akribis

USER GUIDE

ScanAir Pro system

Lighthouse

Distributed by AKRIBIS



ScanAirPro & Diluter

FILTER EFFICIENCY TESTING SYSTEM



Operators Manual

LIGHTHOUSE
WORLDWIDE SOLUTIONS

AKRIBIS · www.akribis.info · contacto@akribis.info

Lighthouse Worldwide Solutions

ScanAir Pro Filter Scanner & Diluter

Operating Manual

Copyright © 2013-2016 by Lighthouse Worldwide Solutions. All rights reserved. No part of this document may be reproduced by any means except as permitted in writing by Lighthouse Worldwide Solutions.

The information contained herein constitutes valuable trade secrets of Lighthouse Worldwide Solutions. You are not permitted to disclose or allow to be disclosed such information except as permitted in writing by Lighthouse Worldwide Solutions.

The information contained herein is subject to change without notice. Lighthouse Worldwide Solutions is not responsible for any damages arising out of your use of the LMS program.

ScanAir Pro™ and SOLAIR™ are trademarks of Lighthouse Worldwide Solutions.

Manufactured by:

Lighthouse Worldwide Solutions

1221 Disk Drive

Medford, Oregon 97501

LWS Part Number: 248083430-1 Rev 4

Table of Contents

About this Manual

Text Conventions i
Additional Help i

Chapter 1 Introduction

Overview 1-1
Interchangeable Terms 1-1
Description 1-2
ScanAir Pro Specifications 1-3

Chapter 2 Getting Started

Initial Inspection 2-1
Unpacking 2-1
Shipping Instructions 2-2
Installation 2-3
Connecting to the Diluter 2-3

Chapter 3 Operation

Using the ScanAir Pro 3-1
Touch Screen Overview 3-1
Prepare to Use the Scanner 3-2
Main Screen 3-4
CONFIG Screen 3-5
Service Screen 3-6
Dilution Factor 3-6
Probe Dimension 3-7
Size Mode Time Constant 3-8
Auto Save Interval 3-9
Set the Alarm 3-10
Set the Scan Rate 3-11
Set the Units 3-12
Set the Mode 3-13

AKRIBIS Worldwide Info - Contacto@akribis.info

Set Upstream Challenge 3-15
Perform an Upstream Challenge 3-17
Downstream Sampling 3-20
Alarms 3-22
Audio Output 3-22
Size Mode 3-23
Count Mode 3-25
Print Data 3-26

Appendix A Limited Warranty

Limitation Of Warranties: A-1
Warranty Of Repairs After Initial Two (2) Year Warranty: A-1

Appendix B Calculations

Np B-1
% Alarm Leak B-2
% Leak Size B-2

Appendix C Touchscreen Calibration

Calibrating the Touch Screen..... C-1

Index

About this Manual

This manual describes the setup and operation of the Lighthouse ScanAir Pro Filter Scanner and Diluter.

Text Conventions

The following typefaces have the following meanings:

Note: *A note appears in the sidebar to give extra information regarding a feature or suggestion.*

WARNING: ***A warning appears in a paragraph like this and warns that doing something incorrectly could result in personal injury, damage to the instrument or loss of data.***

italics	Represents information not to be typed or interpreted literally. For example, *file* represents a file name. Manual titles are also displayed in italics.
boldface	Introduces or emphasizes a term.
`Courier font`	Indicates command syntax or text displayed by the diagnostic terminal.
`Bold Courier`	Indicates commands and information that you type.
Helvetica Italics	Indicates a comment on a command or text output.

Hexadecimal numbers are shown with the word “hex”or with a small “h” following the digits. For example:

```
hex 0D
0Dh
```

Additional Help

For more information about the Lighthouse ScanAir Pro Filter Scanner, contact Lighthouse Worldwide Solutions.

Service and Support
Tel: 1-800-945-5905 (USA Toll Free)
Tel: 1-541-770-5905 (Outside of USA)
techsupport@golighthouse.com

AKRIBIS · www.akribis.info · contacto@akribis.info

1 Introduction

Overview

The ScanAir Pro filter scanner works in conjunction with a 1 CFM particle counter to perform filter installation leak tests. The ideal configuration consists of a particle counter, diluter and the ScanAir Pro as shown in Figure 1-1.

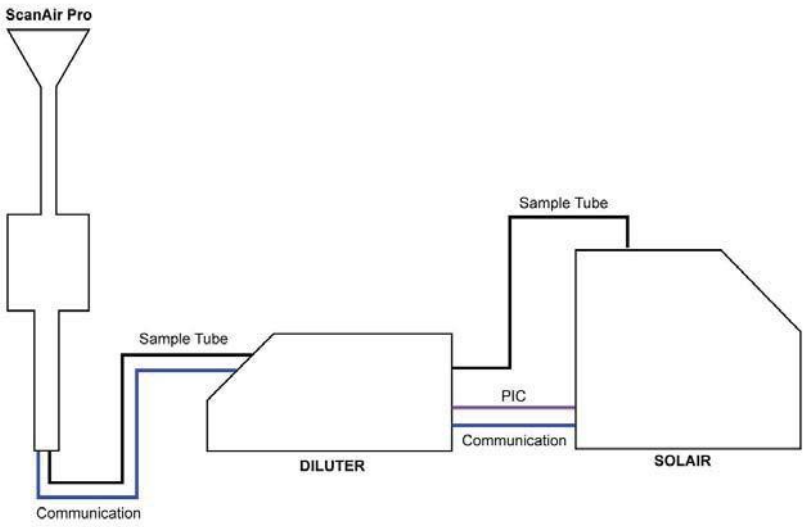


Figure 1-1 ScanAir Pro System

Interchangeable Terms

Throughout this document, the ScanAir Pro Filter Scanner may be referred to as the ***ScanAir Pro, filter scanner*** or ***scanner***. For simplicity, these terms are interchangeable and mean the same thing.

AKRIBIS Systems Pty Ltd info@akribis.info contacto@akribis.info

Description

The ScanAir Pro is an intelligent filter scanner that enables the user to scan filter media, including PTFE, for leaks. The scanner has a color touchscreen interface that can be configured for upstream and downstream sampling.

The scanner operates at a flow rate of 1 CFM and can be configured for different scan rates, alarm percentages and sample modes.



Figure 1-2 ScanAir Pro Filter Scanner

Note: *Sound will emit from the internal speaker OR the headphones/ earbuds, but not both.*

The handle contains an audio jack for the 3.5mm In-Line Volume Control Headphone Adaptor that is supplied with the scanner. The user can attach ear buds or headphones (not included) to measure in quiet environments.

AKRIBIS www.akribis.info · contacto@akribis.info

ScanAir Pro Specifications

Table 1-1 ScanAir Pro Specifications

Flow Rate	1.0 CFM (28.3 LPM)
Communication Modes	SOLAIR 3100/5100, SOLAIR 1100 LD via RJ45 Cable
Touch Screen Display	3.8" (9.25 cm), 320x240
Supporting Software	SOLAIR Processor Firmware v4.81 or greater
Sample Modes	Scan, Count
Data Storage	20 records (data is stored for printing only and is not retained after a power cycle. The data is deleted after printing a report.)
Particle Travel Time	12-ft Tubing: 0.25 seconds from Scan head to SOLAIR inlet. 25-ft Tubing: 0.5 seconds from Scan head to SOLAIR inlet.
Power	+24VDC
Enclosure	Black Polypropylene
Dimensions	8.8"(L) x 5.0"(H) x 3.0"(W) [22.35 x 12.7 x 7.62 cm]
Weight	2.6 lbs. (1.2 kg)

AKRIBIS www.akribis.info contacto@akribis.info

2 Getting Started

Initial Inspection

The ScanAir Pro is thoroughly inspected and tested at the factory and is ready for customer configuration and use upon receipt.

Unpacking

It is presumed that when the shipment was received, the following took place:

1. The shipping container was inspected for damage.
2. If the container was damaged, the shipper was notified immediately.
3. The instrument was carefully inspected for broken parts, scratches, dents and other damage before use, even if the container appeared to be undamaged.
4. Any damages were reported to Lighthouse Technical Support at 1-800-945-5905 (USA Toll Free) or 1-541-770-5905 (Outside of USA) before proceeding.

Verify the contents of the package against the shipping list. If anything appears to be incorrect or missing, immediately contact your sales representative or Lighthouse Worldwide Solutions at 1-510-438-0500.

To maintain your warranty, keep the undamaged shipping container(s) and all packing material for reshipment of the instrument for calibration or repair. Order replacement containers and packing materials only from Lighthouse or a Lighthouse-authorized distributor.

AKRIBIS www.akribis.info contacto@akribis.info

Shipping Instructions

Should it become necessary to return the unit to the factory for any reason, contact Lighthouse Customer Service or visit our website, www.golighthouse.com/rma, and obtain a Return Merchandise Authorization (RMA) number. Reference this number on all shipping documentation and purchase orders. After receipt of the RMA number, follow the shipping instructions below:

WARNING: *If the instrument is damaged during a return shipment due to inadequate user packing, the warranty may be voided and may result in additional repairs being billed to the customer.*

1. Use the original container and packing materials whenever possible. Refer to www.golighthouse.com/rma for detailed instructions. Remove attachments and package separately to prevent physical damage.

2. If the original container and packing materials are not available, wrap the unit in “bubble pack”, surround with shock-absorbent material and place in a double-wall carton - the instrument should not rattle around when the carton is vigorously shaken. If the instrument is damaged during shipment due to inadequate user packing, the warranty may be voided and may result in additional repairs being billed to the customer. You may contact Lighthouse to purchase a replacement shipping container.

3. Seal the container or carton securely. Mark “FRAGILE” and write the Return Merchandise Authorization (RMA) number on any unmarked corner.

4. Return the instrument to the address provided by your Lighthouse representative or the RMA website.

AKRIBIS www.akribis.info · contacto@akribis.info

Installation

Connecting to the Diluter

The diluter is used to support high concentration upstream challenge measurements. The upstream challenge concentration should be at least 6,000,000 counts/ft^3 or 210,000,000 counts/m^3. The diluter is required to dilute the counts entering the particle counter.

Note: *Tests and studies have shown that even when the particle counter takes a high concentration of PAO particles downstream, it doesn't impact the counter drastically. It is advised to purge the particle counter after testing to allow any particles in the unit to be flushed out.*

The upstream port is always measured with the diluter while the downstream ScanAir Pro port is directly measured by the particle counter. From the handle you can switch measurement between the two ports.

When using the diluter, attach the tubing from the ScanAir Pro to the sample inlet ports on the front panel of the diluter. Connect the communication cable to the Industrial RJ45 connector (Figure 2-1).



Figure 2-1 Front Panel Connections

The rear panel contains the sample Outlet port and an RJ45 port and PIC connector. See Figure 2-2. The Outlet tubing attaches to the SOLAIR inlet. The PIC and RJ45 cables attach to the rear panel of the SOLAIR. The PIC cable provides power to the diluter.



Figure 2-2 Rear Panel Connections

AKRIBIS Systems Pty Ltd | contacto@akribis.info

Remove the protective cap from the sensor inlet port on the SOLAIR. Attach the sample tubing from the rear of the diluter to the inlet port on the SOLAIR as shown in Figure 2-3.



Figure 2-3 Attach Sample Tubing to SOLAIR

Attach the RJ45 cable to the RS485 connector and the PIC cable to the PIC connector on the rear panel of the SOLAIR as shown in Figure 2-4.

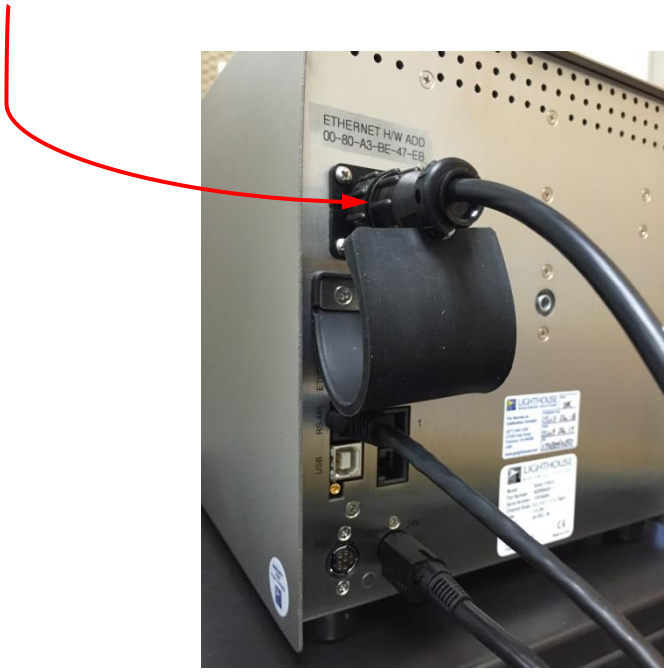


Figure 2-4 Connect Communication Cable to SOLAIR

Turn on the SOLAIR, which provides power to the ScanAir Pro. The Main screen on the ScanAir Pro will display the No Communication icon as shown in Figure 2-5.



Figure 2-5 Apply Power to SOLAIR



Press the Scan Mode button on the SOLAIR Main screen to enter the Filter Media Scan Mode.

When the Filter Media Scan Mode is activated on the SOLAIR, the No Communication icon will disappear. The SOLAIR must remain in the Scan Mode to perform scans. The ScanAir Pro will display the default settings on its Main screen. See Figure 2-6.



Figure 2-6 Filter Scan Media Mode

Select the appropriate particle size on the SOLAIR. Press the ScanAir Pro CONFIG button to set up the scanner for sampling.

AKRIBIS Systems Pty Ltd. info@akribis.info contacto@akribis.info

AKRIBIS www.akribis.info contacto@akribis.info

3 Operation

Using the ScanAir Pro

This chapter describes how to use the Lighthouse ScanAir Pro Filter Scanner. The ScanAir Pro is ready for user configuration and use right out of the box. To start using the instrument proceed as follows:

It is presumed that the Getting Started chapter has been read and followed prior to reading this chapter.

Touch Screen Overview

The ScanAir Pro incorporates a unique touch screen interface to control and configure the instrument.

The interface allows the user to easily view and program the instrument to specific needs and applications. Figure 3-1 illustrates the menu tree.

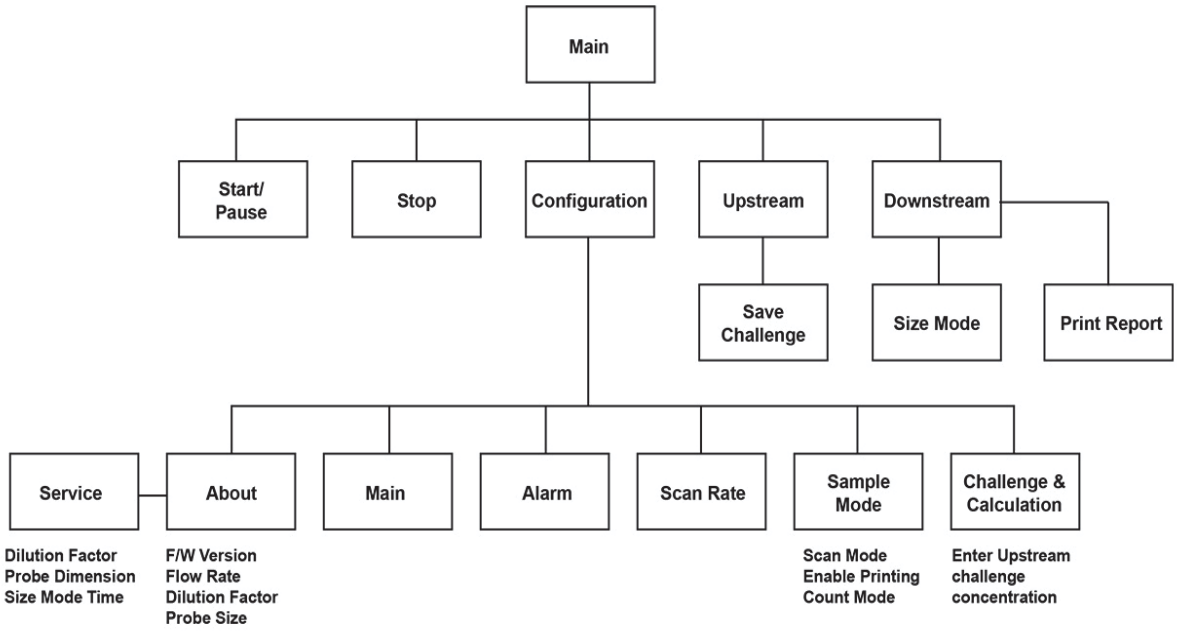


Figure 3-1 Menu Map

AKRIBIS www.akribis.info contacto@akribis.info

Prepare to Use the Scanner

1. Verify all tubes and cables are solidly connected then apply power to the SOLAIR. The SOLAIR provides power to the Scan Air Pro.

2. On the MAIN screen of the SOLAIR, press the Scan Mode icon. See Figure 3-1.



Figure 3-1 SCAN Mode ICON

3. If the Scan Mode icon is not available, press CONFIG then OPTIONS to open the Options screen. Press the ScanAir button. A green checkmark indicates that Scan Mode is enabled. See Figure 3-2. Return to the Main screen.

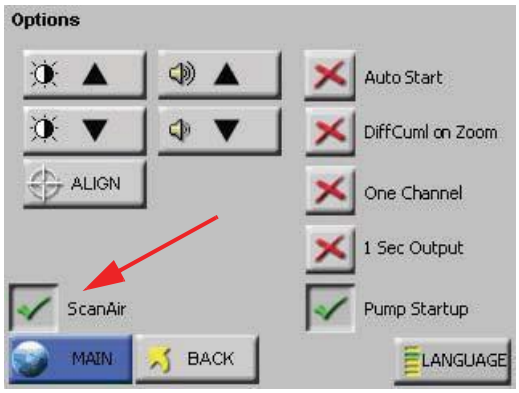


Figure 3-2 ScanAir Enabled

4. Press the Scan Mode ICON to open the Filter Media Scan Mode screen. Press the desired particle size as shown in Figure 3-3.

Note: *Particles that are greater than 1.0–m will not be registered. This feature delivers repeatable and more accurate data.*

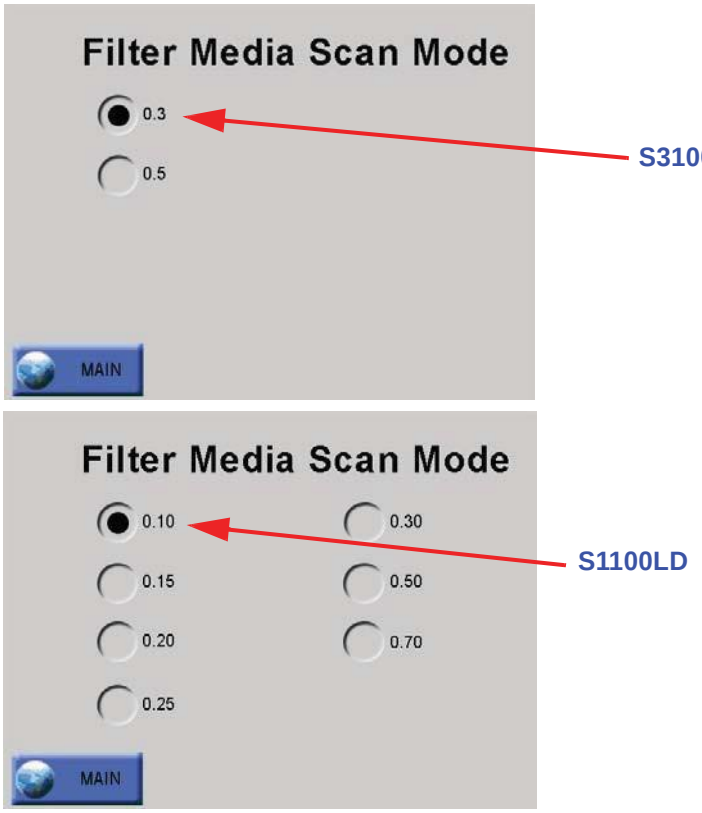


Figure 3-3 Filter Media Scan Mode Screen

5. On the filter scanner's touch screen, press the START button. The SOLAIR starts sampling and the ScanAir Pro stores the selected particle size.

6. If the ScanAir Pro is configured with a leak alarm threshold, the filter scanner will sound its alarm whenever the threshold level is exceeded. The ScanAir Pro touch screen will display the leak percentage.

7. Press the STOP button and the SOLAIR will stop sampling.

AKRIBIS Systems Pty Ltd. info@akribis.info contacto@akribis.info

Main Screen

The SOLAIR must be in Filter Scan mode to communicate with the ScanAir Pro. If the SOLAIR is not in Scan Mode, the main screen will display the “No Communication” icon as shown in Figure 3-4.

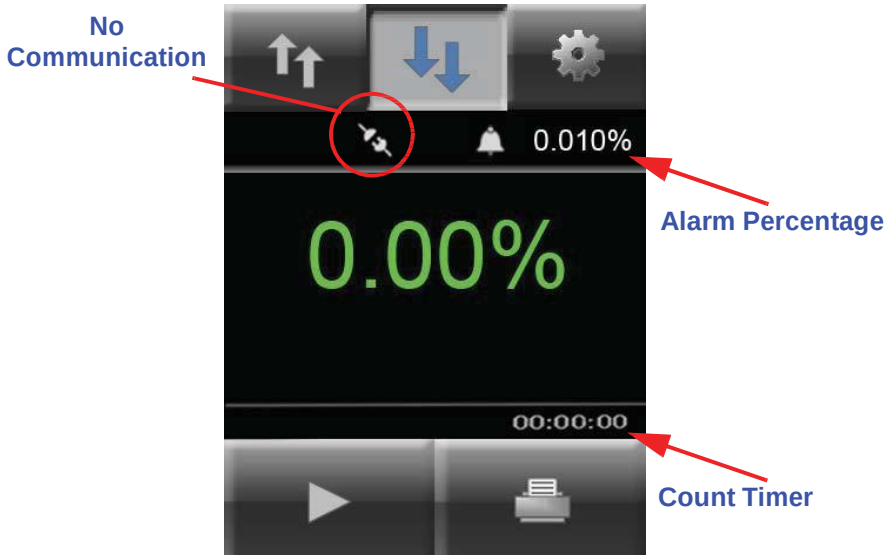


Figure 3-4 Scan Mode Main Screen No Communication ICON

The Main screen displays the setting and command buttons used to configure the filter scanner and run samples. See Figure 3-5.



Figure 3-5 Scan Ready MAIN Screen

The "No Communication" ICON deactivates when a connection is established with the particle counter. The Upstream function is not available in Count Mode.

CONFIG Screen

To set up the scanner, press the Settings button to open the CONFIG screen as shown in Figure 3-6.

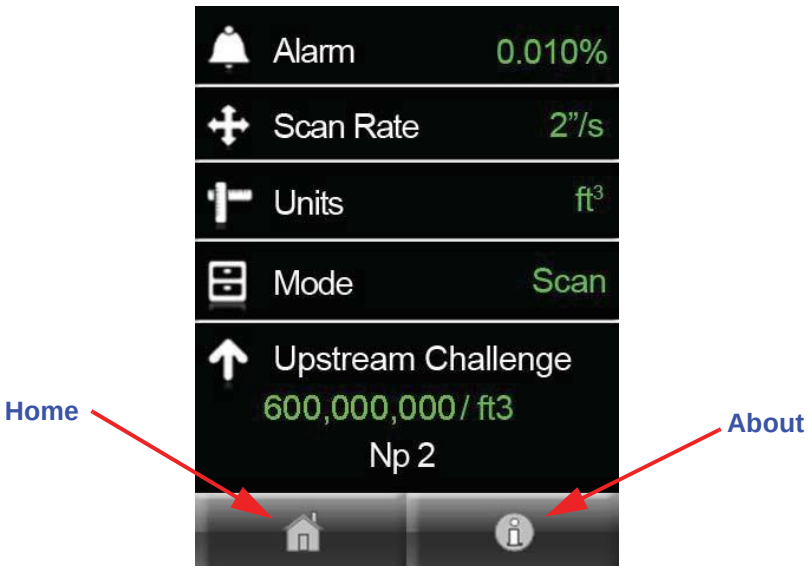


Figure 3-6 CONFIG Screen

Press a filed name on the CONFIG screen to set the Alarm percentage, Scan Rate speed, Units of measurement, Sample Modes and Upstream Challenge test. Press the HOME button to return to the Main screen.

Press the About button to display the ScanAir Pro information screen shown in Figure 3-7. Press OK to return to the CONFIG screen.



Figure 3-7 About Screen

AKRIBIS Systems Pty Ltd contacto@akribis.info

Note: *The flow rate is read from the particle counter and is updated when the scanner establishes a connection with the SOLAIR.*

The About screen displays the ScanAir Pro firmware version, the flow rate reported by the particle counter, dilution factor and probe size set up in the Service screen.

Service Screen

To access the Service screen, press the Info button to open the About screen and press and hold the OK button for 3 to 4 seconds. The Service screen displays the settings for the diluter, probe, Size Mode Time rolling average and the Auto Save Interval. These settings can be changed by pressing the field name to enter its setup screen. See Figure 3-8.

Press OK button for 3 to 4 seconds to enter the Service Screen



Figure 3-8 Service Screen

Dilution Factor

The dilution factor is specific to the diluter being used with the scanner. When the sample is being diverted to a diluter, the counts detected on the scanner will be multiplied by the dilution factor.

Since the actual counts are being diluted, there should be no change in the displayed counts on the ScanAir Pro.

To set the dilution factor, press the Dilution Factor field on the Service screen. See Figure 3-9.

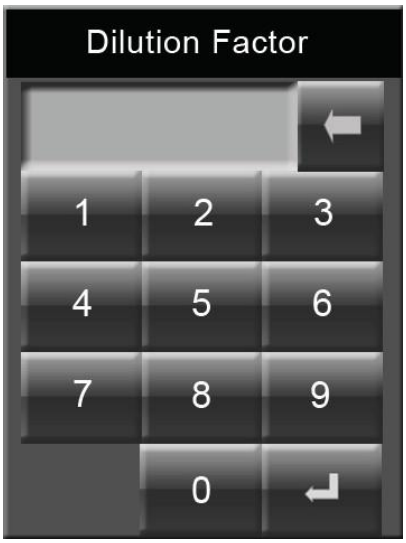


Figure 3-9 Dilution Factor Screen

Enter a value using the keypad and press the Enter button (bent arrow) when done. The value will be displayed on the Service screen. If no value is entered, the previous value will remain as current.

Probe Dimension

Press the Probe Dimension field to open the Probe screen shown in Figure 3-10.

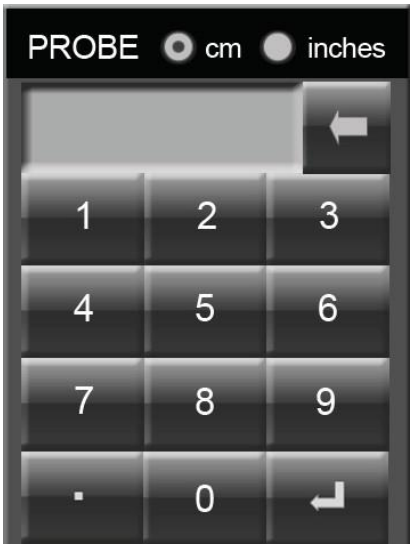


Figure 3-10 Probe Screen

AKRIBIS Systems Pte. Ltd. contacto@akribis.info

Enter the probe size. Choose centimeters or inches by pressing the appropriate radio button at the top of the screen.

Enter the dimension using the keypad and press the Enter button (bent arrow) when done. The value is displayed on the Service screen. If no value is entered, the previous value remains as the current. If the unit of measurement is changed, but no new value is entered, the current value will be converted to reflect the new unit of measure.

If the probe size is set to inches, the Scan Rate will convert to inches/sec, and the upstream challenge and recorded data will be displayed in particles/ft^3. If the probe size is set to centimeters (cm), the Scan Rate will be converted to cm/sec, and the upstream challenge and recorded data will be displayed in particles/m^3.

Size Mode Time Constant

Press the Size Mode Time field to open the Size Mode Time screen. See Figure 3-11.

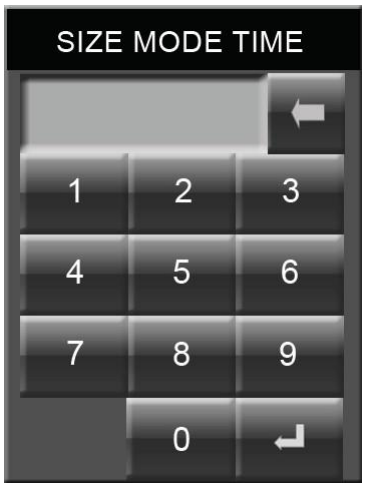


Figure 3-11 Size Mode Time Screen

Size Mode Time is the number of seconds for which a rolling average of the downstream counts will be taken. This provides stable readings for sizing a leak.

Use the keypad to enter the value and press Enter button (bent arrow) when done. The value will be displayed on the Service screen. If no value is entered, the previous value remains as the current.

Press OK at the Service screen to return to the CONFIG screen. Continue setting up the scanner or press the HOME button to return to the MAIN screen.

Auto Save Interval

Press the Auto Save Interval field to open its editing screen, as shown in Figure 3-12.

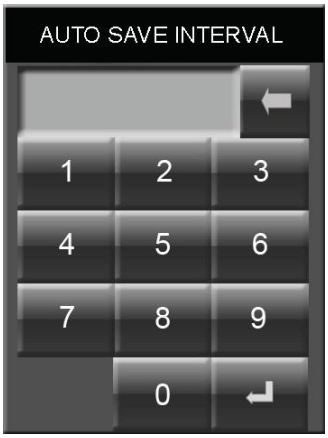


Figure 3-12 Auto Save Interval Screen

This feature provides automatic saving of Count Mode data at regular intervals; the default is 60 seconds.

If the user does not press the Save Button before the first interval is reached, the ScanAir Pro will automatically save the data.

If the user presses the Save Button before the first interval has expired, the ScanAir Pro will not save the data automatically and will require the user to save the data manually. Under this condition, any time the user wishes the data to be saved, the Save Button must be pressed.

Use the keypad to enter the number of seconds from 0 - 9999 and press the Enter Button. The new value will be displayed on the service screen. If no new value is entered, the previous value remains as the current. A value of 0 disables the feature.

AKRIBIS Systems Pty Ltd - contacto@akribis.info

Set the Alarm

Press the Alarm field on the CONFIG screen to open the % Significant Leak screen as shown in Figure 3-13.

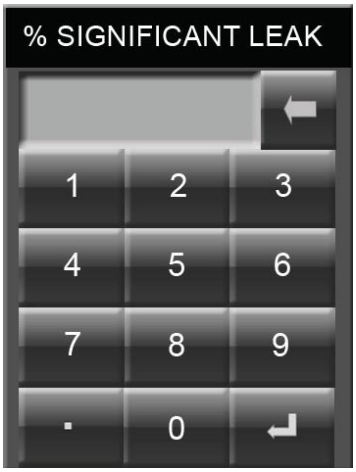


Figure 3-13 % Significant Leak Screen

Note: *If the value entered is greater than 150%, the value will be defaulted to 150.00%.*

Enter a percentage value to be used as an unacceptable leak percentage. Sustained readings above this value indicate a leak in the filter or seam and will trigger the alarm. Press the Enter button to set the new value. If no value is entered, the previous value will be used.

Note: *Values less than 0.00005% will be rounded off and displayed as 0.0000%.*

Values greater than or equal to 0.00005 will be rounded off and displayed as 0.0001%.

Up to 8 numeric characters may be entered, which includes the decimal point. If the value entered is less than 0.01% (0.0099% and below), a value with 4 decimal places will be displayed in the CONFIG screen Alarm field.

If the value entered is equal to or greater than 0.01% and less than 0.1% (0.01% to 0.099%), a value with 3 decimal places will be displayed.

If the value is greater than or equal to 0.1% and less than 1.0%, a value with 2 decimal places will be displayed.

If the value is greater than 1.0%, a value with 1 decimal place will be displayed on the CONFIG screen Alarm field.

Table 3-1 Decimal Place Values

Value	Decimal Places
0 to 0.0099	4
0.01 to 0.99	3
0.1 to 0.99	2
1.0 and above	1

Set the Scan Rate

Press the Scan Rate field to open the Scan Rate screen (Figure 3-14).



Figure 3-14 Scan Rate Screens

The user has the option of supplying the scan rate in inches or centimeters via the drop-down menu. Choose one of the radio buttons on the screen. Scan rates of 2, 3 and 4 inches/sec are equivalent to 5, 7.5 and 10 cm/sec. Press OK to return to the CONFIG screen.

If the probe size was entered in cm, entering the scan rate in inches/sec will convert the probe size to inches, and the upstream challenge and recorded data will be displayed in particles/ft^3. Likewise, changing to cm/sec will convert the probe size to centimeters and the upstream challenge and recorded data will be displayed in particles/m^3.

AKRIBIS Systems Pty Ltd contacto@akribis.info

Set the Units

Press the Units field to open the Units screen. See Figure 3-15.



Figure 3-15 Units Screen

The Units screen allows changing the measurement type displayed on the Main screen. The user has the option of selecting ft^3 (cubic feet), m^3 (cubic meters), L (liters) or ml (milliliters). Press OK to return to the CONFIG screen.

Press ft^3 to set the upstream challenge and upstream data to be displayed as counts/ft^3. The scan rate will be displayed in inches/sec and the probe size will be displayed in inches.

Press m^3 to set the upstream challenge and upstream data to be displayed as counts/m^3. The scan rate will be displayed in cm/sec and the probe size will be displayed in cm.

Press L to set the upstream challenge and upstream data to be displayed as counts/L. The scan rate will be displayed in cm/sec and the probe size will be displayed in cm.

Press mL to set the upstream challenge and upstream data to be displayed as counts/mL. The scan rate will be displayed in cm/sec and the probe size will be displayed in cm.

Set the Mode

Pressing the Mode field will open the Sample Mode screen shown in Figure 3-16.



Figure 3-16 Sample Mode Screen

Scan mode is the default Sample Mode and is used to take upstream or downstream samples. Scan mode doesn't have any options.

If Count mode is selected, a second dropdown menu allows choosing between Raw and Normalized particle count data for printing.

The print enable button applies to Scan Mode and Count Mode. Scan mode displays percentage of Alarm Limit and Count mode displays a 5-second moving average of the concentration of particles.

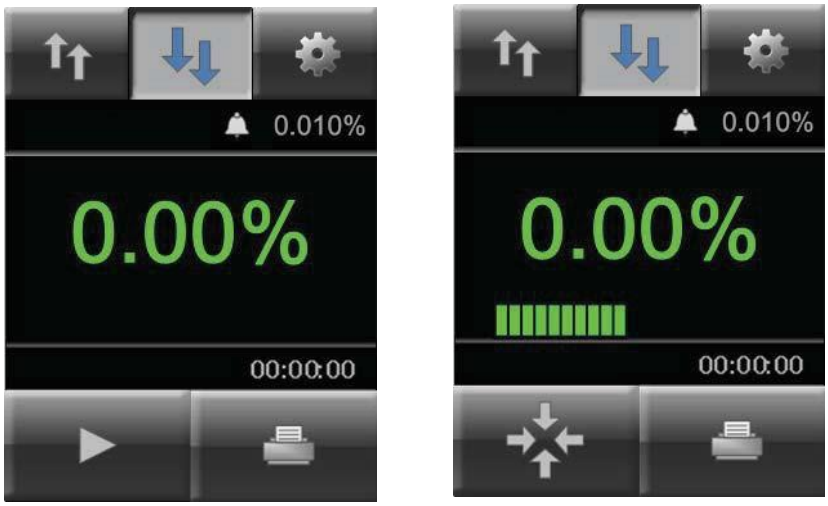


Figure 3-17 Scan Mode Start and Run States

AKRIBIS www.akribis.info contacto@akribis.info

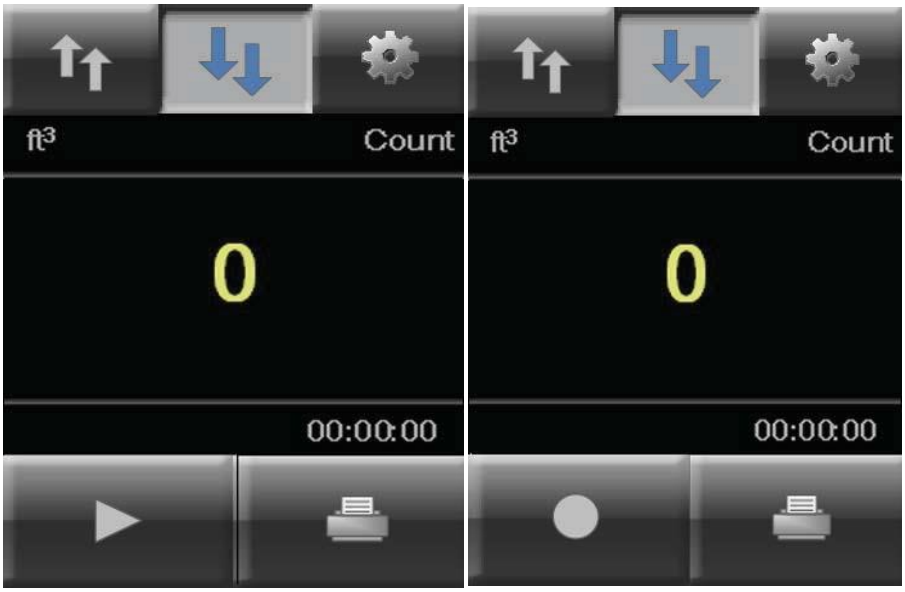


Figure 3-18 Count Mode Start and Run States

Count data is stored on the ScanAir Pro and may be printed several times by just pressing the Print button. If count is stopped and restarted, the user will be prompted if old data needs to be deleted. If the 'X' is pressed, the Scan screen will return and no data will be deleted. If the Checkmark (yes) is pressed, data will be deleted and the Scan screen will return. Pressing the Start again will start the counter.

Press OK to return to the CONFIG screen.

Set Upstream Challenge

Pressing the Upstream Challenge field opens the Upstream Challenge screen as shown in Figure 3-19.

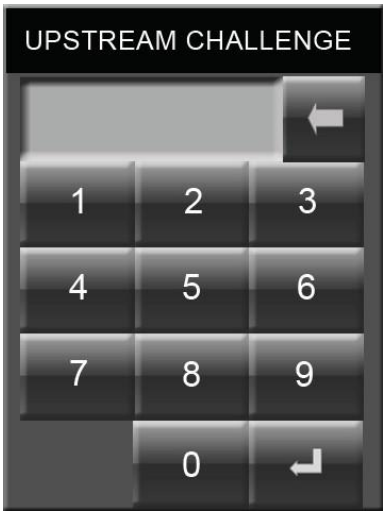


Figure 3-19 Upstream Challenge Screen

The Upsteam Challenge value is dependant on the selected unit of measurement; enter the value by using the keypad. Press Enter (bent arrow) to display the value on the CONFIG screen. If no value is entered, the default or last entered value will remain as the current.

If the unit being used is m^3, then the maximum value can be 999,999,999,999 particles/m^3.

Using the unit as ft^3 limits the maximum value as 999,999,999 particles/ft^3.

Using L as the unit limits the maximum value as 999,999,999 particles/L.

Using mL as the unit limits the maximum value to 999,999 particles/mL.

If the value entered yields an Np that is less than 2, a pop-up screen informs the user the minimum detectable leak value using the current parameters. See Figure 3-20.

AKRIBIS Systems Limited contacto@akribis.info

Note: *For a scan rate of 2-inches/second or 5 cm/second with a standard probe size of 0.4-inches and 0.01% leak, this equates to an upstream challenge of 6,000,000 particles/ft^3.*

For a scan rate of 3-inches/second or 7.5 cm/second with a standard probe size of 0.4-inches and 0.01% leak, this equates to an upstream challenge of 18,000,000 particles/ft^3.

For a scan rate of 4-inches/second or 10 cm/second witha standard probe size of 0.4-inches and 0.01% leak, this equates to an upstream challenge of 24,000,000 particles/ft^3.



Figure 3-20 Minimum Detectable Leak Screen

If the Np value is greater than 2 but less than 4, the user will still be informed of the minimum detectable leak value by a pop-up screen.

Press the check mark to return to the Upstream Challenge entry screen. Re-enter a different value, if desired, and press the Enter button.

Press the X to accept the value entered and return to the CONFIG screen; the value entered is displayed.

AKRIBIS www.akribis.info · contacto@akribis.info

Perform an Upstream Challenge

The Upstream Challenge is a measurement of the concentration of particles behind, or “upstream” of, the filter, which is used as a reference against downstream samples.

Press the Upstream Mode Button shown in Figure 3-21.

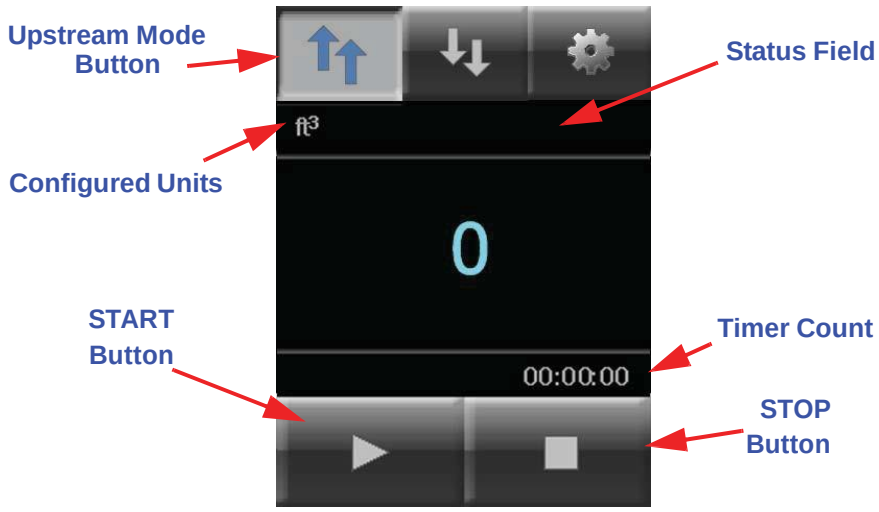


Figure 3-21 Upstream Challenge Mode Start

Samples are automatically diverted to the Diluter in upstream mode and its ICON appears in the Status Field. When the START button is pressed, the scanner performs a 4-second purge to stabilize the sample before counting particles. The data is displayed in counts per volume as a 5-second moving average. See Figure 3-22.

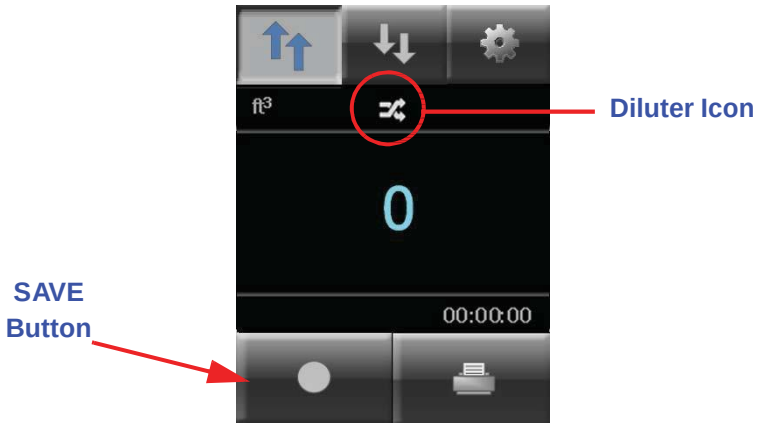


Figure 3-22 Diluter Icon

The scanner will take a minimum of five 2-second samples and compare them to the 5-second moving average. When five consecutive readings are within 20% of the 5-second moving average, the 5-second

AKRIBIS Systems Limited contacto@akribis.info

average will be stored as the upstream challenge.

If the total sample time exceeds 20-seconds, the user will be informed by a pop-up screen that the concentration is not uniform. See Figure 3-23.



Figure 3-23 Concentration Not Uniform Message

The user has the option to repeat the sample or store the current upstream challenge. Press YES (check mark) to automatically restart the upstream sample. Press NO (X) to store the last 15 seconds of the moving average as the upstream challenge.

During the sampling, the START button converts to a SAVE button which allows the user to save the upstream challenge concentration any time after the 4-second purge is complete.

The calculated upstream challenge will be displayed at the end of the sample.

AKRIBIS www.akribis.info · contacto@akribis.info

If the calculated Np (number of counts indicating a leak) is less than 2, the scanner will inform the user with a pop-up screen that the challenge was insufficient. See Figure 3-24.

Note: *For a scan rate of 2-inches/second (5 cm/ second), the Np must be greater than 2 or the user will be informed of an insufficient challange.*

For a scan rate of 3-inches/second (7.5 cm/ second) or a scan rate of 4-inches/second (10 cm/ second), the Np must be greater than 4 or the user will be informed of an insufficient challenge.

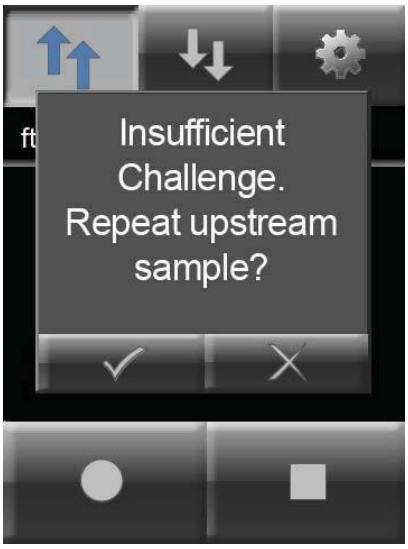


Figure 3-24 Insufficient Challenge Screen

The user will be given the option to repeat the sample. Press YES (check mark) to automatically restart the upstream sample. Press NO (X) to save the current challenge.

AKRIBIS Systems Pty Ltd contacto@akribis.info

Downstream Sampling

The Downstream sample measures the concentration of particles taken in front or “downstream” of the filter or seam and is measured against the saved Upstream Challenge concentration.

If printing is enabled and leak size data is stored internally, the user will be prompted to clear the previously recorded data when the start button is pressed. See Figure 3-25.

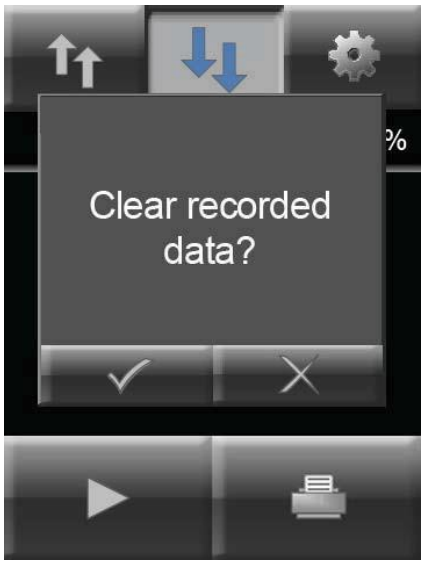


Figure 3-25 Clear Recorded Data

Press the Downstream button on the ScanAir Pro, if not already selected, to perform downstream sampling. See Figure 3-26. When downstream mode is selected, the diluter is automatically bypassed.

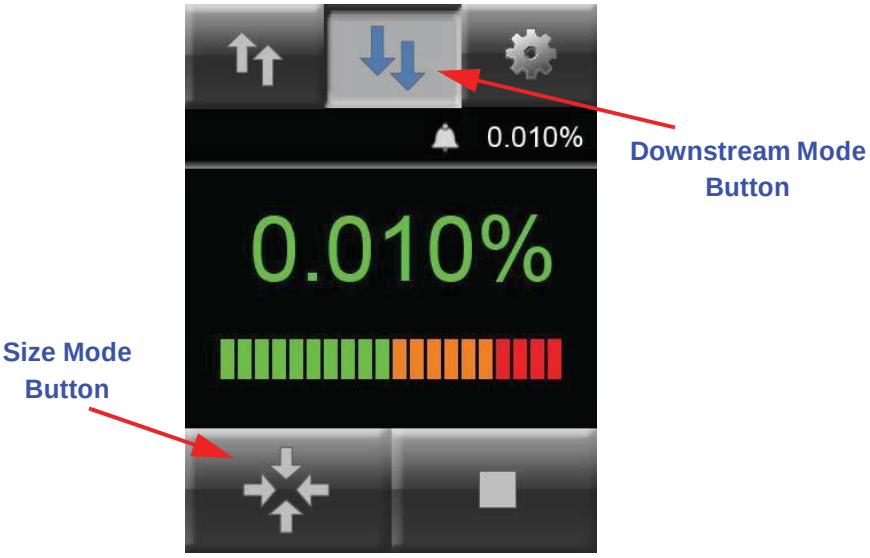


Figure 3-26 Downstream Sample Mode

AKRIBIS www.akribis.info · contacto@akribis.info

When START button is pressed, the scanner will perform a 4-second purge to allow the sample to stabilize before counting particles. The START button will change to the Size Mode button.

The % Significant Leak is updated during the sampling every second as data is received from the particle counter.

Note: *If the value entered is greater than 150%, the value will be defaulted to 150.00%.*

If the value is less than 0.0099%, the data is displayed with 4 decimal points. If the value is greater than or equal to 0.01% and less than 0.1%, the data is displayed with 3 decimal points.

If the value is greater than or equal to 0.1% and less than 1.0%, the data is displayed with 2 decimal points. If the value is 1.0% or greater, the data is displayed with 1 decimal point.

Table 3-2 Decimal Place Values

Value	Decimal Places
0 to 0.0099	4
0.01 to 0.099	3
0.01 to 0.99	2
1.0 and above	1

Press the STOP button to stop sampling. The data will reset to zero and the Size Mode button will revert back to the START button.

AKRIBIS Systems Pte. Ltd. contacto@akribis.info

Alarms

If the counts in the data window exceed the Np, the scanner will beep to indicate the presence of a leak.

The Alarm Window is determined by the probe size and scan rate. The Alarm window is typically in the order of 100 to 200 ms.

$$Alarm\ Window\ (seconds) = \frac{probe\ size}{scan\ rate}$$

A visual alarm indicator is displayed in conjunction with the audible alarm and is updated during sampling. See Figure 3-27.



Figure 3-27 Visual Alarm Indicator

Green indicates counts that are less than 50% of the alarm threshold Np. Yellow are counts between 50% and 80% of the alarm threshold Np and Red are counts that greater than 80% of the alarm threshold Np.

Audio Output

The user has the option to use headphones or earbuds (not included) as the audio output. The user can connect the Volume Control Adapter (included) to the audio jack as shown in Figure 3-28.

Note: *Sound will emit from the internal speaker OR the headphones/ earbuds, but not both.*



Figure 3-28 Volume Control Adapter

When the adapter is connected and used in conjunction with headphones or earbuds, the sound is diverted from the internal speaker.

Size Mode

The Size Mode button can be pressed at any time during the sample. When Size Mode is activated the scanner beeps once per second and the screen displays a rolling average of the leak percentage based on the Size Mode Time value set in the service screen. See Figure 3-29.



Figure 3-29 Size Mode Activated

The Stop button converts to a Save button and allows the user to save the leak size for printing.

When the user presses the Save button during the sample, a pop-up screen will appear giving the user the option to save the current leak size. See Figure 3-30.

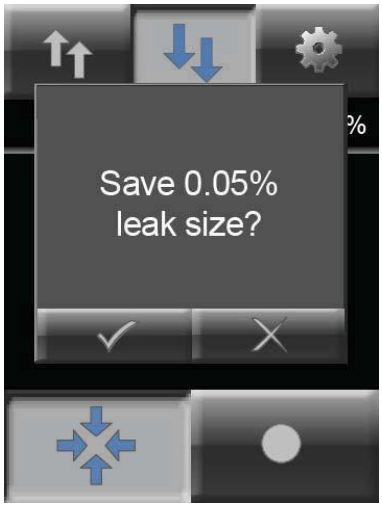


Figure 3-30 Save Current Leak Size

AKRIBIS Systems Limited - contacto@akribis.info

Pressing the Yes button (check mark) will save the current leak size in the scanner. The value will be automatically printed on the report at the end of the sample. Pressing the No button (X) will continue the sampling and no data will be saved.

The ScanAir Pro can record and store a maximum of 20 leak records. When the maximum is reached, a pop-up message is displayed, prompting the user to print the recorded data. See Figure 3-31.



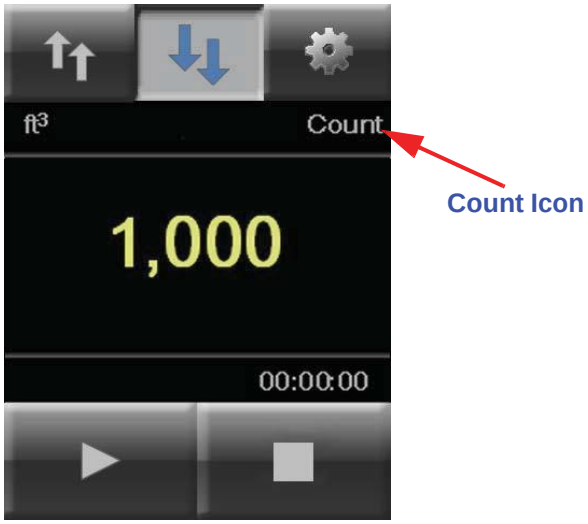
Figure 3-31 Print Report Screen

Pressing the Yes button (check mark) will stop the sampling and print the recorded data. Pressing No (X) will continue with the sampling.

Press the Size Mode button a second time to return to normal downstream sampling.

Count Mode

If the ScanAir Pro is set to Count Normalized Mode, the scanner will count the total number of particles every 5 seconds and the Main screen will display a moving average as shown in Figure 3-32.



FigCure 3-32 Count Mode Screen

If the ScanAir Pro is set to Count Raw Mode, the value displayed is the cumulative particle count from the start of sampling and is reset to zero when an Auto Save takes place or the user presses save.

The Count icon appears in the status field when Count mode is selected. Nothing is displayed when Scan mode is selected.

AKRIBIS Multimedia, contacto@akribis.info

Print Data

When a sample has been completed, the user can press the Print button to print the recorded data. If no data is recorded, a pop-up screen will appear to inform the user there is no recorded data. See Figure 3-33.

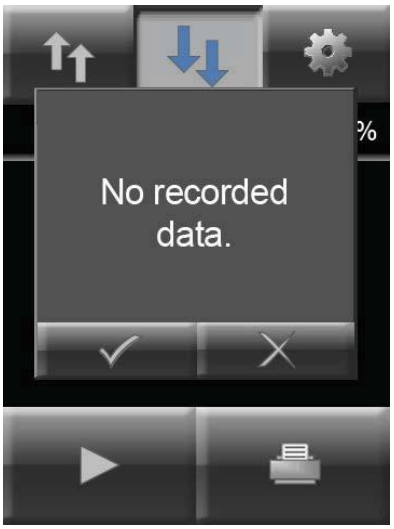


Figure 3-33 No Recorded Data Screen

If the user presses the Print button and printing has not been enabled, the user will be prompted to enable printing as shown in Figure 3-34.



Figure 3-34 Enable Printing Prompt

Pressing the Yes button (check mark) will print the report from the SOLAIR printer. Pressing No (X) will leave the print function disabled.

Figure 3-35 displays an example of the Print report.

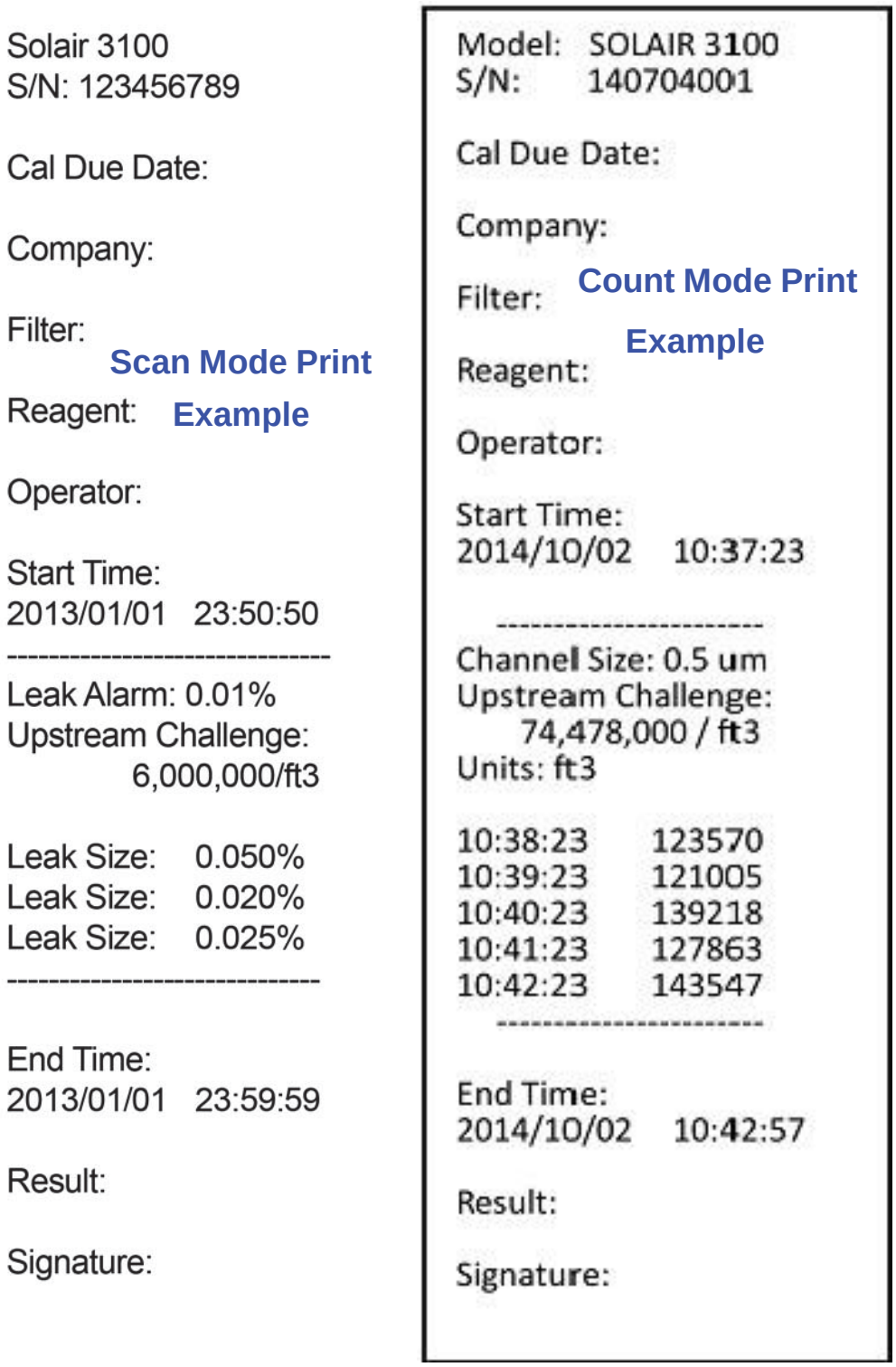


Figure 3-35 Report Print Examples

AKRIBIS Systems Pty Ltd. Info@akribis.info

A Limited Warranty

Limitation Of Warranties:

A. Lighthouse Worldwide Solutions (LWS) warrants that all equipment shall be free from defects in material and workmanship under normal use for a period of two years from date of shipment to Buyer except that LWS does not warrant that operation of the software will be completely uninterrupted or error free or that all program errors will be corrected. Buyer shall be responsible for determining that the equipment is suitable for Buyer's use and that such use complies with any applicable local, state, or federal law. Provided that Buyer notifies LWS in writing of any claimed defect in the equipment immediately upon discovery and any such equipment is returned to the original shipping point, transportation charges prepaid, within two years from date of shipment to Buyer and upon examination LWS determines to its satisfaction that such equipment is defective in material or workmanship, i.e. contains a defect arising out of the manufacture of the equipment and not a defect caused by other circumstances, including, but not limited to accident, misuse, unforeseeable use, neglect, alteration, improper installation, improper adjustment, improper repair, or improper testing, LWS shall, at its option, repair or replace the equipment, shipment to Buyer prepaid. LWS shall have reasonable time to make such repairs or to replace such equipment. Any repair or replacement of equipment shall not extend the period of warranty. If the Instrument is modified or in any way altered without the explicit written consent of LWS then the warranty is null and void. This warranty is limited to a period of two years, except as noted below, without regard to whether any claimed defects were discoverable or latent on the date of shipment. The length of warranty for pumps in hand held particle counters is one (1) year. Batteries and accessories with all products are warranted for one (1) year. Fuses and purge filters carry no warranty. If a third party battery is used in the product, the product warranty is null and void. If the battery is charged by a third party battery charger the battery warranty is null and void.

B. If Buyer shall fail to pay when due any portion of the purchase price or any other payment required from Buyer to LWS under this contract or otherwise, all warranties and remedies granted under this Section may, at LWS's option, be terminated.

C. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER REPRESENTATIONS, WARRANTIES AND COVENANTS, EXPRESS OR IMPLIED WITH RESPECT TO THE EQUIPMENT AND ANY DEFECTS THEREIN OF ANY NATURE WHATEVER, INCLUDING AND WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. LWS SHALL NOT BE LIABLE FOR, AND BUYER ASSUMES ALL RISK OF, ANY ADVICE OR FAILURE TO PROVIDE ADVICE BY LWS TO BUYER REGARDING THE EQUIPMENT OR BUYERS USE OF THE SAME. UNDER NO CIRCUMSTANCES SHALL LWS BE LIABLE TO BUYER UNDER ANY TORT, NEGLIGENCE, STRICT LIABILITY, OR PRODUCT LIABILITY CLAIM AND BUYER AGREES TO WAIVE SUCH CLAIMS. LWS's SOLE AND EXCLUSIVE LIABILITY AND BUYERS SOLE AND EXCLUSIVE REMEDY, FOR ANY NONCONFORMITY OR DEFECT IN THE PRODUCTS OR ANYTHING DONE IN CONNECTION WITH THIS CONTRACT, IN TORT, (INCLUDING NEGLIGENCE), CONTRACT, OR OTHERWISE, SHALL BE AS SET FORTH IN THE SUBSECTION A HEREOF AS LIMITED BY SUBSECTION B HEREOF. THIS EXCLUSIVE REMEDY SHALL NOT HAVE FAILED OF ITS ESSENTIAL PURPOSE (AS THAT TERM IS USED IN THE UNIFORM COMMERCIAL CODE) PROVIDED THAT THE SELLER REMAINS WILLING TO REPAIR OR REPLACE DEFECTIVE EQUIPMENT (AS DEFINED IN SUBSECTION A) WITH A COMMERCIALLY REASONABLE TIME AFTER RECEIVING SUCH EQUIPMENT. BUYER SPECIFICALLY ACKNOWLEDGES THAT SELLER'S PRICE FOR THE EQUIPMENT IS BASED UPON THE LIMITATIONS OF LWS'S LIABILITY AS SET FORTH IN THIS CONTRACT.

Warranty Of Repairs After Initial Two (2) Year Warranty:

A. Upon expiration of the initial two-year warranty, all parts and repairs completed by an authorized Lighthouse repair technician are subject to a six (6) month warranty.

B. Other than the above, LWS makes no warranty of any kind, expressed or implied, except that the products manufactured and sold by LWS shall be free from defects in materials and workmanship and shall conform to LWS's specifications; Buyer assumes all risk and liability resulting from use of the products whether used singly or in combination with other products. If instrument is modified or in any way altered without the explicit written consent of LWS, then the warranty is null and void.

C. WARRANTY REPAIRS SHALL BE COMPLETED AT THE FACTORY, BY AN AUTHORIZED SERVICE LOCATION, BY AN AUTHORIZED SERVICE TECHNICIAN, OR ON SITE AT BUYER'S FACILITY BY A LIGHTHOUSE AUTHORIZED EMPLOYEE. BUYER PAYS FREIGHT TO FACTORY; SELLER WILL PAY STANDARD RETURN FREIGHT DURING THE WARRANTY PERIOD. BUYER MAY SELECT A FASTER METHOD OF SHIPMENT AT ITS OWN EXPENSE.

AKRIBIS Systems - contacto@akribis.info

B Calculations

Np

Based on the user input and the upstream challenge concentration, the Np is the number of counts indicating the presence of a leak and is calculated by the ScanAir Pro as follows:

$$N_p = \frac{C_c \ x \ L_s \ x \ F_s \ x \ D_p}{60 \ x \ S_r}$$

- S_r Acceptable scan rate: cm/sec (in/sec)
- C_c Upstream challenge concentration: particles/ft3 (particles/m3
- L_s Significant leak: percentage of upstream concentration (typically 0.01%, or 0.0001)
- F_s Sample flow rate of instrument used: ft3/min (m3/min)
- D_p Probe dimension parallel to scan direction: inches (cm)
- N_p Number of counts indicating the presence of a leak (1 though 10)
- 60 Conversion: 60 sec/min

Example: (using English units):

N_p = (6000000 particles / ft^3 x 0.0001 x 1.0 ft^3/min x 0.4") / (60s x 2"/ sec)

$N_p = 2$

Example: (using metric system):

N_p = (210000000 particles /m^3 x 0.0001 x 0.0283m^3/min x 1.02cm) / (60s x 5cm/sec)

$N_p = 2$

AKRIBIS Systems Pty Ltd. contacto@akribis.info

% Alarm Leak

The % leak is calculated and updated every second during downstream sampling, using the following formula:

$$L_s = \frac{counts / sec \times 60 \times S_r}{C_c \times F_s \times D_p}$$

Example (using English units):

L_s = (2 counts/sec x 60s x 2"/sec) / (6000000 particles/ft^3 x 1.0 ft^3/min x 0.4")

L_s = 0.01%

Example (using metric system):

L_s = (2 counts/sec x 60s x 5cm/sec) / (210000000 particles/m^3 x 0.0283m^3/min x 1,02cm)

L_s = 0.01%

% Leak Size

The % leak size is calculated and updated every second during downstream sampling, using the following formula:

$$\%\ Leak = \frac{downstream\ counts}{upstream\ counts} \times 100$$

AKRIBIS www.akribis.info · contacto@akribis.info

C Touchscreen Calibration

To get into the Touchscreen calibration mode, ***lightly*** press on the display while power is OFF. Exercise care to prevent puncturing the screen's membrane, which will void warranty. Keep the light pressure on the display while powering up the ScanAir Pro. The screen at Figure C-1 will appear. Touch anywhere on the screen to continue the calibration process.



Figure C-1 Display Calibration Start Screen

At the next screen touch in the center of the circle displayed in the upper left corner of the screen. Release the touch to move to the next alignment circle. The tip of a stylus is suggested to successfully complete the alignment by being on-target more accurately than by using a fingertip. Exercise care to prevent puncturing the screen's membrane. Figure C-2 shows the second and third Calibration screens.

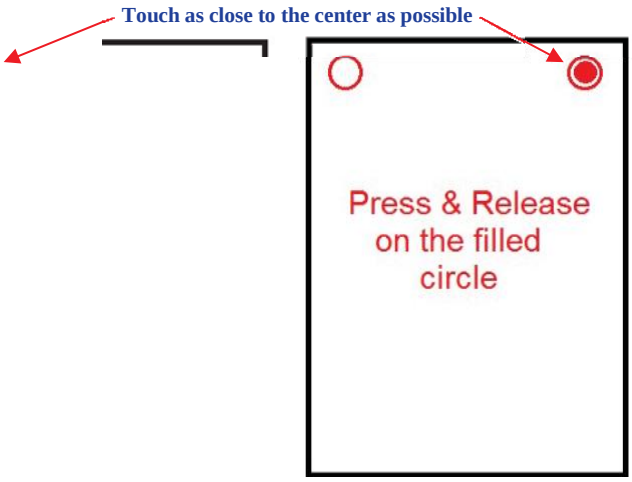


Figure C-2 Second and Third Calibration Screens

AKRIBIS · www.akribis.info · contacto@akribis.info

The fourth and fifth alignment screens are shown in Figure C-3. Continue touching the center circle to continue the alignment process.

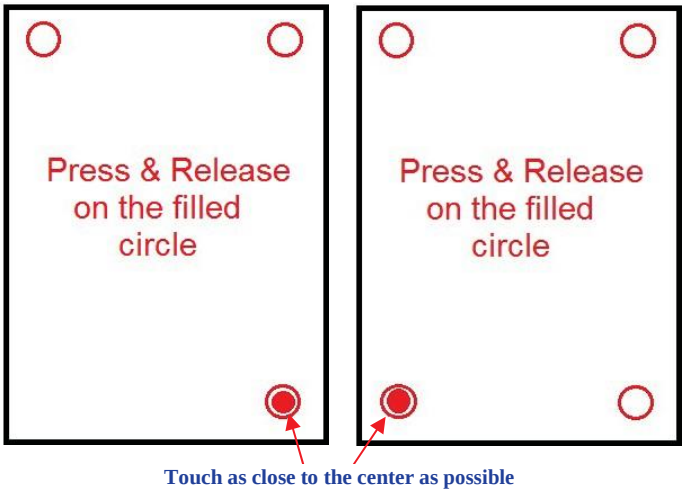


Figure C-3 Fourth and Fifth Calibration Screens

Touching the final filled circle on the bottom left properly brings up the final screen as shown in Figure C-4. Touching anywhere on the screen completes the alignment process and will bring up the Main screen.



Figure C-4 Touchscreen Calibration Complete

Index

A

Additional help 1-i

C

Communication Modes 1-3
Communications 3-1

D

Description 1-2
Dimensions 1-3

E

Enclosure 1-3

H

Help 1-i

I

Installation 2-3

L

Limitation Of Warranties A-1
Limited Warranty A-1

O

Overview 1-1

P

Particle Travel Time 1-3
Power 1-3

S

Sample Modes 1-3
ScanAir Pro Specifications 1-3
Supporting Software 1-3

T

Text conventions 1-i
Touch Screen Display 1-3

W

Warranty A-1
Weight 1-3

AKRIBIS Systems Pty Ltd contacto@akribis.info

Service and Support
Tel. 1-800-945-5905 (USA Toll Free)
Tel. 1-541-770-5905 (Outside of USA)
techsupport@golighthouse.com
www.golighthouse.com

LIGHTHOUSE
WORLDWIDE SOLUTIONS

AKRIBIS · www.akribis.info · contacto@akribis.info