CubiScan®

1200-AKL

Operations Manual

Version 1.0

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CubiScan 1200-AKL Operations Manual

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CubiScan® 125 measurement products are the subject of U.S. Patent 8,928,896. Another U.S. patent is pending.

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This document was created with the purpose of providing the most accurate and complete information. If you have comments or suggestions for improving this manual, contact Quantronix at manual@cubiscan.com.

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Chapter 1
Product Description

The CubiScan 1200-AKL is a large-scale, static dimension scanning device that measures multi-piece, palletized, or non-palletized freight. The CubiScan 1200-AKL can work with a heavy-capacity floor scale or in a stand alone capacity. Its overhead-mounted sensor configuration provides a comprehensive view of the freight measurement area while allowing access from any direction. The CubiScan 1200-AKL can be floor, ceiling, or wall-mounted, allowing for a flexible system that is customized to fit your needs.

The CubiScan 1200-AKL is commonly used to dimension freight, for packaging planning, and storage space optimization. Barcode scanning and printing devices can be used with the CubiScan 1200-AKL to create a versatile measurement system.

Freight is measured using Class 1 infrared laser sensing technology. Two laser scanners are fixed to parallel guides that pass over the freight. Capacity for freight can be measured up to 8 x 8 x 9 feet (larger, customized versions are available). A floor or wall-mounted touchscreen display allows for a simple user operation process.

The CubiScan 1200-AKL uses powerful sensing technologies to create a flexible and economical solution for today's most demanding dimensioning applications.

Figure 1
CubiScan 1200-AKL

Specifications

Power Requirements

95-240 VAC, 47-63 Hz, Single phase

Environmental

Operating Temperature:	32° to 104° F (o° to 40° C)
Humidity:	0 to 85% non-condensing

Measuring Sensor

Two infrared laser scanners, 905 nm, Class 1, (eye-safe), according to DIN EN 60825-1

Measurement Capacities

Measurement Range (Standard Version)

Length:	6 in to 8 ft (12 cm to 2.5 m)
Width:	6 in to 8 ft (12 cm to 2.5 m)
Height:	6 in to 9 ft (12 cm to 2.75 m)

Measurement Range (Extended Version)

Length:	6 in to 11 ft (12 cm to 3.4 m)
Width:	6 in to 8 ft (12 cm to 2.5 m)
Height:	6 in to 9 ft (12 cm to 2.75 m)

Measurement Increment:	0.5 in (1 cm)
Measurement Time:	< 15 seconds
Object Colors:	Opaque

Physical

Standard Version

Length:	8 ft (2.4 m)
Width:	10 ft (3 m)
Height:	11 to 13 ft (3.4 to 3.9 m)
Weight:	_

Extended Version

Length:	11 ft (3.4 m)
Width:	10 ft (3 m)
Height:	11 to 13 ft (3.4 to 3.9 m)
Weight:	_

User Interface

A TFT, LCD touchscreen displays the barcode, keypad, L, W, H, and an image of the freight, among other things.

Chapter 2
Getting Started

This chapter provides instructions for powering the CubiScan 1200-AKL on and off. It also describes the different windows and functions that are found on the home screen.

It is recommended that you paint or tape lines on the floor to designate the measurement area, as shown in the figure below.

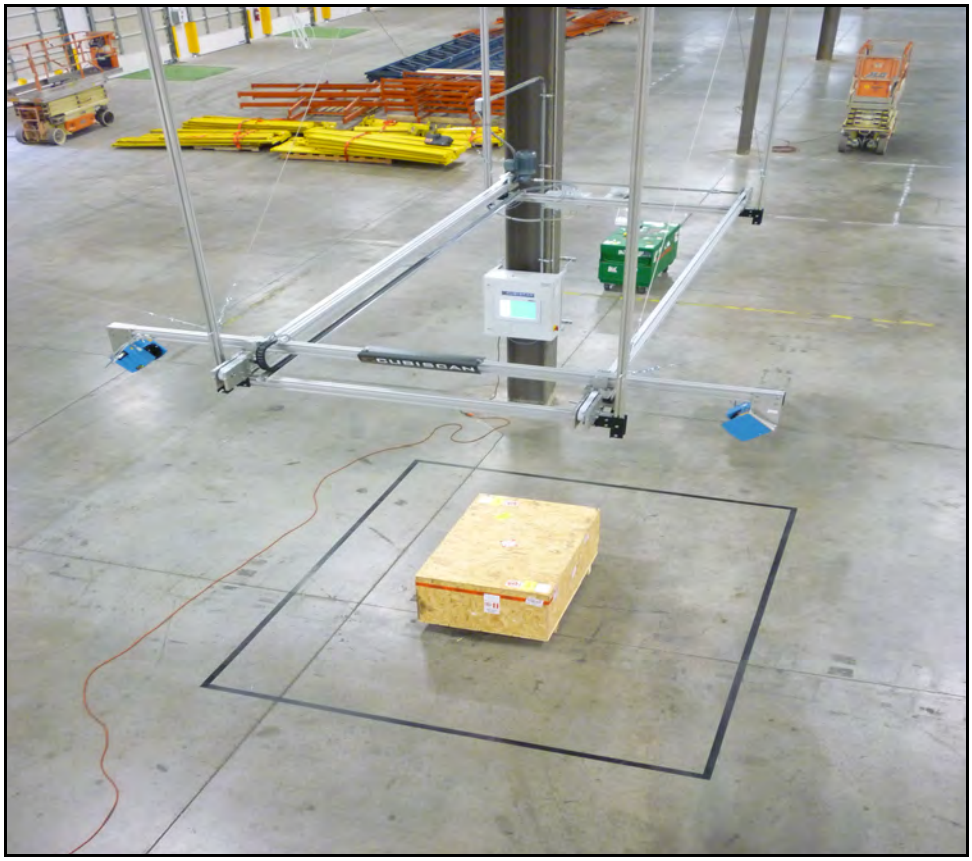


Figure 2
Measurement Area

NOTE *The following screenshots have been taken from a non-standard version of the CubiScan 1200-AKL and may appear slightly different from your own.*

Powering the CubiScan 1200-AKL On/Off

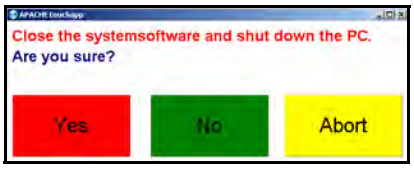
Before powering the system on or off, ensure that the measuring area is clear.

To turn the CubiScan 1200-AKL on, locate the red knob located on the control box, see Figure 3. Turn the red knob clockwise into the ON position.

Figure 3
On/Off Knob

Once the system has been powered on, it will display the home screen. When the status button turns green (located in the upper left corner of the screen), the CubiScan 1200-AKL is ready to measure.

To turn the CubiScan 1200-AKL off, touch the CUBISCAN logo located in the information bar. The following message will appear.



If you really do want to turn the CubiScan 1200-AKL off, tap **Yes**. The system will then shut down. Turn the red knob counterclockwise into the off position. **Allow at least 20 seconds to pass so that all power can be drained from the system before turning it back on.**

CubiScan 1200-AKL Touchscreen

The touchscreen located on the control box is how you operate and configure the CubiScan 1200-AKL.

Never use a sharp or hard-tipped object to tap on the touchscreen. It is fragile and can scratch or break. You can tap lightly on the screen with your fingertip, or you can use the eraser end of a pencil or a stylus with a soft point. Use a light touch just hard enough for the screen to respond.

CubiScan 1200-AKL Home Screen

This chapter describes the different areas and windows found on the home screen.

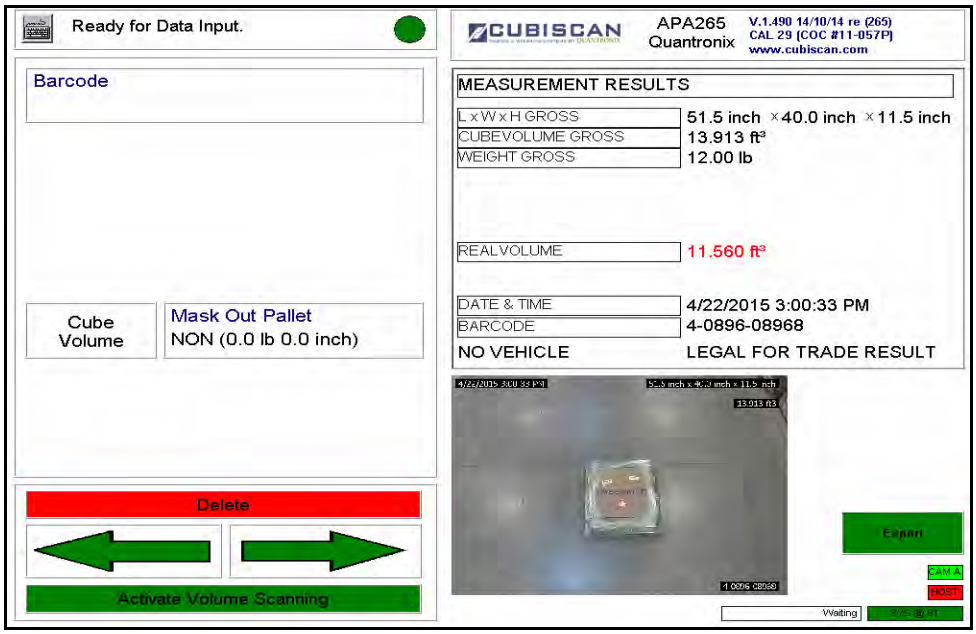


Figure 4
Home Screen

Status Bar

The status bar reports the CubiScan 1200-AKL's current status. This bar also displays the status button.

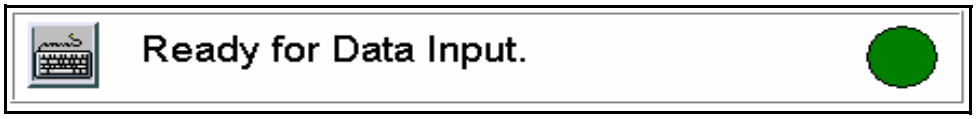


Figure 5
Status Bar

When the status button is green, the system is ready to perform measurements. The data of the last measurement can be read in the measurement results window.

When the status button is red, the system is in the measurement process. When the CubiScan 1200-AKL is in the measurement process the measurement area should not be entered, and freight should not be moved.

When the status button is yellow, the system has completed the measurement process and is reseting the system in preparation for another measurement. The measuring arm will return to the home position.

Tapping the status bar causes the following keyboard to appear on the screen.

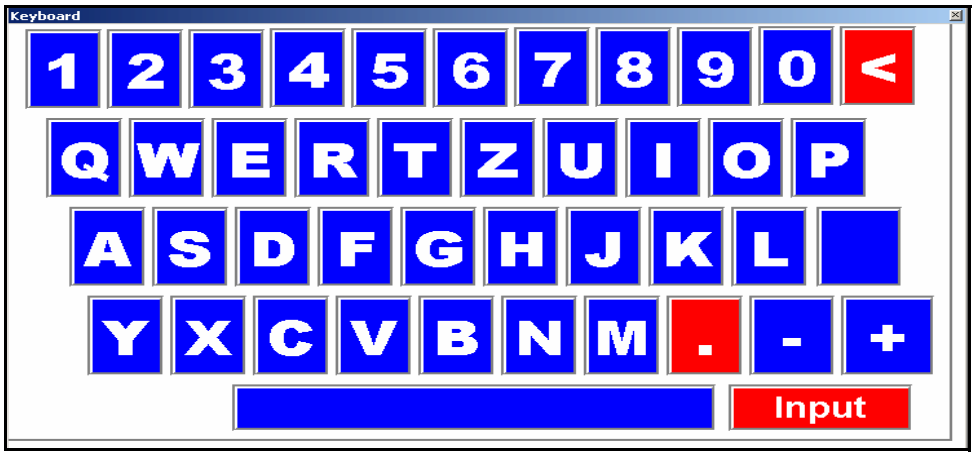


Figure 6
Keyboard

This keyboard allows you to enter letters as well as numbers. To exit this window tap the **X** in the top right corner.

Options Window

In this window you can select the options for volume, mask out pallet, and the barcode number.

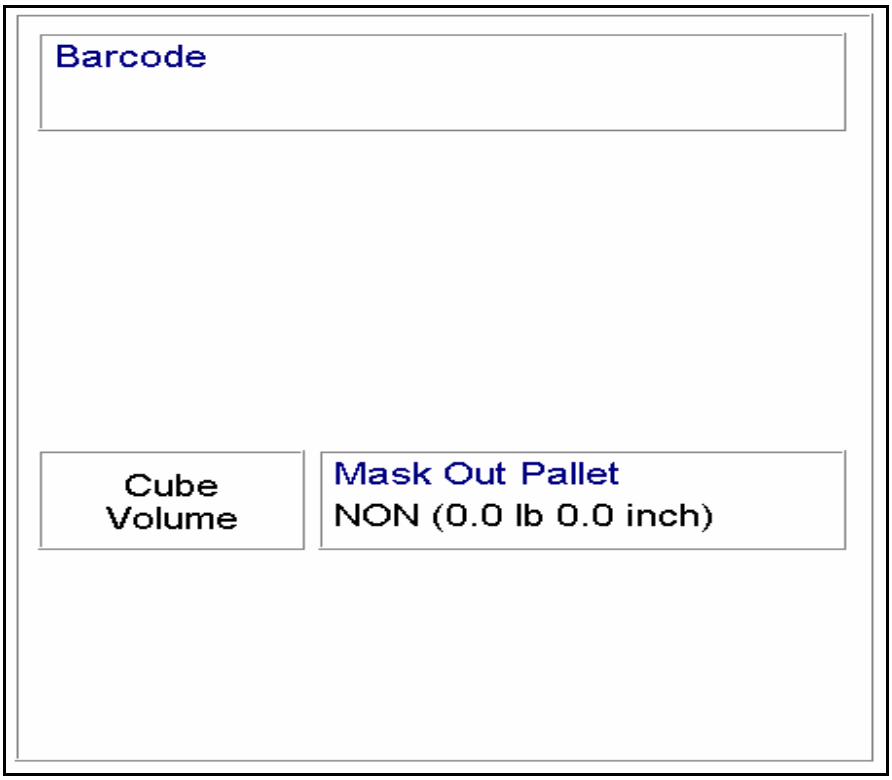


Figure 7
Options Window

Barcode The Barcode field is a mandatory entry field and must have a value before the CubiScan 1200-AKL can begin the measurement process. Tapping on this field brings up the following barcode entry screen.

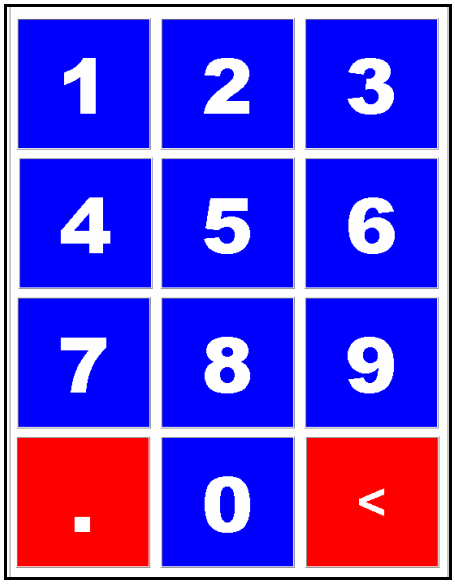
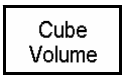


Figure 8
Barcode Entry Screen

To exit this window hit the left navigation arrow, located in the navigation section.

To enter a barcode in this field you can either scan a barcode or manually key in the barcode number using the barcode entry screen.

Cube Volume



The cube volume button is the default setting. Cube volume is the volume of the smallest possible cube that the freight could fit into.

Real Volume

You can select the real volume option by tapping the **Cube Volume** button once. Real volume (or water volume) is the volume without air.

Pallet Inclusion

You can select the pallet inclusion option by tapping the **Cube Volume** button twice. If you select this option the pallet will be included in the measurement. For more information on this feature see “Pallet Inclusion” on page 23.

Mask Out Pallet

Tap this button to mask out a pallet. When you tap this button the following screen appears.

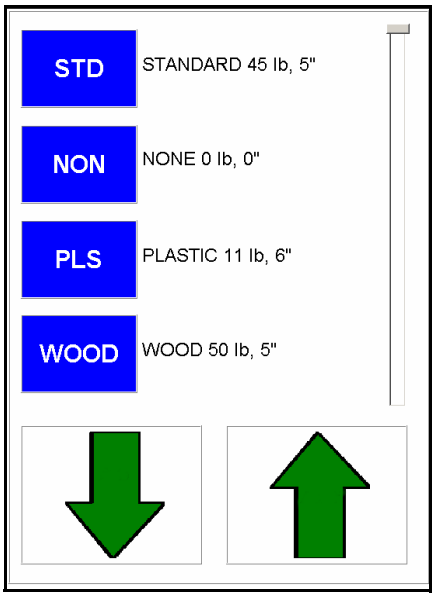


Figure 9
Mask Out Pallet Options Screen

Your pallet options may be different depending on how your system was configured.

For more information on this feature see “Mask Out Pallet” on page 26.

Navigation Section

From this section you can navigate through the CubiScan 1200-AKL screens.

Tapping the **Delete** button will delete any value that is selected, such as a barcode number. The Delete button deletes values one at a time.

The arrow buttons allow you to navigate through the various screens. The back arrow takes you back to the Measurement Results screen. The forward arrow takes you through the screens in the following order.

1. The Barcode Entry screen.
2. The Mask Out Pallet Options screen.
3. The Pre-Measurement screen.

Tapping the **Activate Volume Scanning** button will also take you to the Pre-Measurement screen. For more information on taking measurements see Chapter 3 “Operation” on page 16.

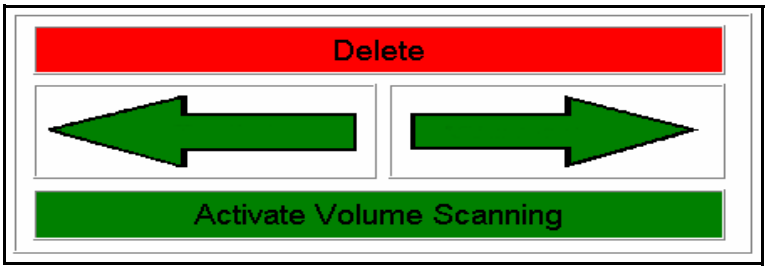


Figure 10
Navigation Section

Information Bar

The information bar displays information about the CubiScan 1200-AKL.

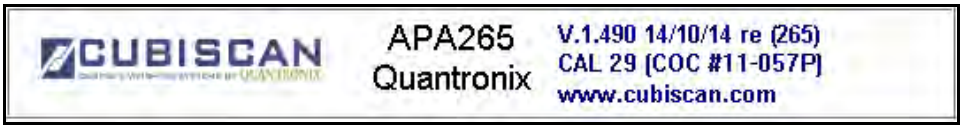


Figure 11
Information Bar

To shut down the system tap the CUBISCAN logo. For more information about turning the CubiScan 1200-AKL off, see “Powering the CubiScan 1200-AKL On/Off” on page 6.

Measurement Results Window

This window displays the most recent measurement results. By tapping on the various measurements you can display each measurement in different units (e.g., m, inch, kg, lb). You can close this window by tapping on it again or by tapping anywhere else on the screen.

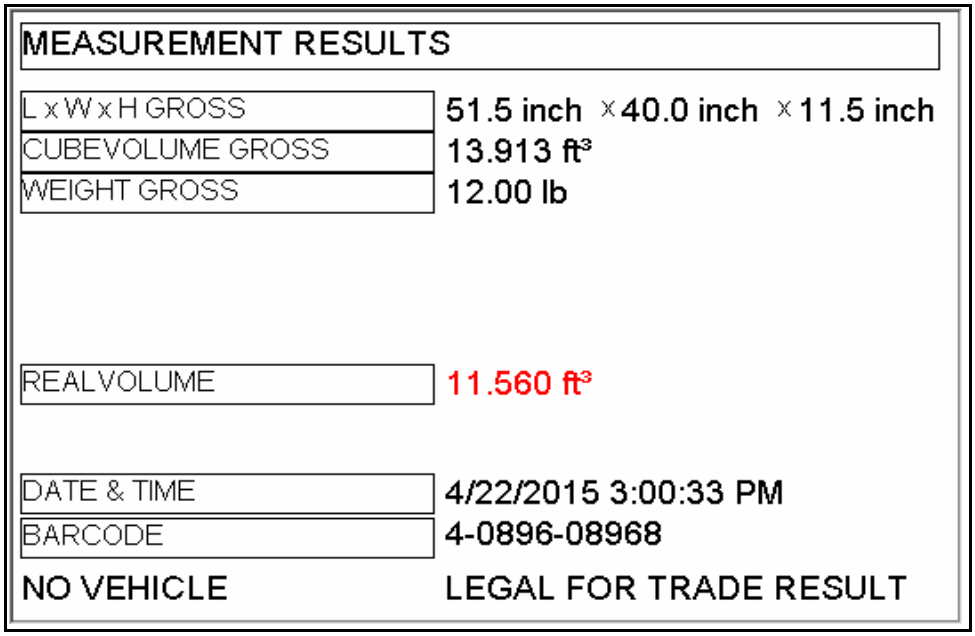


Figure 12
Measurement Results Window

Image Window

The image window displays the image taken of the freight. The image includes a time and date stamp, the barcode number, the volume, and the measurements of the freight.

Figure 13
Image Window

If you swipe the image to the left, the image window displays the overview

image. The overview image shows the height of the image using a color scale.

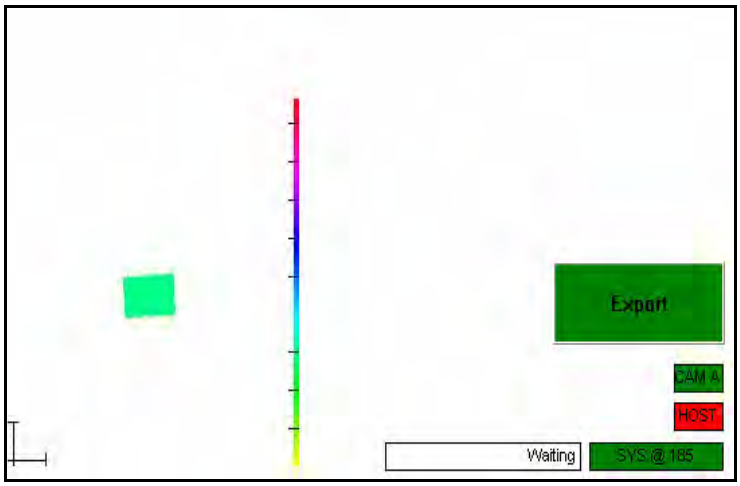


Figure 14
Overview Image

Image Window Options

The following section describes the various functions found in the Image Window.

Tapping this button will export all the stored measurement information that has not yet been exported. The information is exported to the file location that was specified when your CubiScan 1200-AKL was installed.

This button displays the status of camera A. You may have more or less camera buttons depending on how many, if any, cameras you have.

When this button is white, it means that the camera connected successfully after the CubiScan 1200-AKL was turned on.

When this button is green, it means that it has successfully captured an image.

When this button is red, it means that the camera is not connecting to the CubiScan 1200-AKL.

The host button displays the connection status of a TCP/IP host, such as a forklift or barcode scanner.

When this button is green, it means that the CubiScan 1200-AKL is successfully connected to the TCP/IP host.

When this button is red, it means that the CubiScan 1200-AKL is not connected to the TCP/IP host.

This button displays the status of the system software (this button may appear different on your screen).

If this button is green, the system software is connected.

If this button is red, the system software is not connected.

This button displays the status information of the CubiScan 1200-AKL.

The waiting status means that the CubiScan 1200-AKL is waiting and ready to begin a measurement.

The measuring status means that the CubiScan 1200-AKL is currently measuring freight.

The calculating status means that the CubiScan 1200-AKL is calculating the measurement information and will display it shortly.

NOTE *A black screensaver appears after a few minutes of inactivity, tapping the screen should bring the display back up.*

Chapter 3
Operation

This chapter provides instructions for operating the CubiScan 1200-AKL.

Measuring Freight

To measure freight, complete the following steps.

1. Power on the CubiScan 1200-AKL. For information on how to do this, see “Powering the CubiScan 1200-AKL On/Off” on page 6.

2. Make sure that the freight you want to measure is in the measurement area.

3. Scan or enter a barcode into the barcode field. (If your system is configured for it, scanning a barcode will automatically begin the measurement process.)

4. Select your preferred volume and pallet options or use the default options. For more information, see “System Configuration” on page 23.

5. Tap **Activate Volume Scanning**. The following Pre-Measurement screen appears. Your Pre-Measurement screen may appear different depending on the options that you selected.

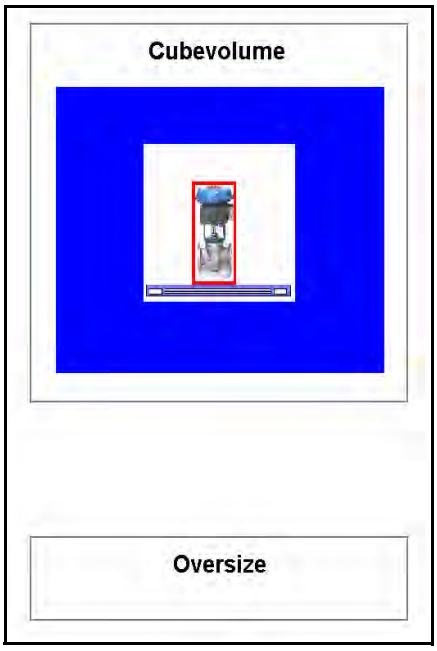


Figure 15
Pre-Measurement Screen

6. To begin the measurement process tap the graphic outlined in red, shown above in Figure 15. For information on measuring oversized freight, see “Measuring Oversized Freight” on page 18.

   The CubiScan 1200-AKL arm will move over the freight. This process usually takes about 15 seconds.

   Once the measurement is complete the values will be displayed in the measurement results window. The image that was captured will be displayed in the image window.

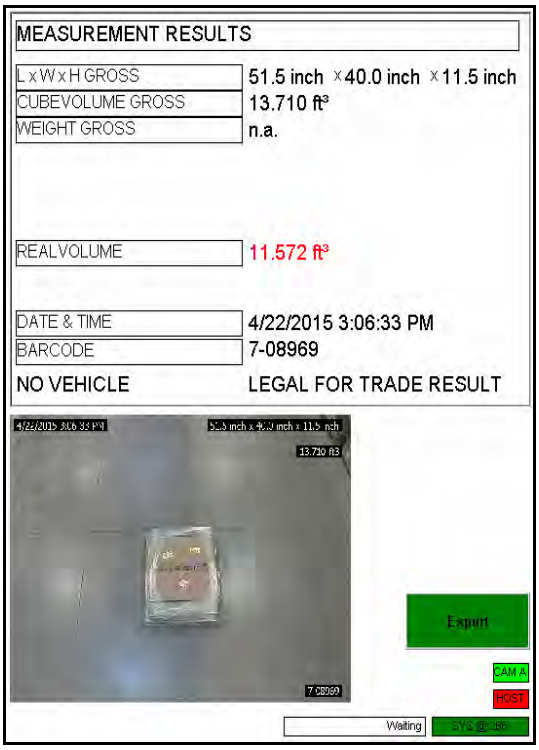


Figure 16
Measurement Results

7. You can then export the information by clicking **Export**. For more information on exporting measurement results, see “Image Window Options” on page 14.

Measuring Oversized Freight

Oversized freight is any freight that does not fit into the measurement area. To measure oversized freight, complete the following steps.

1. Power on the CubiScan 1200-AKL. For information on how to do this, see “Powering the CubiScan 1200-AKL On/Off” on page 6.

2. Select your preferred volume and pallet options or use the default options. For more information see “System Configuration” on page 23.

3. Enter a barcode using your preferred method.

4. Tap Activate Volume Scanning. The following Pre-Measurement screen appears.

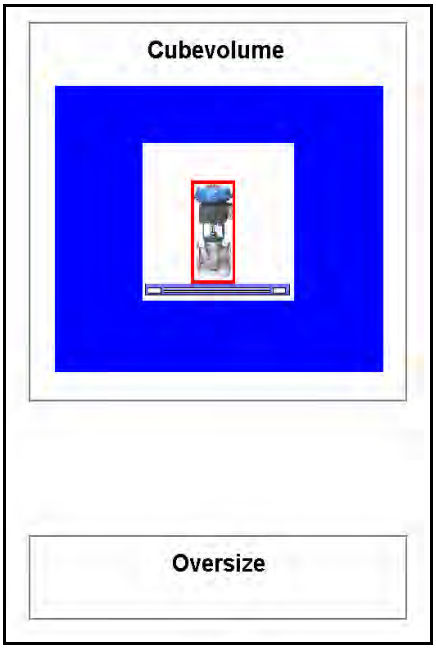


Figure 17
Pre-Measurement Screen

5. Tap the **Oversize** button. The Oversize Manual Measurement window appears.

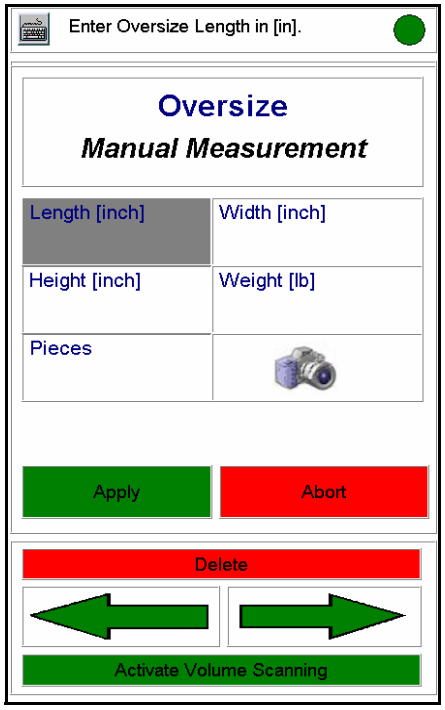


Figure 18
Oversize Manual Measurement Window

6. Measure the length, width, and height of the freight and enter the values into the appropriate fields. Enter the weight if applicable, if not, simply enter a zero into this field. All fields must contain a value before the measurement can take place.

7. Enter the number of pieces that are in the measurement field (this field may not be available, depending on your installation preferences).

8. If you do not want the CubiScan 1200-AKL to capture an image, tap the camera graphic located on the oversize manual measurement window. A red X will appear over the graphic.

9. When you are finished entering all the appropriate information, tap **Apply**. The measurement results will be displayed. If you do not want to complete the oversize measurement process, tap **Abort**.

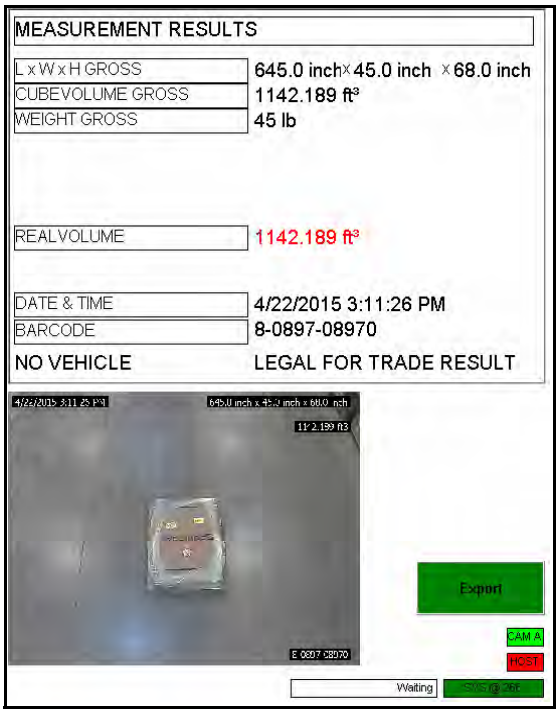


Figure 19
Oversized Measurement Results

The image window will display a picture of whatever is in the measurement area at the time.

If you specified that the CubiScan 1200-AKL should not capture an image, the following screen is displayed.

Figure 20
Oversized Measurement Results, No Image

Chapter 4
Configuration

This chapter provides instructions for using the CubiScan 1200-AKL touchscreen to set up preferences and operate special features that the CubiScan 1200-AKL offers.

System Configuration

The following options are settings that you can select to configure the CubiScan 1200-AKL to your specifications.

Pallet Inclusion

If you would like to include a pallet in your measurement, complete the following steps.

1. Enter a barcode using your preferred method.
2. Select **Pallet Inclusion** by tapping on the **Cube Volume** button twice.
3. Select the pallet that you would like to include by tapping **Mask Out Pallet**. Use the arrows to scroll through the pallet options as needed.
4. Tap **Activate Volume Scanning**.

5. Tap the graphic outlined in red to start the measurement process (shown below).

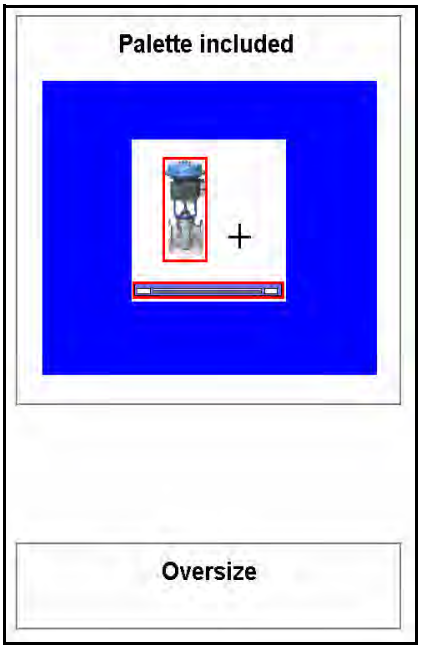


Figure 21
Palette Included

The measurement results window will display the net and gross results.

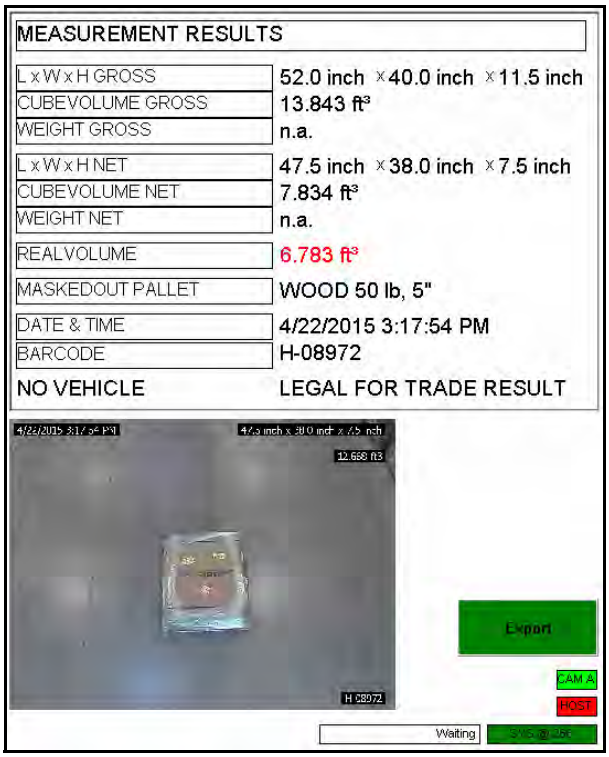


Figure 22
Pallet Included Measurement Results

The pallet that was selected for inclusion will appear in the **MASKEDOUT PALLET** field. This field merely displays the pallet that was selected, not necessarily that a pallet was masked out.

If you select this option and the CubiScan 1200-AKL cannot locate a pallet in the measuring field (or no pallet was selected in the Mask Out Pallet window), the following message will appear.

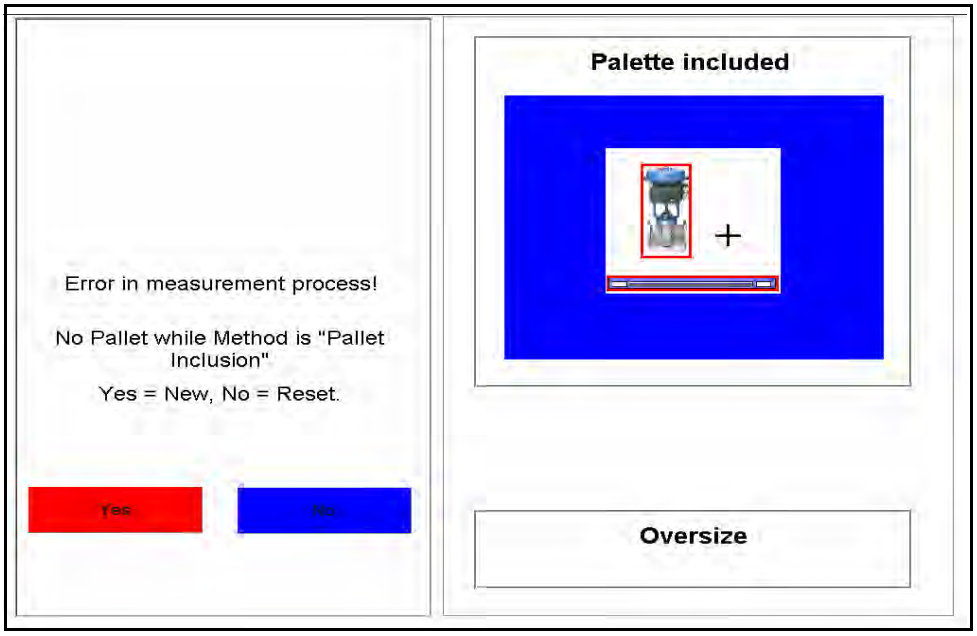


Figure 23
Pallet Inclusion Error

Select **Yes** if you would like to begin a new measurement.

Select **No** if you would like to try measuring again using the same barcode.

Mask Out Pallet

If you would like to mask out (or hide) the pallet, complete the following steps.

1. Enter a barcode using your preferred method.
2. Tap **Mask Out Pallet**.
3. Select the pallet that you would like to mask out. You can use the arrows to scroll through the options.
4. Tap **Activate Volume Scanning**.
5. Tap the graphic outlined in red to start the measurement process.

The measurement results window will display the net and gross results as well as the pallet that was masked out.

Figure 24
Mask Out Pallet Measurement Results

Special Features

The following options are special features that the CubiScan 1200-AKL offers.

Floor Scale

The CubiScan 1200-AKL can be integrated with a floor scale. When a scale is set up with the CubiScan 1200-AKL, the weight is displayed in the measurement results window. If you would like to configure your CubiScan 1200-AKL with a floor scale, contact your system integrator.

Mask Out Forklift

The CubiScan 1200-AKL has the ability to mask out forklifts. When this feature is enabled, the vehicle information is displayed above the image. It will report the type of vehicle that was masked instead of showing “No

Vehicle." If you would like to enable this feature, contact your system integrator.

Number of Pieces

This special feature allows you to duplicate measurements. If you have multiples of the same type of freight, you can instruct the CubiScan 1200-AKL to report however many duplicates is needed. These duplicates will be included when the measurement information is exported. If you would like to enable this feature, contact your system integrator.

Chapter 5
Maintenance

This chapter provides information on the care and maintenance of the CubiScan 1200-AKL. Routine maintenance and careful handling will help keep the CubiScan 1200-AKL in good operating condition and prevent service call or repairs.

Touchscreen Care

To clean the touchscreen, moisten a soft cloth with water, then gently wipe the screen clean with the cloth, do not spray liquid directly on the touchscreen.

Do not let the touchscreen come into contact with any sharp objects.

Cleaning the CubiScan 1200-AKL Lasers

The laser heads should be kept clean. While some dust normally won't interfere with sensor operation, they should be cleaned routinely to prevent the possibility of interference. The frequency with which the laser heads should be cleaned depends on the CubiScan 1200-AKL's operating environment.

To clean the laser heads, you will need the following.

- Ladder (or another means of reaching the CubiScan 1200-AKL laser heads)
- Clean, dry microfiber cloth

Once the laser heads are within reach, gently wipe the laser head surfaces with a dry microfiber cloth.

When you clean the laser heads be sure that you are following all required safety regulations.

Change the Control Box Filters

This chapter provides information on how to change the control box filters. These filters should be changed as needed, depending on the 1200-AKL's operating conditions.

To change the filters, complete the following steps:

1. Locate the two filters located on the front and side of the control box (shown below).

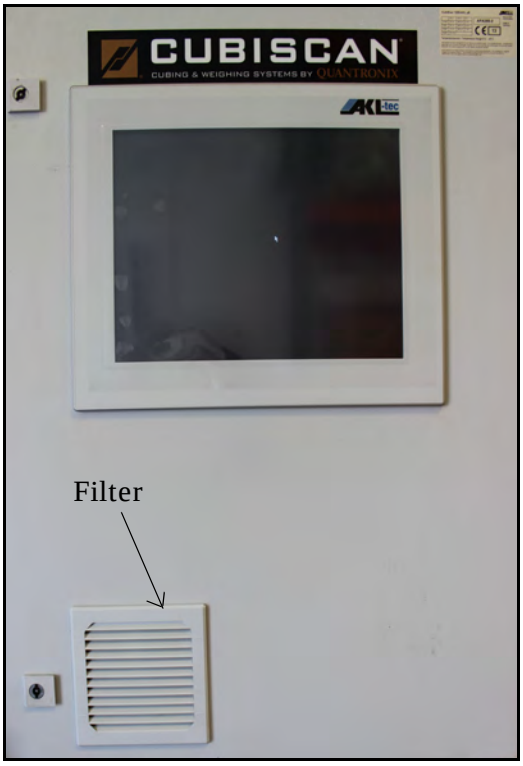


Figure 25
Control Box Front Filter

Figure 26
Control Box Side Filter

2. Gently wiggle the filter guards free. They should simply pop out.

3. Clean the filters or replace them with new ones.

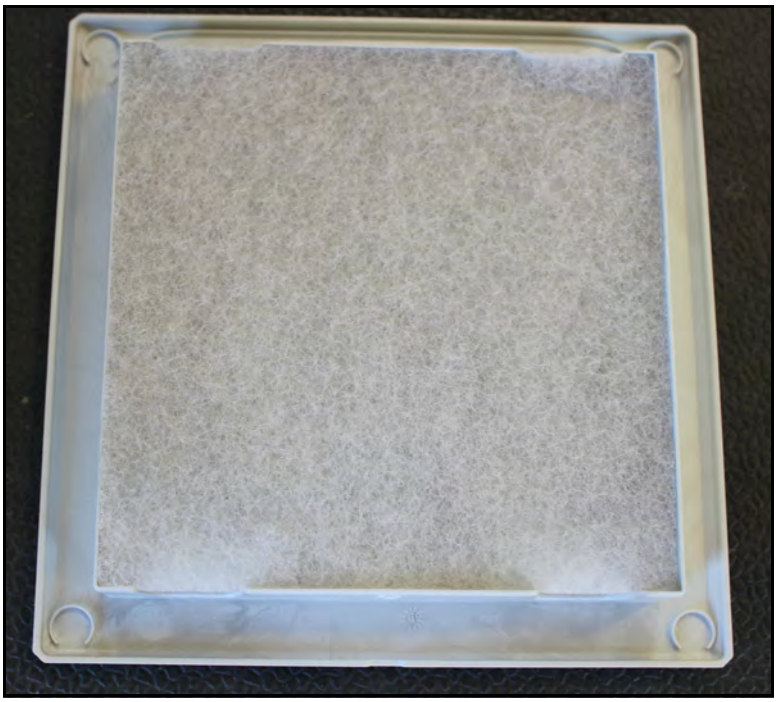


Figure 27
Control Box Filter

4. Snap the filter guards back into place.

Chapter 6
Troubleshooting

This chapter provides assistance in identifying and solving common problems with the CubiScan 1200-AKL. If you encounter problems not covered in this chapter, or if a defect is suspected, contact your system integrator or call Quantronix Technical Assistance at (801) 451-7000 for assistance.

General Information

Keep debris out of the measurement area.

If you have a scale and scale guard, ensure that the scale guard is not touching the sides of the scale.

Error Messages

This sections covers the most common error messages that the CubiScan 1200-AKL generates.

No Pallet while Method is “Pallet Inclusion”

This error message occurs if you have selected the pallet inclusion feature but not a pallet from the mask out pallet options window. The error message is shown below.

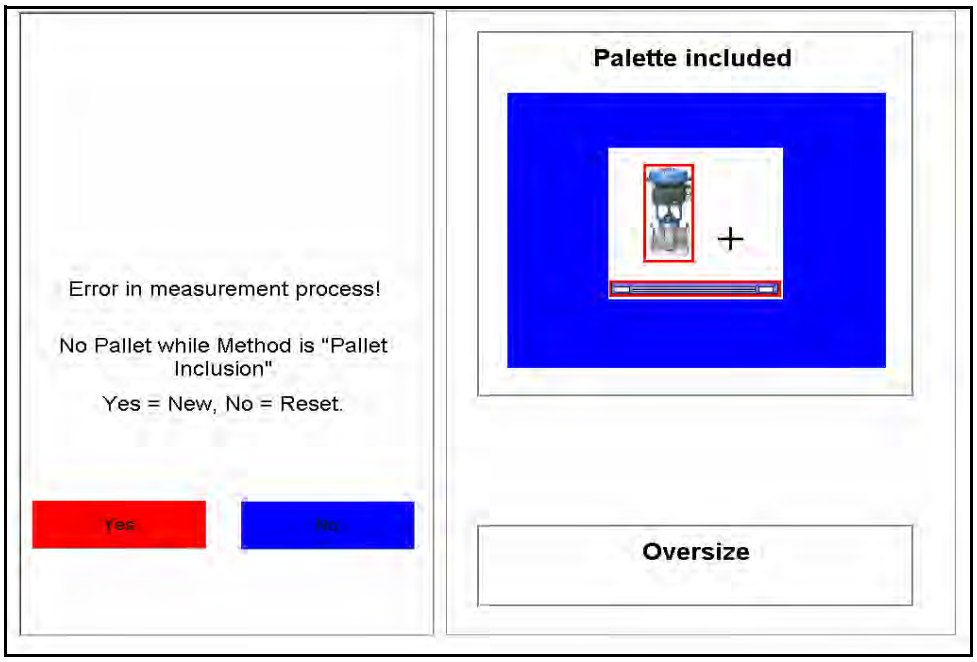


Figure 28
No Pallet while Method is “Pallet Inclusion”

Tap Yes if you’d like to start a new measurement.

Tap No if you’d like to try measuring again using the same barcode.

Object Exceeds Border

This error message occurs when there is an object in the measurement field that exceeds the measurement area’s borders. Typically the error message also includes the side that is causing the error message to occur. In the example shown below, it reads **(LEFT/XMIN)**, meaning that the left side of the measurement area was exceeded.

Make sure that there is no debris in the measurement area.

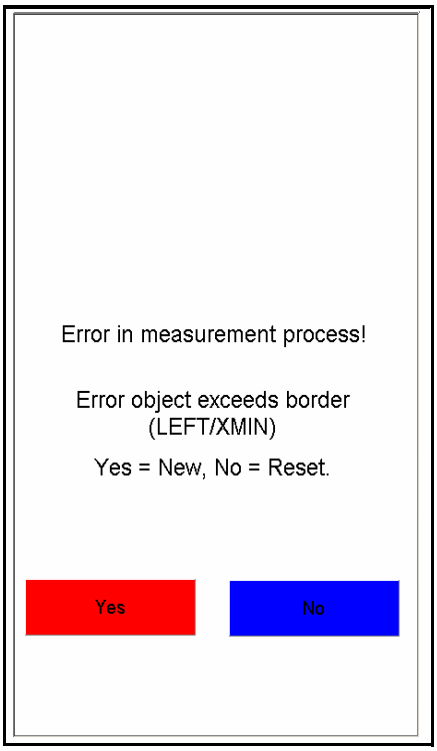


Figure 29
Object Exceeds Border

Tap Yes if you'd like to start a new measurement.

Tap No if you'd like to try measuring again using the same barcode.

Contamination on Lasers

This error message occurs when there is contamination on the lasers. This error message may come in a variety of forms but will typically include **DUST** as part of the error message. This means that the lasers are blocked, either by dust or another object. See "Cleaning the CubiScan 1200-AKL Lasers" on page 29 for more information.

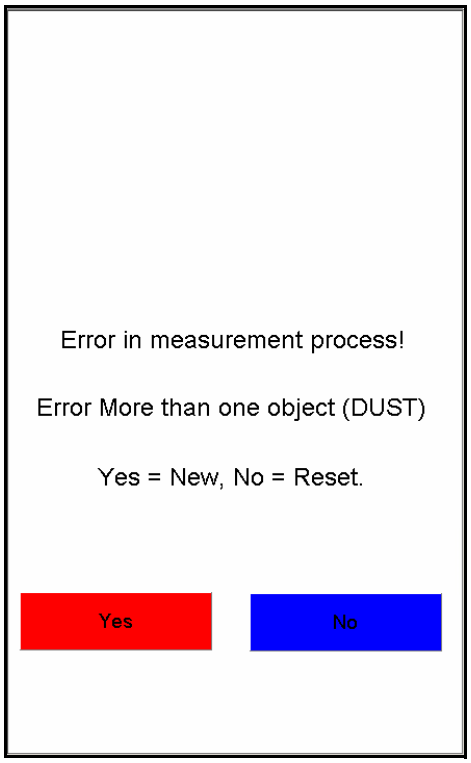


Figure 30
Contamination on Lasers

CubiScan 1200-AKL Is Not Responding

If the CubiScan 1200-AKL is not responding, try powering it off. For information on how to do this, see “Powering the CubiScan 1200-AKL On/Off” on page 6. Make sure that the power switch is turned off for **20 seconds or more** to ensure that all power has been drained from the system.

If powering the CubiScan 1200-AKL off does not work, contact Quantronix Service and Support at (801) 451-7000 for assistance.

Appendix A
Parts List

Following is a list of parts that can be purchased for the CubiScan 1200-AKL as spare parts or if replacement is necessary.

Part No.	Description	Quantity/Unit
13635	Sick LMS500 Laser Scanning Head	2
13814	Embedded PC, Intel Core2Duo (1.5 GHz), includes all expansion PCB's as configured	1
13822	Variable Speed Frequency Drive, 0.4KW/1 phase	1
13821	Touch Panel Display, 15" x GA TFT LCD Display	1
13824	Sick Incremental Encoder, 24VDC	1
13825	Inductive Proximity Sensor	3
13917	Drive Motor with Gear Box	1