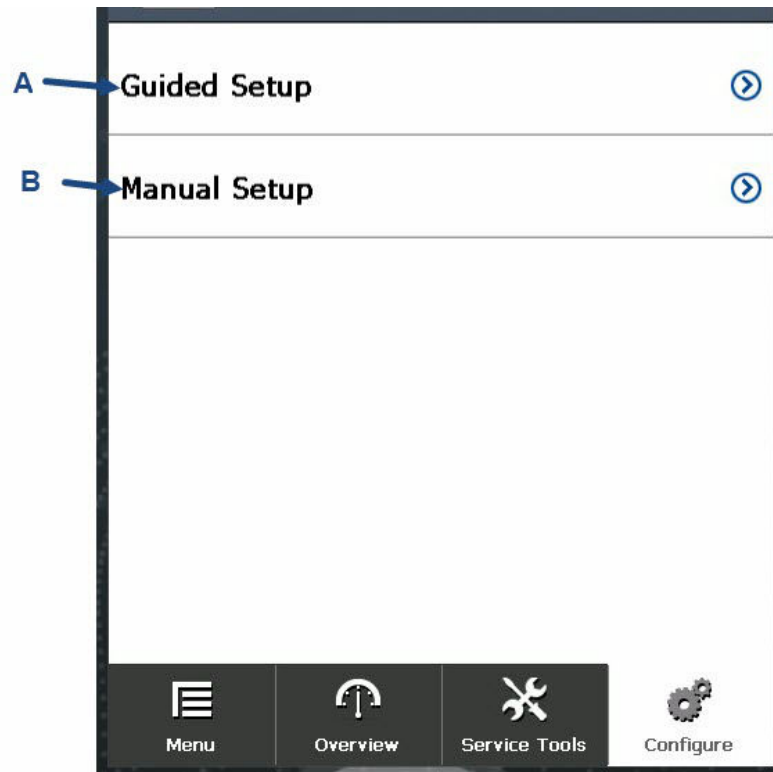


A. *Reset Device: Performs soft reset.*

3.3.5 Configure screen

From the **Configure** screen, you can configure the detector's parameters manually or using the wizard.

Figure 3-19: Configure screen

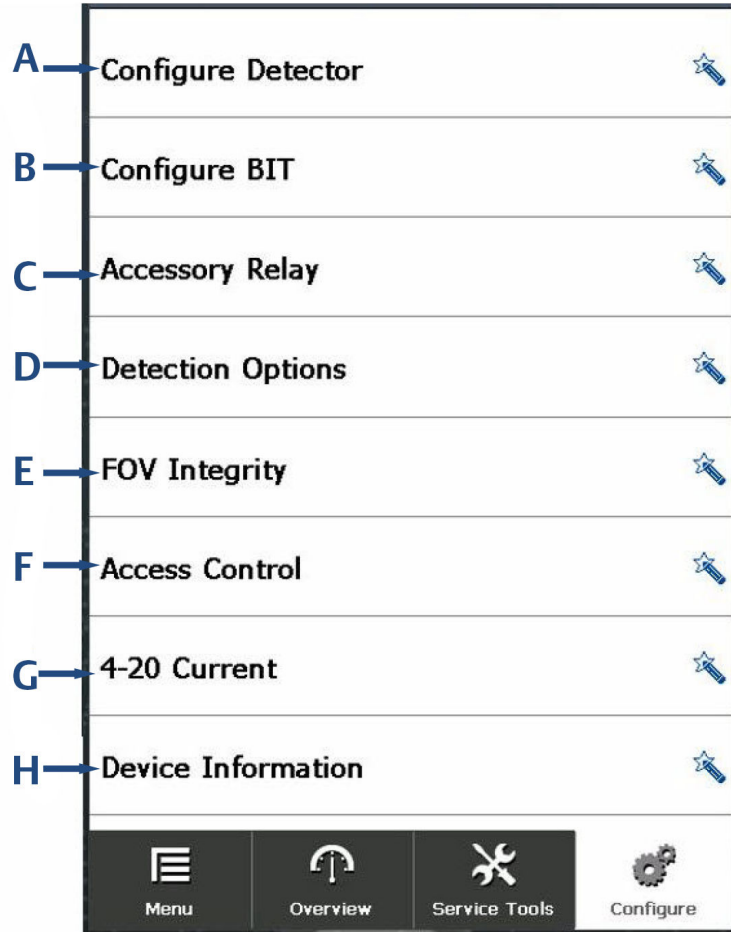


- A. *Guided Setup: Opens screen from which you can configure parameters using the wizard.*
- B. *Manual Setup: Opens screen from which you can manually configure parameters.*

Guided setup screen

Use the **Guided Setup** screen to configure the device parameters using a wizard.

Figure 3-20: Guided setup screen



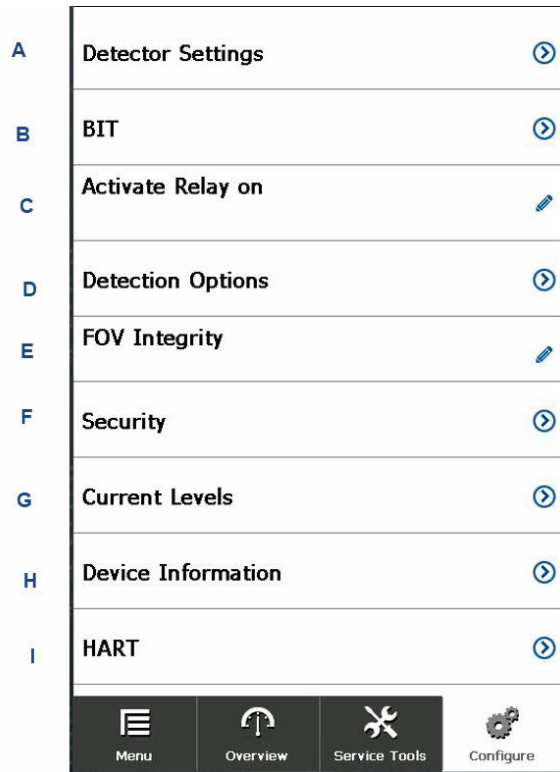
- A. *Configure Detector: Guides you through detector configuration.*
- B. *Configure BIT: Guides you through the built-in test (BIT) configuration.*
- C. *Accessory Relay: Guides you through accessory relay configuration.*
- D. *Detection Option: Guides you through detector options configuration.*
- E. *FOV Integrity: Guides you through FOV integrity configuration.⁽²⁾*
- F. *Access Control: Guides you through access control configuration.*
- G. *4-20 Current: Guides you through the 4-20 mA current configuration.*
- H. *Device Information: Guides you through detector information configuration.*

⁽²⁾ This is available for the SharpEye 40/40D models only.

Manual setup screen

Use the **Manual Setup** screen to manually configure each of the detector's parameters.

Figure 3-21: Manual setup screen



- A. *Detector Settings*: Opens **Settings** screen.
- B. *BIT*: Opens **BIT Settings** screen.
- C. *Activate Relay on*: Activates or deactivates relay.
- D. *Detection Options*: Opens **Detection Options** screen.
- E. *FOV Integrity*: Enables or disables FOV integrity.⁽³⁾
- F. *Security*: Opens **Security** screen.
- G. *Current Levels*: Displays levels.
- H. *Device Information*: Displays the **Device Information** screen. See [Device information screen](#).
- I. *HART*: Opens **HART Settings** screen.

⁽³⁾ This is available for SharpEye 40/40D models only.

Detector settings screen

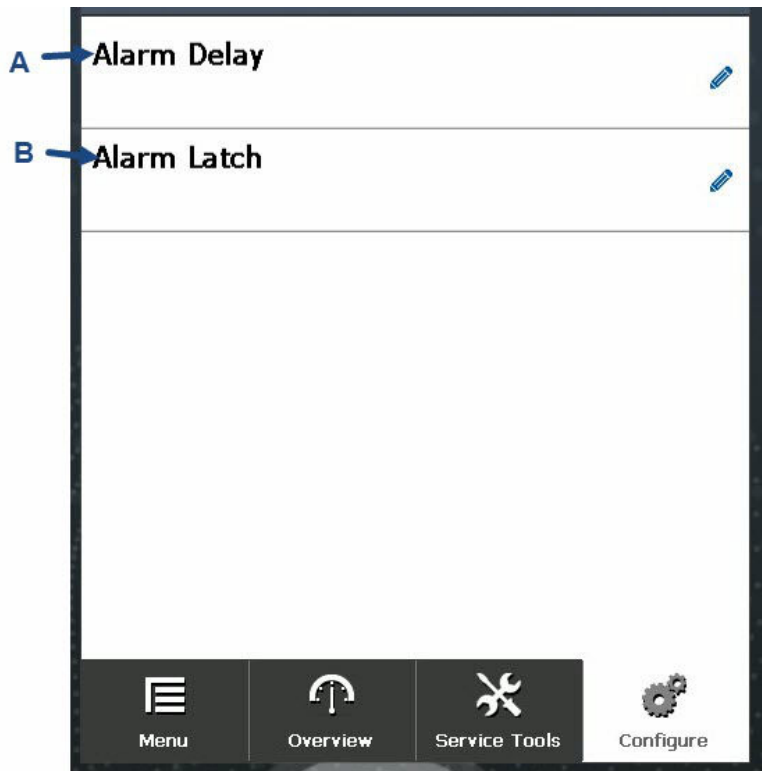
Figure 3-22: Detector settings screen



- A. *Sensitivity*: Selects the sensitivity.
See the options displayed in the [SharpEye 40/40 Quick Start Guide](#).
- B. *Alarm*: Opens the **Alarm** screen.
- C. *Window Heater*: Opens **Window Heater Settings** screen.

Alarm screen

Figure 3-23: Alarm screen



A. *Alarm Delay*: Select alarm delay.

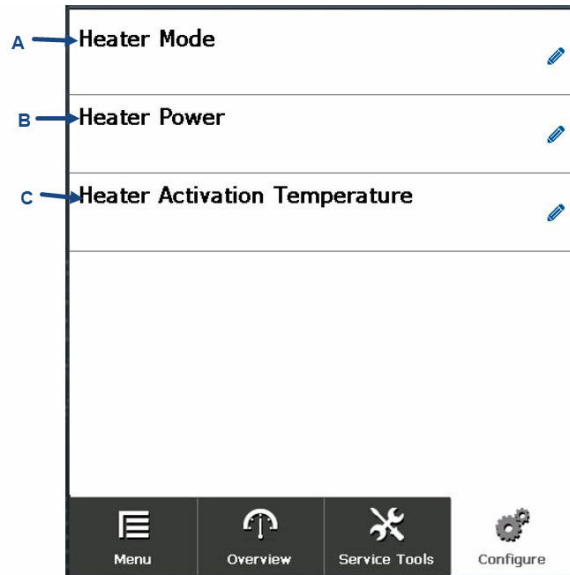
Options are:

- 0 sec
- Antiflare
- 3 sec
- 5 sec
- 10 sec
- 15 sec
- 20 sec
- 30 sec

B. *Alarm Latch*: Activate or deactivate alarm latch.

Window heater screen

Figure 3-24: Window heater screen



A. *Heater Mode: Select window heater mode from the following options:*

Off Window heater is off all the time.

Auto Window heater turns on when the environment reaches the activation temperature.

On Window heater is on all the time.

B. *Heater Power: Select power mode: low or high.*

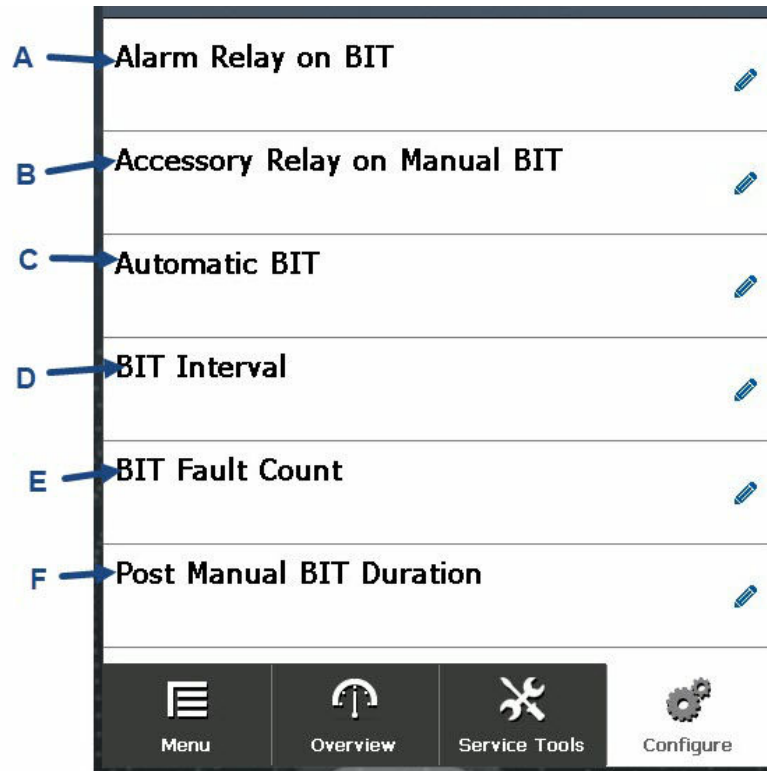
C. *Heater Activation Temperature: Heater activation temperature in degrees Celsius. Options are:*

- 0
- 5
- 10
- 15
- 20
- 25
- 30

BIT screen

Use this screen to define built-in test (BIT) settings.

Figure 3-25: BIT screen

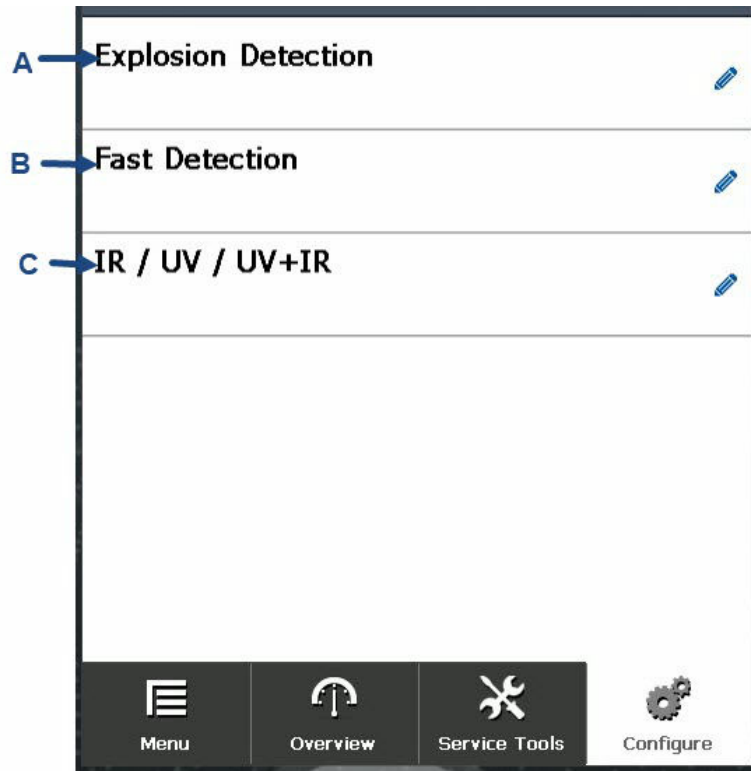


- A. Alarm Relay on BIT: Activate or deactivate alarm relay on BIT.
- B. Accessory Relay on Manual BIT: Activate or deactivate accessory relay on BIT.
- C. Automatic BIT: Activate or deactivate automatic BIT.
- D. BIT Interval: Manually select BIT interval.
- E. BIT Fault Count: Manually select BIT fault count.
- F. Post Manual BIT Duration: Set post manual BIT duration in seconds.

Detection options screen

Use this screen to define the detection options.

Figure 3-26: Detection options screen



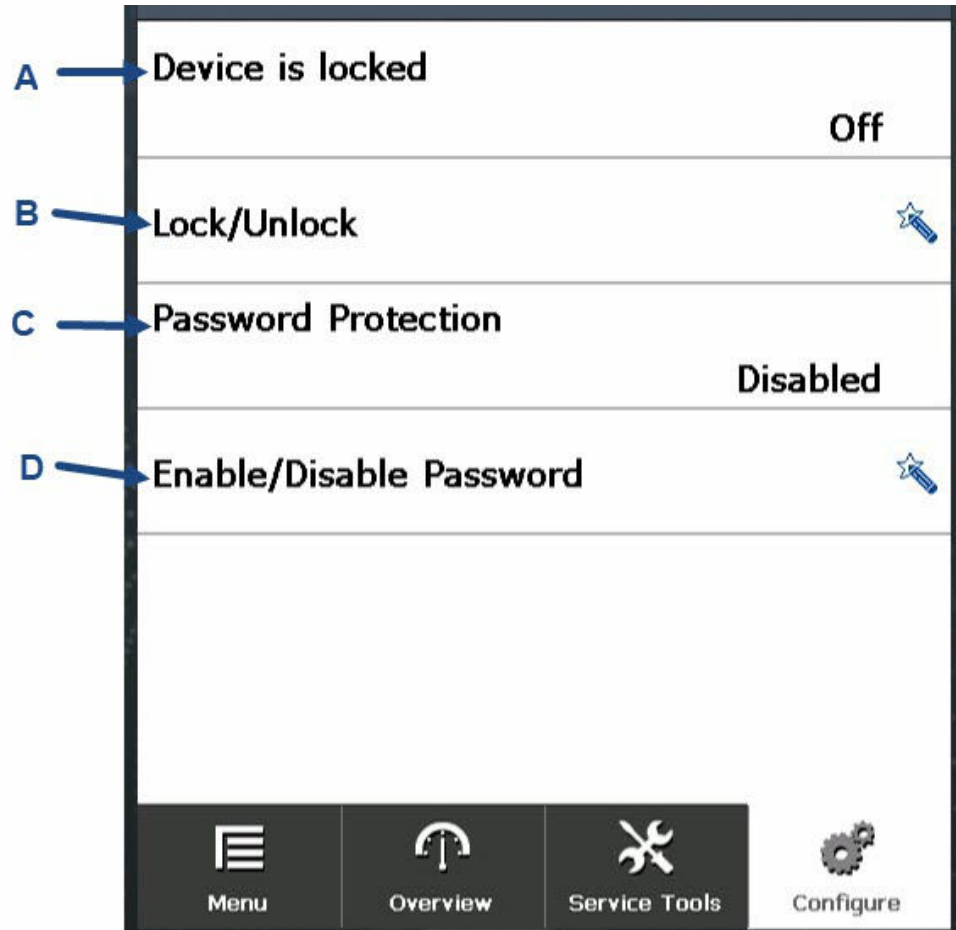
- A. Explosion Detection: Enable or disable explosion detection.⁽⁴⁾
- B. Fast Detection: Enable or disable fast detection.⁽⁴⁾
- C. IR/UV/UV+IR: Select single infrared (IR), single ultraviolet (UV), or both UV and IR channels.⁽⁵⁾

⁽⁴⁾ This is available for SharpEye 40/40D models only.

⁽⁵⁾ This is available for UV/IR models only.

Security settings screen





Figure 3-27: Security settings screen







- A. *Device Lock Status: Displays device lock status.*
- B. *Lock/Unlock: Lock or unlock the detector for maintenance. No other device can configure the detector while it is locked.*
- C. *Password Protection: Displays password protection status.*
- D. *Enable/Disable Password: Enable password protection to prevent unauthorized access.*

Current levels screen

Figure 3-28: Current levels screen

A →	Fault	1.0 mA
B →	BIT Fault	2.0 mA
C →	FOV Warning	4.0 mA 
D →	Normal	4.0 mA 
E →	Warning	16.0 mA 
F →	Alarm	20.0 mA 

 Menu	 Overview	 Service Tools	 Configure
---	---	--	--

- A. *Fault: Current displayed during fault. This cannot be changed (1 mA).*
- B. *BIT Fault: Current displayed during built-in test (BIT) fault. This cannot be changed.*
- C. *FOV Warning: Current displayed during FOV warning. 3 - 5 mA (should always be \leq the normal value. Default: 4 mA.⁽⁶⁾)*
- D. *Normal: Current displayed during normal function. 4 or 5 mA (should always be \geq the FOV value). Default: 4 mA.*
- E. *Warning: Current displayed during warning. 13 - 16 mA (should always be lower than alarm value). Default: 16 mA.*
- F. *Alarm: Current displayed during alarm. 15 - 20 mA (should always be higher than warning). Default: 20 mA.*

(6) This is available with SharpEye 40/40 models only.

Identification screen

See [Device information screen](#) for information on the **Device Information** screen.

Figure 3-29: Identification screen

A	Tag	
B	Long tag	
C	Model	975
D	Final assembly num	0
E	Dev id	2154599
F	Date	04/20/2021
G	Descriptor	
H	Message	
I	Model Number	975D-UF-6

Bottom navigation bar: Menu, Overview, Service Tools, Configure

- A. Tag: Displays detector tag. This is editable.
- B. Long tag: Displays detector long tag. This is editable.
- C. Model: Displays detector model.
- D. Final assembly num: Displays final assembly number. This is editable.
- E. Dev id: Displays device identification number.
- F. Date: Displays current date.
- G. Descriptor.
- H. Message.
- I. Model Number.

Revision numbers screen

Figure 3-30: Revision numbers screen

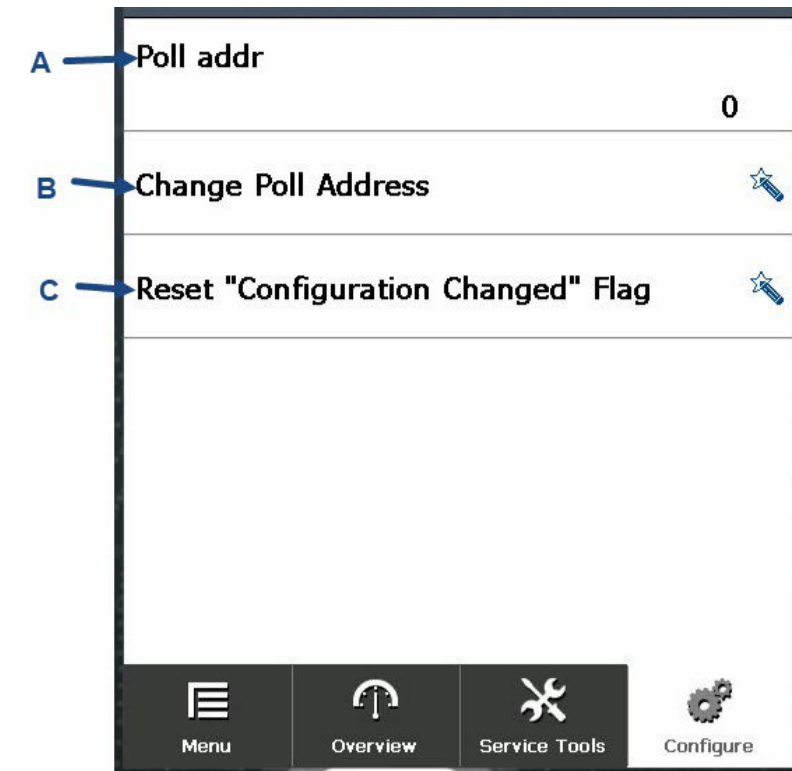
A	Universal rev	7
B	Fld dev rev	1
C	Hardware rev	1
D	Software rev	1
E	DD Revision	1

The screenshot shows a list of revision numbers. The bottom navigation bar contains four icons: Menu (hamburger icon), Overview (upward arrow icon), Service Tools (wrench icon), and Configure (gears icon).

- A. Universal rev: Displays HART® revision number.
- B. Fld dev rev: Displays device revision number.
- C. Hardware rev: Displays hardware revision number.
- D. Software rev: Displays software revision number.
- E. DD Revision: Displays device driver revision number.

HART® screen

Figure 3-31: HART® screen



- A. *Poll addr*: Displays polling address.
- B. *Change Poll Address*: Tap to change polling address.
- C. *Reset "Configuration Changed" flag*: Tap to reset configuration change count.

Identification screen

Figure 3-32: Identification screen

A	Tag	
B	Long tag	
C	Model	975
D	Final assembly num	0
E	Dev id	2154599
F	Date	04/20/2021
G	Descriptor	
H	Message	
I	Model Number	975D-UF-6

Bottom navigation bar: Menu, Overview, Service Tools, Configure

- A. Tag: Displays detector tag. This is editable.
- B. Long tag: Displays detector long tag. This is editable.
- C. Model: Displays detector model.
- D. Final assembly num: Displays final assembly number. This is editable.
- E. Dev id: Displays device identification number.
- F. Date: Displays current date.
- G. Descriptor.
- H. Message.
- I. Model Number.

Revision numbers screen

Figure 3-33: Revision numbers screen

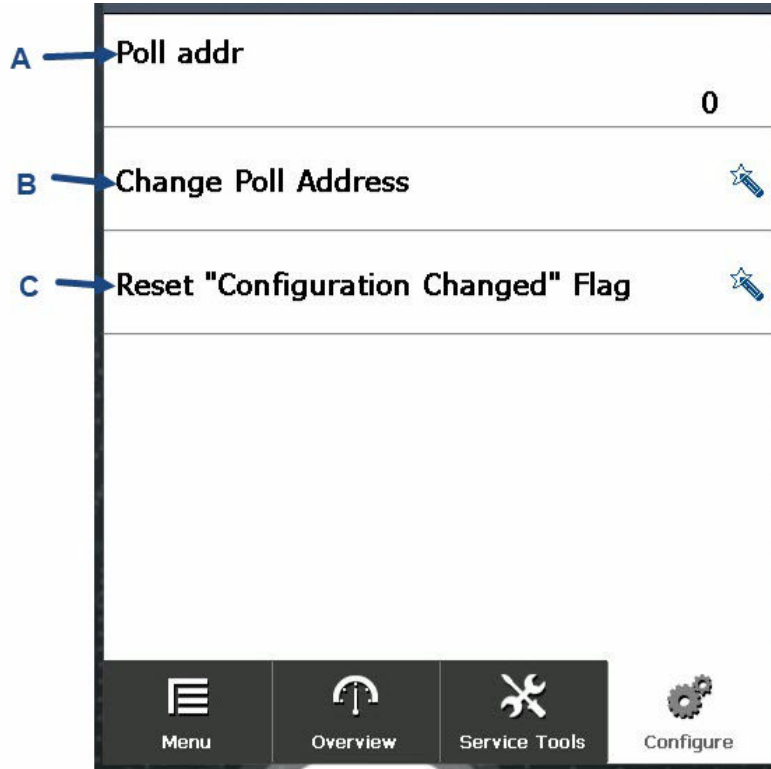
A	Universal rev	7
B	Fld dev rev	1
C	Hardware rev	1
D	Software rev	1
E	DD Revision	1

Menu Overview Service Tools Configure

- A. Universal rev: Displays HART® revision number.
- B. Fld dev rev: Displays device revision number.
- C. Hardware rev: Displays hardware revision number.
- D. Software rev: Displays software revision number.
- E. DD Revision: Displays device driver revision number.

HART screen

Figure 3-34: HART screen



- A. *Poll addr: Displays polling address.*
 - B. *Change Poll Address: Tap to change polling address.*
 - C. *Reset "Configuration Changed" flag: Tap to reset configuration change count.*
-

4 Configurable options

4.1 SharpEye 40/40C options

This section contains values for configurable options. Asterisks (*) indicate default values unless otherwise noted.

Option	SharpEye model			
	40/40C-I	40/40C-M	40/40C-LB	40/40C-L4B
Detection sensitivity	<ul style="list-style-type: none"> • 3m • 15m • 30m* • 45m • 65m 		<ul style="list-style-type: none"> • 3m • 15m* 	<ul style="list-style-type: none"> • 3m • 15m • 28m*
Alarm delay (in seconds)	<ul style="list-style-type: none"> • 0 • A (Anti-flare)* • 3 • 5 • 10 • 15 • 20 • 30 			
Alarm latching	<ul style="list-style-type: none"> • Yes • No* 			
Heated optics	<ul style="list-style-type: none"> • Constantly on • Constantly off • Auto on: 32 °F (0 °C) • Auto on: 41 °F (5 °C)* • Auto on: 50 °F (10 °C) • Auto on: 59 °F (15 °C) • Auto on: 68 °F (20 °C) • Auto on: 77 °F (25 °C) • Auto on: 86 °F (30 °C) 			
Heated power	<ul style="list-style-type: none"> • Low • High* 			
Alarm relay on successful manual BIT	<ul style="list-style-type: none"> • Yes • No* 			

Option	SharpEye model			
	40/40C-I	40/40C-M	40/40C-LB	40/40C-L4B
Accessory relay on successful manual BIT	<ul style="list-style-type: none"> • Yes • No* 			
Post manual BIT indication duration (in seconds)	3-60 Default value: 3			
Enable automatic BIT	<ul style="list-style-type: none"> • Yes* • No 			
Fault count	0-10 Default value: 3			
Bit interval (in minutes)	1-60 Default value: 15			
Accessory relay options	<ul style="list-style-type: none"> • Disabled* • Accessory relay on warning • Accessory relay as EOL 			
Lock option	<ul style="list-style-type: none"> • Not locked* • Locked 			
4-20mA settings				
Fault	<ul style="list-style-type: none"> • 0 • 1* 			
BIT fault	2*			
Normal	<ul style="list-style-type: none"> • 4* • 5 			
Warning	<ul style="list-style-type: none"> • 16* • Custom 			
Alarm	<ul style="list-style-type: none"> • 20* • Custom 			

4.2 SharpEye 40/40D options

This section contains values for configurable options. Asterisks (*) indicate default values unless otherwise noted.

Option	SharpEye model			
	40/40D-I	40/40D-M	40/40D-LB	40/40D-L4B
Detection sensitivity	<ul style="list-style-type: none"> • 3m • 15m • 30m* • 45m • 65m • 90m 		<ul style="list-style-type: none"> • 3m • 15m • 28m* 	
Alarm delay (in seconds)	<ul style="list-style-type: none"> • 0 • A (Anti-flare)* • 3 • 5 • 10 • 15 • 20 • 30 			
Alarm latching	<ul style="list-style-type: none"> • Yes • No* 			
Heated optics	<ul style="list-style-type: none"> • Constantly on • Constantly off • Auto on: 32 °F (0 °C) • Auto on: 41 °F (5 °C)* • Auto on: 50 °F (10 °C) • Auto on: 59 °F (15 °C) • Auto on: 68 °F (20 °C) • Auto on: 77 °F (25 °C) • Auto on: 86 °F (30 °C) 			
Heated power	<ul style="list-style-type: none"> • Low • High* 			
Alarm relay on successful manual BIT	<ul style="list-style-type: none"> • Yes • No* 			
Accessory relay on successful manual BIT	<ul style="list-style-type: none"> • Yes • No* 			
Post manual BIT indication duration (in seconds)	3–60 Default value: 3			

Option	SharpEye model			
	40/40D-I	40/40D-M	40/40D-LB	40/40D-L4B
Enable automatic BIT	<ul style="list-style-type: none"> • Yes* • No 			
Fault count	0–10 Default value: 3			
Bit interval (in minutes)	1–60 Default value: 15			
Detection options	<ul style="list-style-type: none"> • Standard* • Fast • Explosion 		<ul style="list-style-type: none"> • Standard* • Fast • Explosion • IR only • UV only • UV/IR* 	
Accessory relay options	<ul style="list-style-type: none"> • Disabled* • Accessory relay on warning • Accessory relay as EOL • Accessory relay as FOV • FOV integrity 			
Lock option	<ul style="list-style-type: none"> • Not locked* • Locked 			
4-20mA settings				
Fault	<ul style="list-style-type: none"> • 0 • 1* 			
BIT fault	2*			
Normal	<ul style="list-style-type: none"> • 4* • 5 			
Warning	<ul style="list-style-type: none"> • 16* • Custom 			
Alarm	<ul style="list-style-type: none"> • 20* • Custom 			
FOV	<ul style="list-style-type: none"> • 3 • 4* • 5 			

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