

Cubiscan 75 Pro



Operations and technical manual

Version [1.1]

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Cubing and weighing systems

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CUBISCAN®

Cubiscan 75 Pro operations and technical manual

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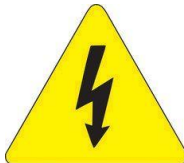
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CAUTION

The Cubiscan 75 Pro should only be serviced by qualified personnel.

Observe precautions for handling electrostatic sensitive devices when setting up or operating the Cubiscan 75 Pro.



WARNING

Disconnect all power to the Cubiscan 75 Pro before servicing or making any connections.



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CHAPTER 1

PRODUCT DESCRIPTION

The Cubiscan 75 Pro is a static, overhead cubing system that uses innovative 3D camera technology to dimension objects. The simple overhead design grants access from almost any direction. There are no moving parts—allowing for effortless setup and use.

Any scale with a TCP/IP or serial output can be used with the Cubiscan 75 Pro, creating a complete cubing and weighing system. Measurements are quickly taken by placing an object on the platform or scale (if a scale is being used), scanning a barcode, or tapping the Measure button—resulting in fast, easy, and accurate data gathering.

The Cubiscan 75 Pro can be used for storage space planning, creating shipment manifests, and obtaining detailed dimensioning data. It has an integrated touchscreen that shows a color-depth map of the measured object or a live view of the measurement area, as well as the measurement results. The 3D camera measures to a precise increment of 0.2 inches.

Each unit has an Ethernet and a serial port, enabling the Cubiscan 75 Pro to communicate with a computer. Proprietary Qbit software is used to interface with the Cubiscan 75 Pro, allowing for menu-driven operator control, data storage and transfer, as well as diagnostics. Alternatively, documented communications Protocol can be used to create custom software.

The Cubiscan 75 Pro uses powerful camera technologies to create a flexible and economical solution for today's most demanding cubing applications.



Figure 1
Cubiscan 75 Pro

Specifications



Power requirements

100-240 VAC, 50-60 Hz

Environmental

Operating temperature: 32° to 104° F (0° to 40° C)

Humidity: 5 to 95% non-condensing

Dimensioning sensor

3D camera

Dimensioning capacities

The Cubiscan 75 Pro has a pyramid-shaped measurement area—a long, short box is more likely to fit in the measurement area than a compact, tall box. The figure below indicates the measurement area. See the tables below for specific maximums and minimums.



Figure 2
Measurement area

Dimensional ranges for Non-LFT

Minimum length, width, height: 2.0 x 2.0 x 2.0 in (5.0 x 5.0 x 5.0 cm)

Minimum length, width, height, flats mode: 2.0 x 2.0 x 0.0 in (5.0 x 5.0 x 0.0 cm)

Height	Max length	Max width
2.0 in (5.0 cm)	55.0 in (140.0 cm)	31.0 in (80.0 cm)
12.0 in (30.0 cm)	43.0 in (110.0 cm)	27.0 in (70.0 cm)
18.0 in (45.0 cm)	37.0 in (94.0 cm)	25.0 in (63.0 cm)
24.0 in (60.0 cm)	30.0 in (75.0 cm)	22.0 in (55.0 cm)
36.0 in (90.0 cm)	18.0 in (45.0 cm)	13.0 in (33.0 cm)

Measurement increment cuboidal: 0.2 in (0.5 cm)

Measurement increment non-cuboidal: 0.5 in (1.0 cm)

Note: Small features of non-cuboidal objects may be omitted from the measured dimensions.

Note: Minimum display height for objects in flats mode is 0.5 in (1.0 cm). Measurements under the display height will show as 0.

Other

Measurement time

Platform or scale trigger: approximately 2 seconds

Manual or barcode trigger: < 1 second

Object colors: Opaque

Physical

Length: 25.1 in (63.8 cm)

Width: 16 in (41.6 cm)

Height: 60.5 in (153.7 cm)

Weight: 35 lb (16 kg)

User Interface

Minimum PC specifications:

Windows 10/8.1/8/7/XP/95/98/NT/2000, Pentium II Processor, 20 megabytes of disk space, screen resolution setting of 800 X 600

Cubiscan's QBIT™ software can be used to interface with the Cubiscan 75 Pro.

Display:

Integrated touchscreen displays L, W, H, Dim Wgt, unit of measure, color-depth image, and status.

Outputs:

Ethernet (1), Serial (2)

Safety Precautions

Definitions

Safety definitions are designed in adherence to American National Standards Institute (ANSI) safety sign standards in order to ensure that the Cubiscan is operated and maintained correctly and safely.



DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. Includes hazards that are exposed when guards are removed.

WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death. Includes hazards that are exposed when guards are removed.

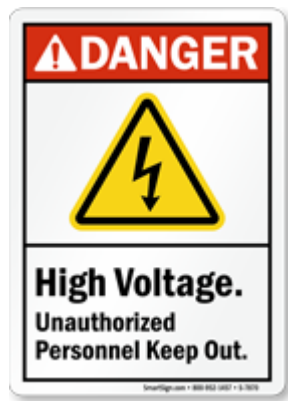
CAUTION: Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.

IMPORTANT: Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.

Labels

Labels are provided with the Cubiscan to alert operators of potential hazards. Ensure that the labels are properly displayed on the unit and in its vicinity. Do not remove or alter labels for any reason without first consulting a Cubiscan representative.

Danger High Voltage



Electric Shock



Caution



Warning



Do not use Cubiscan near electronic devices that handle high-precision control or weak signals as it may affect electronic devices leading to malfunction.

Do not allow foreign matter or liquids to get inside the Machine. Doing so may cause short circuit or smoke, resulting in fire, electric shock, or malfunction. If foreign matter or liquid gets inside the Cubiscan, immediately turn off the machine and unplug it from the outlet.

If the Cubiscan is dropped or suffers a strong impact, immediately turn it off and unplug it from the outlet. Continued use may cause fire, electric shock, injury, or malfunction.

Do not operate the touch panel with sharp objects. Pressing the touch panel strongly with a sharp object may cause damage, leading to malfunction.

Do not climb onto or lean on the Cubiscan. Doing so may cause injury.

Regular cleaning and calibration tests are required to maintain accurate measurements. Run calibration tests after any maintenance work.

Turn off power to the Cubiscan and unplug it immediately if the machine gives off an odd smell, makes unusual sounds, emits smoke, or overheats. Call **Cubiscan Technical Assistance** at **801.451.7000** for assistance. Failure to do so could result in fire, accidental electrocution, and possible machine damage.

Electrical Hazards

Avoid handling electric cables, plugs, and other electrical components when connected to a live power source. Follow these safety standards when working with electrical components of the Cubiscan:

- Turn off the power to the machine before unplugging.
- Be sure to hold the plug, NOT the power cable, when unplugging.
- Whenever handling electrical cables or components, do so with care.
- Never place cables and other electrical components near a heat source.
- Ensure that grounding wires are in place and secure before operating the Cubiscan.
- Avoid stepping on or placing heavy objects on cables.
- Do not modify, bend, or otherwise tamper with cables and other electrical components.

If damage is observed from a cable, plug, or other electrical component, turn off the machine immediately and unplug it from the power source. Consult a Cubiscan trained technician for replacement.

If you do not use the unit for a long time, disconnect the power plug from the outlet to ensure safety. Allowing it to remain plugged in over a long period of time without use may cause fire or electric shock.

Failure to observe safe electrical standards may result in accidental electrocution, damage to the machine, fire, and possible injury or death.

Heat Warning

Motors and other electrical components, especially batteries, heat up during use. If the unit is used extensively, these parts may become overheated causing a potential hazard to the machine and the operator.

To avoid injury, when working around motors and other electrical components, avoid contact with these parts during operation and shortly after. Even with the power off heat may be retained in the part for several minutes after operation.

If you find certain parts are heating well beyond the temperature threshold, shut down the unit to prevent injury. Ensure that the problem is not a result of the surrounding environment. If it is, move the unit to a more suitable environment. If the problem persists, consult a Cubiscan technician.

Environment

The Cubiscan should not be installed in any environment where excessive heat, humidity, or dust is present. Variations in temperature or direct exposure to sunlight may cause inaccuracies in measurements and could damage sensors. Do not install near fans where temperatures may fluctuate, causing variations in measurements.

Do not install the Cubiscan in a location that is inclined as this will affect the precision of its measurement and may contribute to instability resulting injury if the unit tips over. Install the unit on a flat surface and stable location, where it can easily be leveled.

Some setups will require multiple cables running to the Cubiscan. This may cause a potential tripping hazard that can damage the unit and cause injury. Install the unit in a low traffic area, where wires may be tucked against a wall or some other inconspicuous place. If wire must be run in a traffic area, take precautions to prevent tripping such as taping down the cables or providing a cable ramp or other protective cover.

Accessories

Certain accessories used with the Cubiscan may pose risk outside the scope of the standalone unit. These may include but are not limited to: scales, portable batteries, camera units, shrink wrappers, etc. Please consult additional documentation for the individual units. A collection of this documentation for each accessory sold with the unit may be found on the Cubiscan website: <https://cubiscan.com/guides-accessories/>

Cubiscan is not responsible for third party accessories used with the unit. Before using third party accessories, consult a Cubiscan sales representative or technician to ensure that the implementation of the accessory will not pose a safety risk, harm the Cubiscan, or potentially void the warranty.

Laser Eye Safety Classification



"Complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dates May 8, 2019."

Class 1

This Cubiscan is a Class 1 lasers product under IEC 60825-1. According to IEC guidelines, a Class 1 laser is considered safe in all applications. The levels of optical radiation emitted from a Class 1 laser are above the exposure limits for the eye under any exposure condition.

CAUTION

“Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure”

Note: there is no exception for this statement based on Class of radiation or the applicability of actual controls on the product.

For safety reasons, the laser within the Cubiscan is not serviceable. Do not attempt to repair the laser yourself, remove it from its casing, or tamper with it in any way. Doing so may expose you to harmful radiation and will potentially damage the laser.

If the laser is suspected to be damaged, call **Cubiscan Technical Assistance** at **801.451.7000** for assistance. A Cubiscan certified technician will assist you.

Whenever performing maintenance on the Cubiscan, power it down and unplug it. This will ensure the user is not exposed to harmful radiation during maintenance. For more information on precautions to take during maintenance, see “Precautions” on page 43

CHAPTER 2

SETUP

This chapter Provides instructions for assembling and setting up the Cubiscan 75 Pro. Perform the steps to set up the Cubiscan 75 Pro in the following order.

- Unpack the Cubiscan 75 Pro (page 11)
- Place the Cubiscan 75 Pro where you will be using it (page 12)
- Assemble the Cubiscan 75 Pro (page 12)
- Remove the shipping material (page 7)
- Connect power to the Cubiscan 75 Pro (page 15)
- Turn the Cubiscan 75 Pro on (page 16)
- Connect the Cubiscan 75 Pro to a computer (page 17)
- Install the Qbit software (page 18)
- Complete the camera calibration (page 18)
- Set the scale (optional) (page 20)
- Determine measurement trigger (page 21)

Unpacking



1. Carefully remove the Cubiscan 75 Pro from the crate, and place the Cubiscan 75 Pro on a solid, stable surface for assembly. See “Placement” on page 12.
2. Remove the cables and accessories.

Examine the container and the Cubiscan 75 Pro carefully for any damage. If, after unpacking, you discover any damage to the Cubiscan 75 Pro, contact the carrier immediately.

If any of the components or accessories are missing or defective, contact Cubiscan or your system integrator.

Placement



The Cubiscan 75 Pro is designed to be operated in a warehouse environment. However, for Proper operation the following conditions should be met if possible.

- Do not subject the Cubiscan 75 Pro to extremes in temperature or humidity. Locate the Cubiscan 75 Pro away from open freight doors.
- Protect the Cubiscan 75 Pro from static electricity, especially the display.
- The Cubiscan 75 Pro is typically set on a table or similar working surface so that objects are easier to place in the measurement area. You must bolt the Cubiscan down, bolts are Provided.
- Place the Cubiscan 75 Pro on a flat, sturdy surface as free from vibration as possible. You must bolt the Cubiscan 75 Pro platform in place using the bolts Provided in the shipping container. Bolting the Cubiscan 75 Pro in place will prevent it from falling or being knocked over and damaged.
- Place the computer as close to the Cubiscan 75 Pro as possible. The operator may need to use the keyboard and mouse while dimensioning objects.
- Orient the Cubiscan 75 Pro so that the display faces the operator.
- Place the Cubiscan 75 Pro away from direct sunlight or bright lights, such as halogen spotlights.

Assembling the Cubiscan 75 Pro



The Cubiscan 75 Pro is almost completely assembled when shipped. You only need to remove the shipping materials, attach the post to the base platform, and bolt the platform down.

Attaching the post to the platform

1. Attach the lower post to the platform using the four large screws.

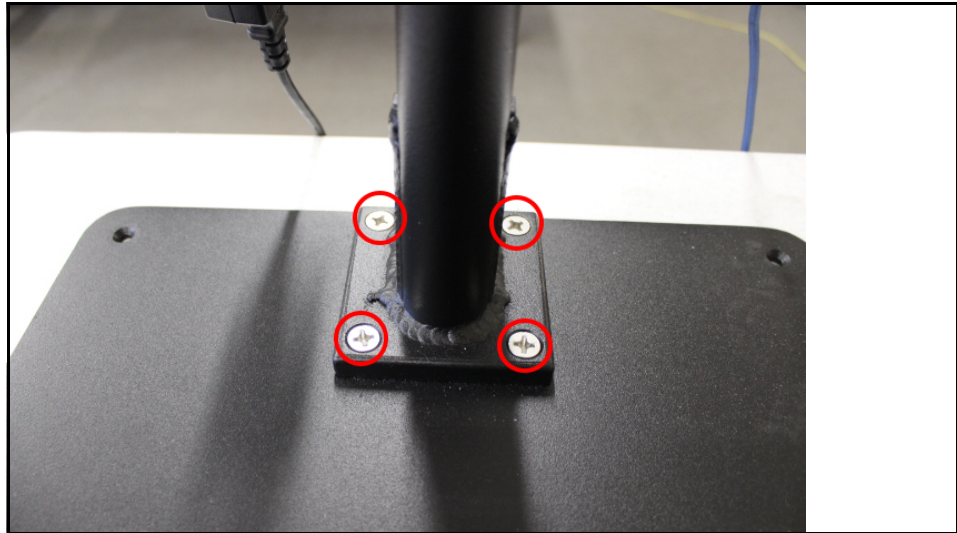


Figure 3
Attaching the base

NOTE >

The stand must be attached to the platform for the height calibration to work properly. The Cubiscan 75 Pro will not work if it is mounted any other way.

2. Slide the top post into the lower post. Ensure the screw is loose enough to slide into the channel.

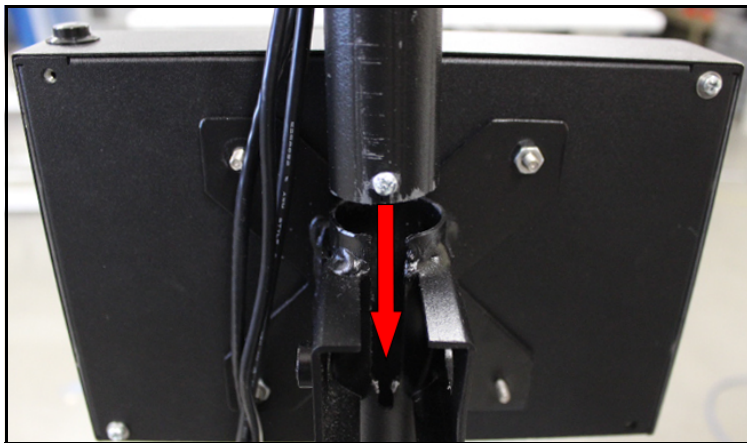


Figure 4
Top post

3. Tighten the top post screw using a phillips screwdriver.

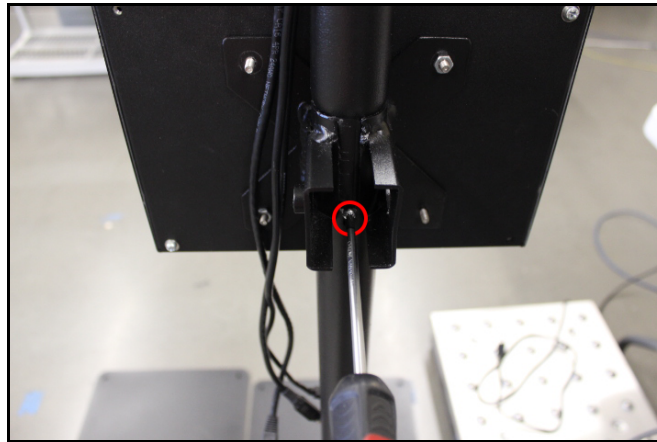


Figure 5
Attaching top post

4. Slide the large-grip plastic-head thumb screw through the holes on the brace and twist clockwise to tighten. Continue to turn until hand tight.

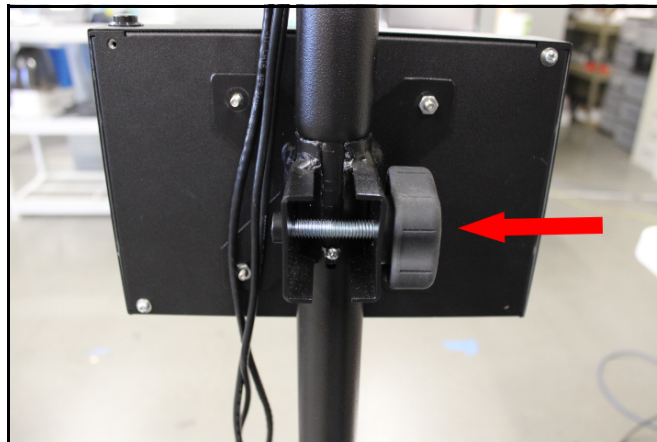


Figure 6
Securing the top post

Bolting the platform in place

Bolting the platform in place is required to prevent the Cubiscan 75 Pro from falling or being knocked over.

1. Place the Cubiscan 75 Pro where you will be using it. Typically, the Cubiscan 75 Pro is placed on a table or similar surface.

2. Mark where you will be drilling the six holes. The image below shows where the six holes in the Cubiscan 75 Pro platform are located.

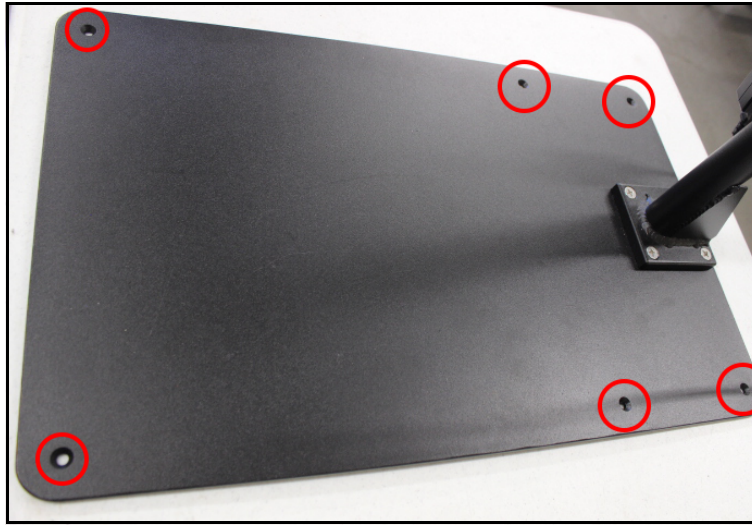


Figure 7
Cubiscan 75 Pro platform

3. Move the Cubiscan 75 Pro to the side and drill the holes.
4. Move the Cubiscan 75 Pro back into place and secure it using the hardware Provided. The washer will go flush against the underside of the table (or the surface to which you are bolting the Cubiscan 75 Pro), followed by the lock washer and nut.

Connecting cables



Take the following steps to connect cables to the Cubiscan 75 Pro.

1. Locate the camera cables (camera power, USB input, network input). Attach the cables in their appropriate ports on the bottom of the touchscreen as shown in the image.



Figure 8
Touchscreen ports

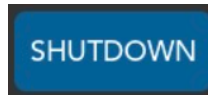
2. Connect the touchscreen power cable to the far left port.
3. Connect the other end of the power cable to a standard power outlet.
4. Use the power button located on the top right corner of the touchscreen to turn the Cubiscan 75 Pro on. Allow the Cubiscan a few minutes to power up the first time you turn it on.
5. If connecting to the Ethernet, connect the Ethernet cable in the far right port. This port is for other connection such as the network or computer.

Turning off the Cubiscan 75 Pro



To turn the Cubiscan off, perform the following steps:

1. Tap the menu icon in the upper left corner of the home screen.
2. From the menu side panel, select **VERSION**.
3. Scroll down to **Power** section. There are options for **REBOOT**, **RESTART**, or **SHUTDOWN**.



4. Tap **[Shutdown]**, to shutdown the device.

Connecting to a computer



To connect the Cubiscan 75 Pro to a computer, you can use an Ethernet cable or a serial cable. Both methods are described below. For more information on connecting the Cubiscan to a network or computer, see "Connection" on page 37.

Communicating via Ethernet

Complete the following steps to communicate with the Cubiscan using Ethernet.

If you have an available Ethernet port on your computer, you can use the Ethernet cable without using the USB to Ethernet adapter if you prefer. See "Connecting cables" on page 15.

Installing and configuring the Ethernet driver

1. Plug the white TRENDnet USB to Ethernet adapter into the computer. The driver should be automatically installed. If the driver is not installed successfully, refer to TRENDnet support.
2. Plug the Ethernet cable into the Ethernet port located on the underside of the Cubiscan 75 Pro touchscreen.
3. Route the Ethernet cable down the back of the Cubiscan post, using the zip ties Provided to secure the cable against the post. Make sure

that the cable is not in the measurement area. The measurement area includes the Cubiscan platform and extends 18 inches in each direction around the platform.

4. Plug the other end of the cable into the TRENDnet adapter.

Communicating via serial

1. Plug the serial cable into the serial port located on the underside of the Cubiscan 75 Pro touchscreen.
2. Route the serial cable down the back of the Cubiscan post, using the zip ties Provided to secure the cable against the post. Make sure that the cable is not in the measurement area. The measurement area includes the Cubiscan platform and extends 18 inches in each direction around the platform.
3. Connect the serial cable to a free port on your computer. Use an adapter if necessary.
4. Tighten both screws at each end of the cable. It is important that the cable be secure.

Installing Qbit



A flash drive is available containing the Qbit software application, which can be used to operate the Cubiscan 75 Pro.

The *Qbit User Guide*, located on the flash drive, Provides instructions for installing and using Qbit. You can also download the user guide from the Cubiscan website at www.cubiscan.com.

Camera Calibration



You must complete the Cubiscan 75 Pro height calibration Procedure before dimensioning. Complete the following steps to calibrate the camera.

1. Tap the menu icon in the upper left corner of the home screen.

2. From the menu side panel, select **CAMERAS**. This will take you to the **Calibration** screen.
3. Ensure the measurement area is clear of objects.
4. Tap the **[START CALIBRATION]** button.

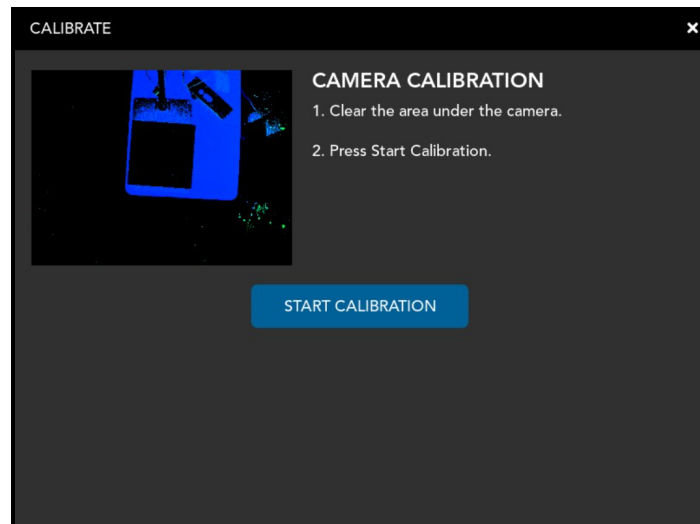


Figure 9
Camera calibration

5. Place the scale if you are using one on the plate. Then place the flats background on top of the scale. If you are not using a scale place the flats background directly on the plate.
6. Tap **[Continue]**.

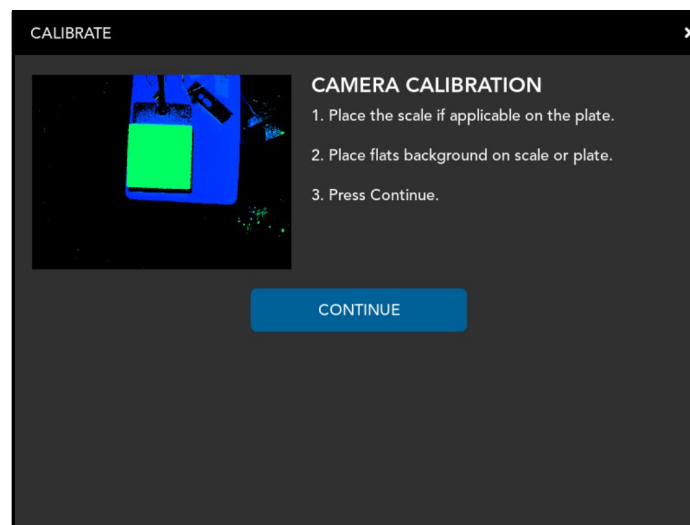


Figure 10
Calibration screen

7. Place the 12" calibration cube Provided on the flats background plate. The measurement area should be clear of all other objects.
8. Tap **[CONTINUE]**. The calibration Process will begin.
9. If the calibration is successful, the original calibration screen will appear with the message **Calibration Complete**. If an error occurs the calibration Process will abort and an error message will appear on the screen.

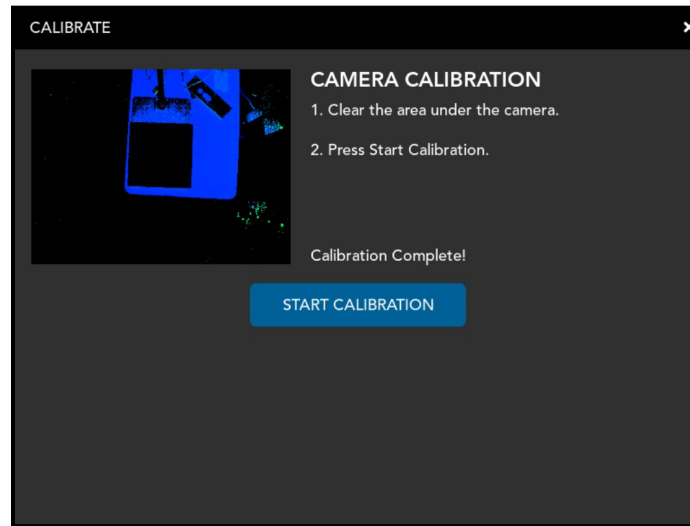


Figure 11
Calibration complete

10. Once the calibration is complete, return to the Homescreen and run a measurement to ensure that it is working Properly.

If you notice that your measurements are outside tolerance (+/- 0.2 inches), go through the calibration Procedure again, especially if your Cubiscan has experienced temperature change, movement, or stress.

If you ever begin using a scale with the Cubiscan, repeat the calibration Procedure.

Setting up the scale



The Cubiscan 75 Pro can be used with any third-party scale. The scale may need some configuration in order to connect with the Cubiscan, see "Scale Setting" on page 40.

1. Place the scale in the center of the Cubiscan platform. Make sure the scale platform is cleared of any items.
2. Plug the scale USB cable into a USB port on the Cubiscan 75 Pro display screen. The scale display will cycle through a start-up routine, then display a zero weight. If the display does not display a zero weight, press the **Zero** button on the scale.

Measurement trigger

The Cubiscan 75 Pro has three types of measurement triggers: **object detection**, **barcodes filled**, and **manual only**. The default is manual only.

To select the desired measurement trigger setting, complete the following steps:

1. Tap the menu icon in the upper left corner of the home screen.
2. Select **Measurement Settings** from the menu.

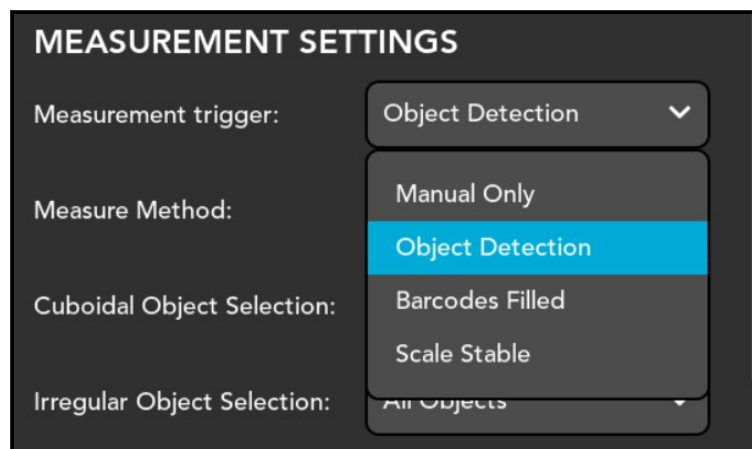


Figure 12
Measurement trigger

3. Choose from the following measurement trigger options:
 - **Manual Only**
The manual only option Prompts a measurement only when the **[MEASURE]** button is tapped from the home screen.
 - **Object Detection**
The object detection trigger automatically Prompts a measurement when a stable object is detected on the Cubiscan 75 Pro platform.

– **Barcodes Filled**

The barcodes filled trigger when a barcode is scanned when set to one in barcode settings. If set to two measurement triggers after second barcode is scanned.

– **Scale Stable**

With scale stable selected, the Cubiscan Pro will measure an object placed on the scale after the scale has come to stable state. This option is only available when a scale is connected to the Cubiscan.

Measurements may be manually triggered at any time while the *object detection*, *barcodes filled*, and *scale stable* measurement triggers are selected.

Setup checklist



Before using the Cubiscan 75 Pro for the first time, verify the following:

1. Is the Cubiscan 75 Pro and the computer placed in the Proper operating environment? (page 12)
2. Is the Cubiscan 75 Pro fully assembled? (page 12)
3. Is the Cubiscan platform bolted in place? (page 14)
4. Have all shipping materials been removed? (page 7)
5. Is the AC power cable connected correctly? (page 15)
6. Is the Cubiscan 75 Pro connected to the computer? (page 17)
7. Has the Qbit software been installed on your computer? (Refer to the *Qbit User Guide* for information.)
8. Have you completed the camera calibration Procedure? (page 18)
9. Is the scale connected to the Cubiscan 75 Pro? (page 20)
10. Have you selected your preferred measurement trigger? (page 21)

CHAPTER 3

OPERATION

This chapter Provides instructions for operating the Cubiscan 75 Pro. Before operating the Cubiscan, be sure that it is bolted down and that the camera is properly calibrated.

Cubiscan 75 Pro display



The Cubiscan 75 Pro home screen displays measurement results and dim weight results. When enabled the screen may display a color-depth image that uses a color scale to indicate the height of the object being measured. The other display window option is a live view mode of the measurement area.

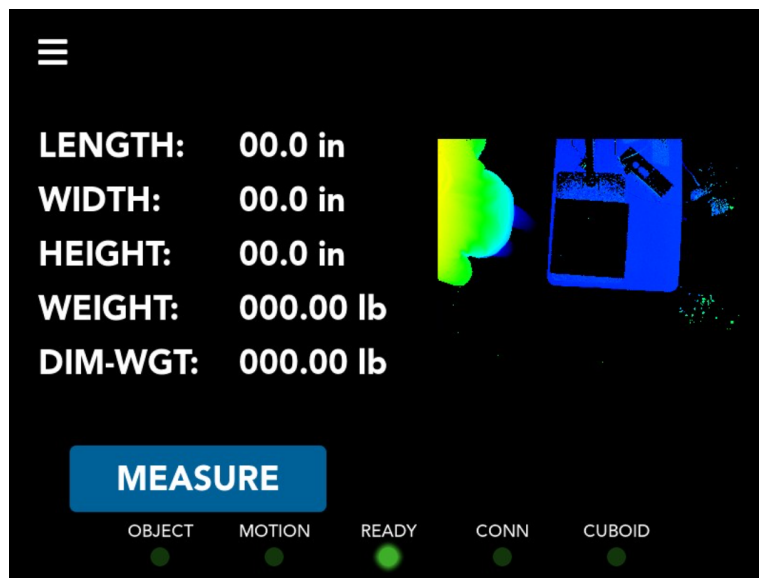


Figure 13
Home screen

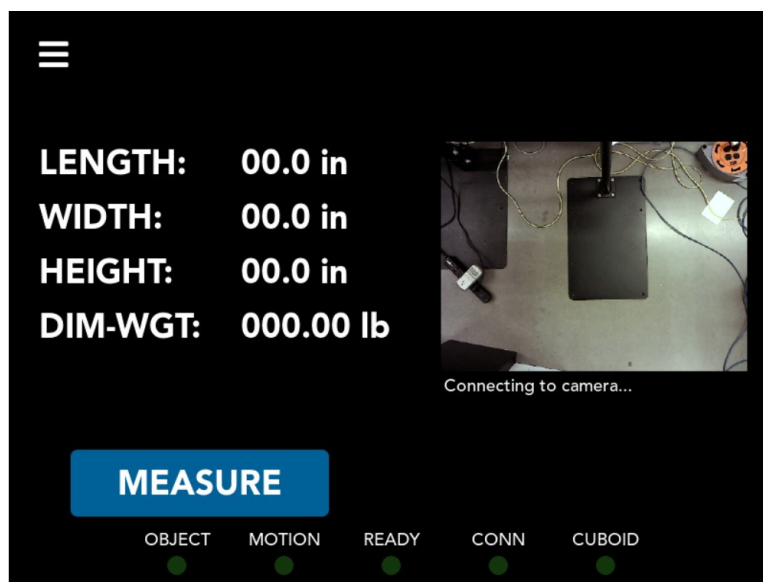


Figure 14
Home screen (live view mode)

To configure the Cubiscan 75 Pro display, see “From the menu side panel, select **CAMERAS**.” on page 46.

Length: This field displays the length of the measurement in inches (in) or centimeters (cm) as selected.

Width: This field displays the width of the measurement in inches (in) or centimeters (cm) as selected.

Height: This field displays the height of the measurement in inches (in) or centimeters (cm) as selected.

Dwgt: This field displays the dim weight result of the measurement in pounds (lb) or kilograms (kg) as selected. The dim weight depends on your selected dim weight factor.

To configure the units, see “Units” on page 37.

MEASURE

Tap the measure button to initiate a measurement. After you tap this button, make sure you remove your hand from the measurement area quickly.

Connection and Device status	This field displays the current connection and status of the Cubiscan 75 Pro. Lights indicate whether the following are valid: • an object is present in the camera field. • motion is detected in the camera field. • the device is ready to measure. • the device has a viable connection for data collection. • measurement taken was cuboid (only in auto mode).
Display window	Displays the view of the camera field. The display window can be set to different views depending on preferences, see "Camera Setting" on page 45.

Dimensioning options



The Cubiscan 75 Pro can be used to measure opaque objects as small as 2.0 x 2.0 x 2.0 in (5.0 x 5.0 x 5.0 cm) (refer to "Specifications" on page 3 for specifications and size limitations). Below is an explanation of the shapes the Cubiscan 75 Pro can measure.

Cuboidal

Cuboidal objects are any shape that closely resembles a cube. The most commonly measured cuboidal objects are boxes. It is much easier for the Cubiscan Pro to measure objects that more closely resemble a geometric shape. This setting is specifically for objects that resemble a box.

Irregular

The Cubiscan 75 Pro can identify and measure a wide variety of irregular shapes. However, the Cubiscan may more easily measure packages that closely resemble known geometric shapes such as triangles, rectangles, and spheres. For example, packages, tubes, and, boxes are much easier for the Cubiscan 75 Pro to measure.

Flats mode

The innovative camera system of the Cubiscan 75 Pro allows it to measure and dimension flats. These are thinner packages in large envelopes. When in flats mode, the Cubiscan 75 Pro can measure flats as small as 2.0 x 2.0 x 0.0 in (5.0 x 5.0 x 0.0 cm) (refer to "Specifications" on page 3 for specifications and size limitations).

Measurement Trigger

You can select from multiple options to trigger a measurement. The options available are:

- Motion Trigger
- Scale Trigger
- Barcode Trigger
- Manual only

For more information on selecting your measuring trigger, see “Measurement trigger” on page 21.

Using Qbit software



Refer to the *Qbit User Guide* for instructions on measuring and other functions in Qbit. The *Qbit User Guide* is Provided on a flash drive or you can download it from the Cubiscan website at www.cubiscan.com.

Using Web Services



The Cubiscan 75 Pro can take the role of a web server, allowing a computer or device to communicate with the Cubiscan 75 Pro via Web Services. The following instructions will get you started. For more information refer to *Web Services Instructions* and *API Documentation Guide*.

Send an HTTP GET request to the csMeasureData. The URL will be the IP address of the Cubiscan 75 Pro plus 'csMeasureData'. Example:
`http://10.1.100.100/csMeasureData`

The response will match the XML or JSON format.

The call to /csMeasureData will have the Cubiscan 75 Pro perform a measurement of the current object on the machine. This call will return the data containing the measurement data.

Dimensioning objects



The Cubiscan 75 Pro is designed to work with third-party scales to Provide weight and dim-weight measurements along with the dimensions of an object. To setup a scale with the Cubiscan see “Setting up the scale” on page 20.

WARNING

This is a class 1 laser product under IEC 60825-1. Only operate the Cubiscan in the prescribed manner as outlined in this manual. Radiation from laser may damage eyes. Do not attempt any maintenance on the sensors without first turning off the power and unplugging the Cubiscan.

To dimension objects using the Cubiscan 75 Pro, complete the following steps:

1. Turn the Cubiscan 75 Pro on. The power button is located on the top right edge of the touchscreen. If this is the first time you are turning the system on, allow it a few minutes to boot up.
2. Make sure the measurement area is free of all objects. When the Cubiscan is ready for measurement, the green light will appear under **READY**.
3. Place the object you are measuring in the measurement area. The green light will appear under **OBJECT**.
4. Depending on the measurement trigger you selected, the Cubiscan 75 Pro will measure the object (you may need to Prompt a measure event

using your selected measurement trigger). The measurement results will be displayed on the screen.



Figure 15
Measurement results

CHAPTER 4

CONFIGURATION

This chapter Provides instructions for configuring the Cubiscan 75 Pro. This chapter also Provides instructions for configuring the units, dimensional weight factor, and other settings.

If you are using Qbit software, see the *Qbit User Guide* located on your flash drive. The Qbit User Guide can also be downloaded from the Cubiscan website at www.cubiscan.com.

Settings



General settings

The Cubiscan 75 Pro may be customized to suit your specific dimensioning needs. To access the general settings, complete the following steps:

1. Tap the menu icon in the upper left corner of the home screen.
2. From the menu side panel, select **SETTINGS**.

GENERAL SETTINGS	
Theme:	Dark
Language:	English
Regulator:	NONE
Barcode:	None
Machine ID:	000000
Site ID:	000000
Password:	

Figure 16
General settings

Theme	Aside from light and dark themes, a custom theme may be created, see “Create Theme” on page 30.
Language	Select your desired language from the following options: English, French, Spanish, Japanese, and Chinese.
Regulator	Choose the regulator standard from the drop-down menu. Options include: none, Australian, European/Middle Eastern, and United States/Canada. The default is <i>none</i> .
Barcode	Select from the drop-down menu to enable up to two barcode scanners. The default is <i>none</i> .
Machine ID	Optional Machine ID may be set for the Cubiscan. This may be useful in a facility where data is tracked from more than one Cubiscan.
Site ID	Optional Site ID may be set for the Cubiscan. This is helpful to distinguish tracking data received from multiple Cubiscans from different sites.
Password	Optional password Protection for the touchscreen is available. Enter desired password into the text field and reenter it in the field next to Confirm Password. This password will also block the web interface administration page. When the password is set you will also be prompted to enter the <i>password</i> and <i>username</i> to access the web interface administration page. The <i>username</i> will be cubiscan and the <i>password</i> will be whatever is entered in the settings.

Create Theme

The interface for the Cubiscan 75 Pro may be customized to suit your preferences and needs. You may select from the preset light or dark themes or create a new custom theme. Complete the following steps to create your own custom theme:

1. Tap the menu icon in the upper left corner of the home screen.
2. From the menu side panel, select **SETTINGS**.
3. Select *Custom* from the drop-down menu next to **Theme** in the General Settings. A button will appear reading, **Create Theme**.

4. Tap **[Create Theme]**.

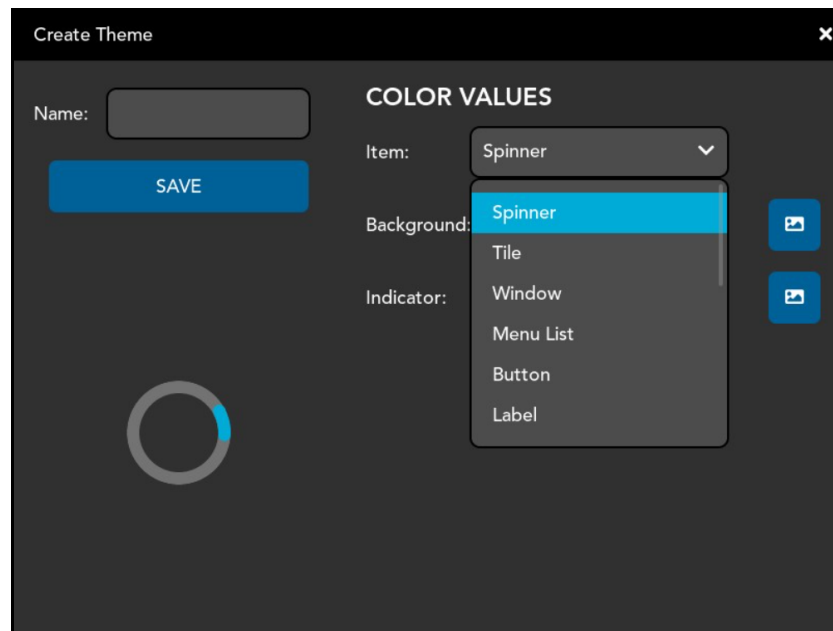


Figure 17
Custom theme

5. Enter a name for the customized theme in the text box next to **Name**.
6. Select an item to customize from the drop-down menu next to **Item**. Options include: spinner, tile, window, menu list, button, and label.
7. With the item selected you may make changes to appearance and color. When complete select the next item to customize.
8. Before leaving the customization screen, tap **[Save]** to keep changes.
9. You may now select the custom theme from the **Theme** drop-down on the General Settings screen.

Date and Time

To set the date and time complete the following steps:

1. Tap the menu icon in the upper left corner of the home screen.
2. From the menu side panel, select **SETTINGS**.

3. Scroll down to the **Date and Time Settings**.

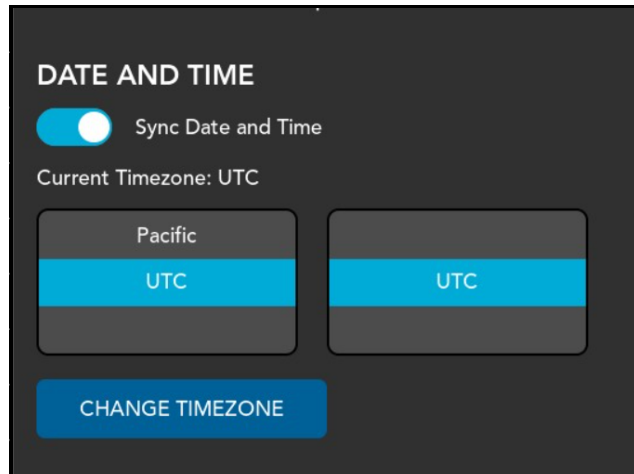


Figure 18
Theme

The following settings are available:

Sync Date & Time	The option is available to set the Cubiscan to sync date and time. In order for the Cubiscan to sync a connection must be set up.
Current Timezone	Set the timezone for the Cubiscan. Be sure to tap [Change Timezone] after making any changing the timezone settings.

Date Settings Set the date for the Cubiscan using the calendar input. Tap **[Change Date]** after making changes to the date to ensure changes are saved.

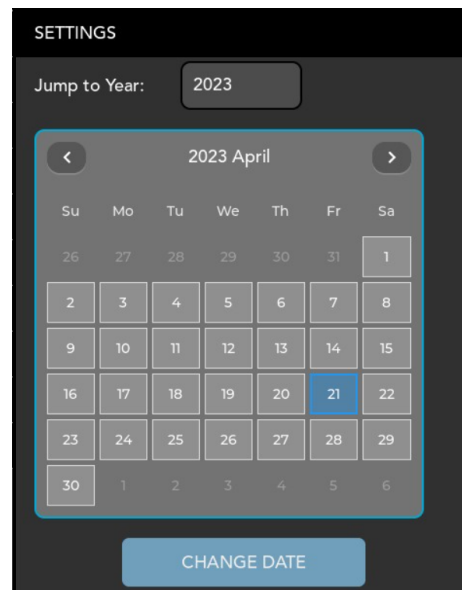


Figure 19
Date settings

Time Settings Set the time by entering values into the text fields next to **Hour**, **Minute**, and **Second**.

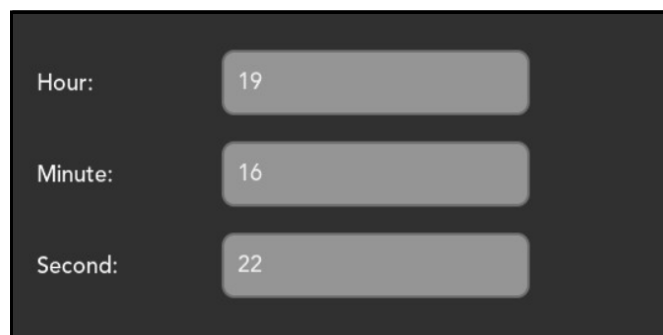


Figure 20
Time settings

System Reset

In the event that settings need to be reset back to factory defaults, the Cubiscan 75 Pro has a system reset. By initiating system reset, all settings including custom settings will be reset back to their initial presets. Resetting

the system back to defaults will result in loss of all custom settings and should be avoided unless absolutely necessary.

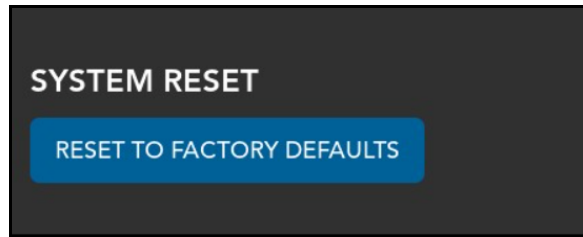


Figure 21
System reset

To initiate a system reset complete the following steps:

1. Tap the menu icon in the upper left corner of the home screen.
2. From the menu side panel, select **SETTINGS**.
3. Scroll down to **System Reset**.
4. Tap **[RESET TO FACTORY DEFAULTS]**.

Measure Settings



The following options can be used to configure your Cubiscan 75 Pro. Settings exist for configuring measurements and the interface, allowing you to setup a measurement system that meets your needs and preferences.

To access the measure settings, perform the following steps:

1. Tap the menu icon in the upper left corner of the home screen.
2. From the menu side panel, select **MEASURE SETTINGS**.

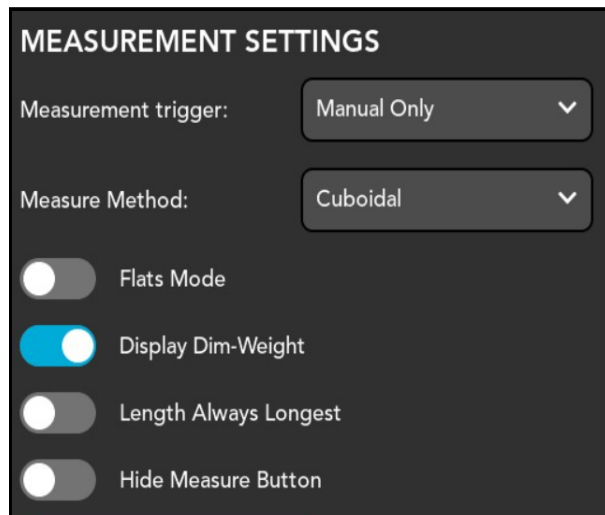


Figure 22
Measure settings

Measurement Trigger	The Cubiscan 75 Pro has four options for triggering a measurement: manual only, object detection, barcodes filled, and scale stable.
Measurement Method	Select from the drop-down the method of measurement from three options: – Cuboidal With cuboidal selected, the Cubiscan 75 Pro will detect and measure those objects that are cuboidal in nature. See “Dimensioning options” on page 25. – Irregular If objects are not cuboidal, it is still possible for the Cubiscan 75 Pro to measure them. Irregulars represent those objects that are not cuboidal, but can be a geometric shape or some other non-congruous shape. – Auto-Detect The 3D camera technology of the Cubiscan 75 Pro allows it to detect whether an object is Cuboidal or irregular. Choose this option if you have Product of both types and do not want to toggle the setting between the two.
Cuboidal and Irregular Object Selection	The Cuboidal and Irregular object selections allow you to determine which objects the Cubiscan 75 Pro should focus on. This will allow the Cubiscan to Provide more accurate results by excluding unwanted objects in the measurement area.

- **Highest**
The object closest to the camera will be dimensioned with all other objects excluded. This is best for taller object.
 - **Most pixels**
The object that has the greatest number of pixels in the measurement area will be dimensioned with all other objects excluded. This is best for larger objects.
 - **Closest to center**
The object that resides closest to the center of the measurement area will be dimensioned with all other objects excluded. This is best if objects measured tend to vary.
 - **Error if Multiple**
Rather than determining which object to measure, the Cubiscan will display an error message if multiple objects are detected in the measurement area.
 - **All Objects**
This option allows the Cubiscan to determine which objects are measured without exclusion.
-
- | | |
|------------------------------|--|
| Flats Mode | When this option is enabled the Cubiscan 75 Pro will measure objects in large envelopes that are typically too small for conventional dimensioners. |
| Display Dim Weight | Toggle this switch to display the dim weight and factor on the home screen. |
| Length Always Longest | When enabled, this option ensures that no matter how an object is oriented, the greatest dimension measurement will be assigned to length. |
| Hide Measure Button | Toggle this switch, to remove the [Measure] button from the home screen. This may be helpful if the Cubiscan is configured for measurement triggers such as <i>scale stable</i> or <i>barcodes filled</i> . |

Units

The Units section, Provides configuration of measuring units. These units will be displayed on the measurement screen and will be posted to data acquired during measurements.



Figure 23
Units

Dim units In this field you can select **inches**, **centimeters**, or **millimeters** for your dimensional unit.

Weight units In this field you can select **pounds** or **kilograms** for your weight unit.

Dim-factor In this field you can select a **domestic** or **international** dim-factor.

Connection



The Connection section Provides information and options for the setup of an Ethernet or other connection, allowing for the transfer of data from the CS 75 Pro.

To access the connection settings, perform the following steps:

1. Tap the menu icon in the upper left corner of the home screen.
2. From the menu side panel, select **CONNECTIONS**.

Ethernet Settings

The Ethernet Settings field allows you to select the Ethernet settings for the Cubiscan. The following information is displayed to help you connect with the CS 75 Pro: **MAC Address**, **IP Address**, **Subnet**, and **Gateway**.

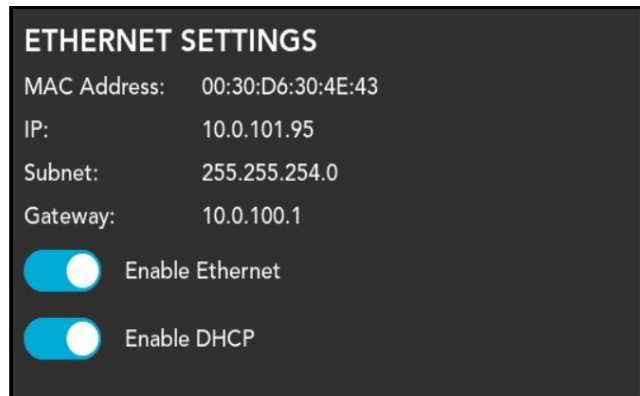


Figure 24
Connection

Enable Ethernet Toggling this option enables or disables the Cubiscan 75 Pro's ability to communicate via Ethernet.

Enable DHCP Toggling this option enables or disables a Dynamic Host Configuration Protocol (DHCP) connection.

USB Settings

The USB Setting allows the user to set up the device USB type. Select whether to enable the **Virtual Serial** by selecting the option from the drop down menu next to Device USB Type.

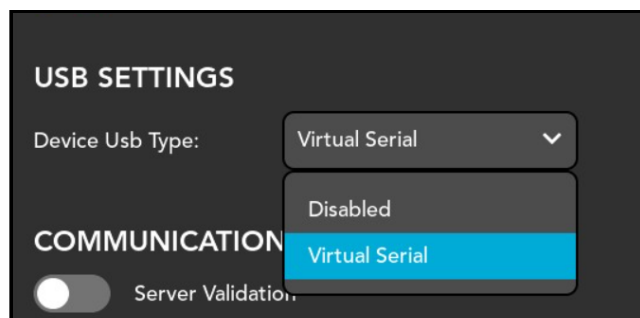


Figure 25
USB setting

Communication Settings

The Communication Settings Provides a toggle for server validation. Toggle the **Server Validation** to enable or disable server-side validation.

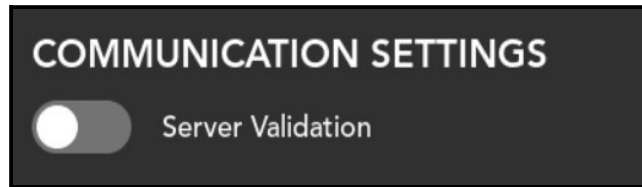


Figure 26
Communication settings

Web-server

The Web-server settings Provides options to set Protocol and certificate server request (CSR).

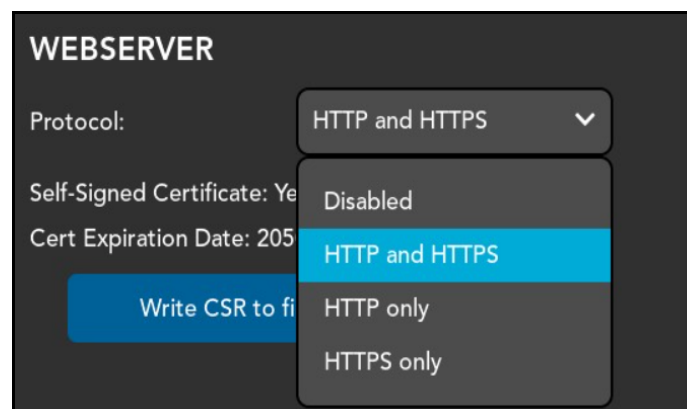


Figure 27
Connection - Protocol

Protocol Enable or disable Protocol and set desired Protocol. Options include: **HTTP AND HTTPS**, **HTTP** only, and **HTTPS** only.

Write CSR to file Tap **[Write CSR to file]** to copy the certificate signing request to file. If you would like to a different certificate for https than the self-signed, you may download the CSR file to create your own. After creating the CSR, upload it with the name "cert.pem".

Post

The Post section provides a toggle to enable or disable the posting of data.

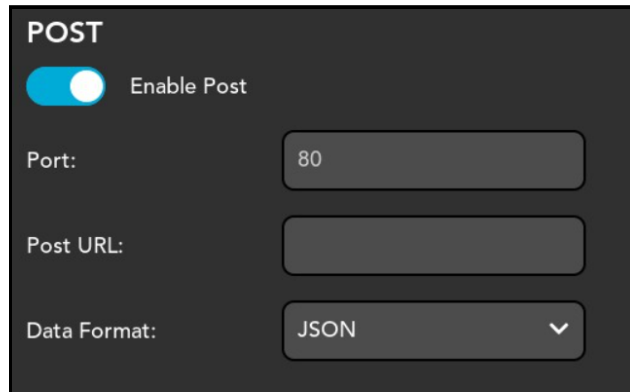


Figure 28
Connection - post

With post enabled, the following information will be needed for the Cubiscan to post data:

- | | |
|-------------|---|
| Port | Enter the network port used to transfer data. |
| Post URL | Enter the address of the computer or network to which the data will be transmitted. |
| Data Format | Select the format of the data to be transmitted. Options include JSON and XML. |

Scale Setting



The Cubiscan 75 Pro can be configured to function with various third-party scales. To configure the scale, complete the following steps:

1. Tap the menu icon in the upper left corner of the home screen.
2. From the menu side panel, select **SCALE**.

3. Under the drop-down menu next to **Scale**, select the option for your scale.

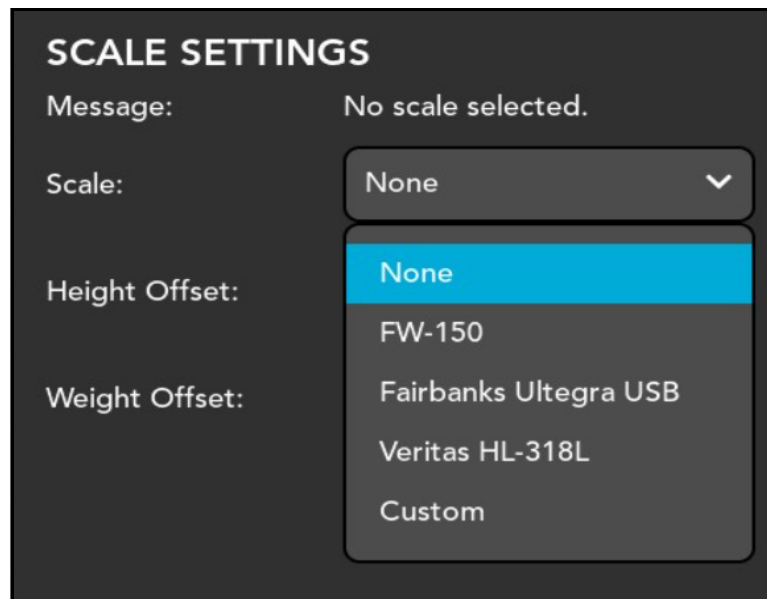


Figure 29
Scale status drop-down selection

Custom scale settings

If your scale does not show up in the list, you may choose custom scale settings by entering the scales settings on the parse setting and connection setting screens. Be sure to tap **[SAVE SCALE CONFIG]** to save configuration.

Parse Settings

1. Select **Custom** from the drop down menu. *Custom Scale Settings* will appear.

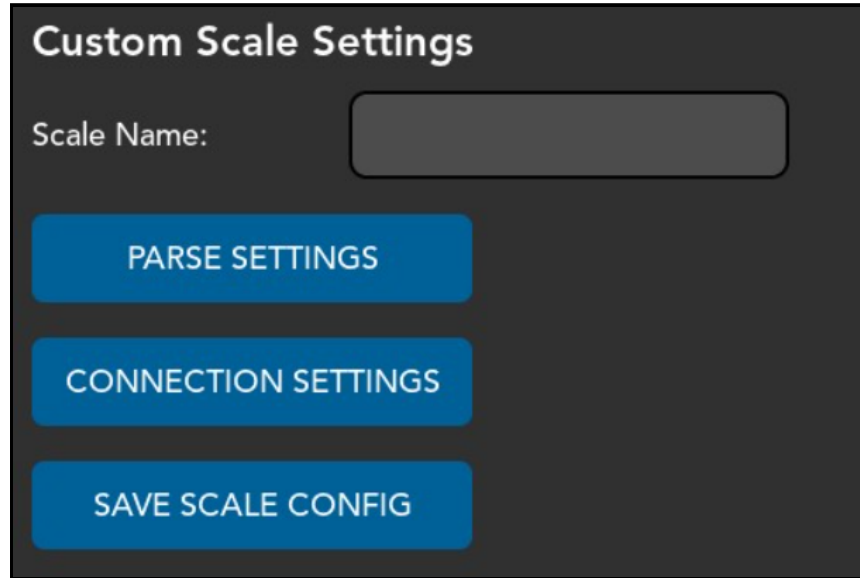
The image shows a mobile application screen titled "Custom Scale Settings". At the top, the title is in white text on a dark background. Below the title, there is a label "Scale Name:" followed by a grey rectangular text input field. Underneath the input field, there are three blue rectangular buttons with white text, stacked vertically. The buttons are labeled "PARSE SETTINGS", "CONNECTION SETTINGS", and "SAVE SCALE CONFIG".

Figure 30
Custom scale settings

2. Enter the name of the scale by tapping in the text box.

Parse Settings

To enter the parse settings for the scale, tap **[PARSE SETTINGS]**. This will bring you to the Parse Settings screen. From here you can enter the values manually in the text fields according to the strings in the scale data packet.

You may need to consult the scale manufacturer for setting details. The following information is needed:

Figure 31
Parse settings

- Start String** The start string is the series of characters that mark the beginning of the scale data packet.
- End String** The end string is the series of characters that mark the end of the scale data packet.
- Request String** The request string is the series of characters that are sent to the scale to request measurement. If the scale is continuously sending data, this field will be left blank.

Start strings, end strings, and request strings often have control characters that cannot be entered directly through the keyboard. To allow these characters, a # symbol followed by 2 hex numbers may be used. These will be converted to their ASCII equivalent of the numbers.

Common characters used in strings are STX, ETX, CR, and LF. The following are their hex numeric equivalent:

Character	Hex Number Equivalent
STX	#02
ETX	#03
CR	#0D
LF	#0A

```
Scale request: <STX>s<ETX><CR><LF>
Scale data packet: <STX>sAK0000.000,lb<ETX><CR><LF>

Start String: #02
End String: #03#0D#0A
Request String: #02s#03#0D#0A
Weight start position: 5
Weight data size: 8
Unit start position: 14
Unit data size: 2
```

Figure 32
Sample string

Weight Data Start	The weight data start determines the position of the first character in the scale's weight data.
Weight Data Size	The weight data size determine how long the weight data should be.
Unit Data Start	The unit data start determines the position of the first character in the scale's unit data (typically lb or kg).
Unit Data Size	The unit data size determine how long the unit data should be.

Connection Settings

To configure the connection settings for the scale, tap **[CONNECTION SETTINGS]**. Enter values for the scale connection in the text fields

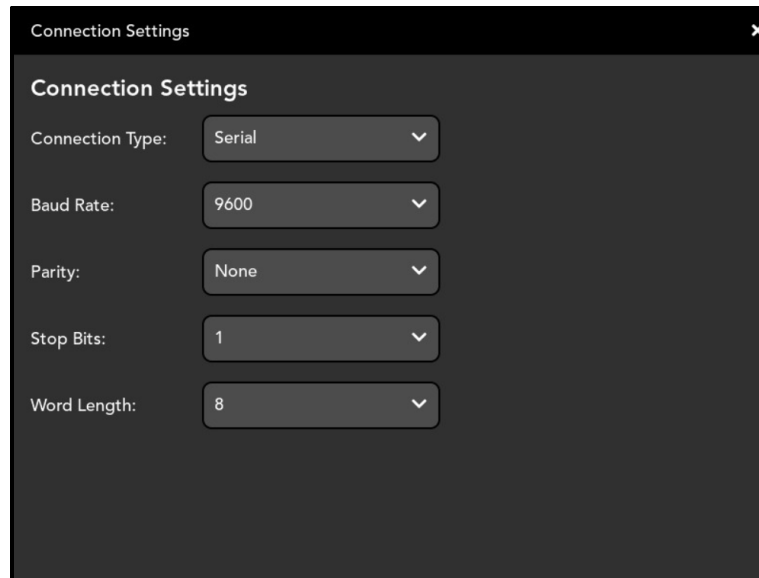


Figure 33
Scale connection settings

Once scale settings are entered, tap **[SAVE SCALE CONFIG]** to keep the new settings.

Camera Setting



The Cameras section Provides options to configure the camera Provided with the Cubiscan 75 Pro. It also allows for the calibration of the camera.

To access the connection settings, perform the following steps:

1. Tap the menu icon in the upper left corner of the home screen.

2. From the menu side panel, select **CAMERAS**.

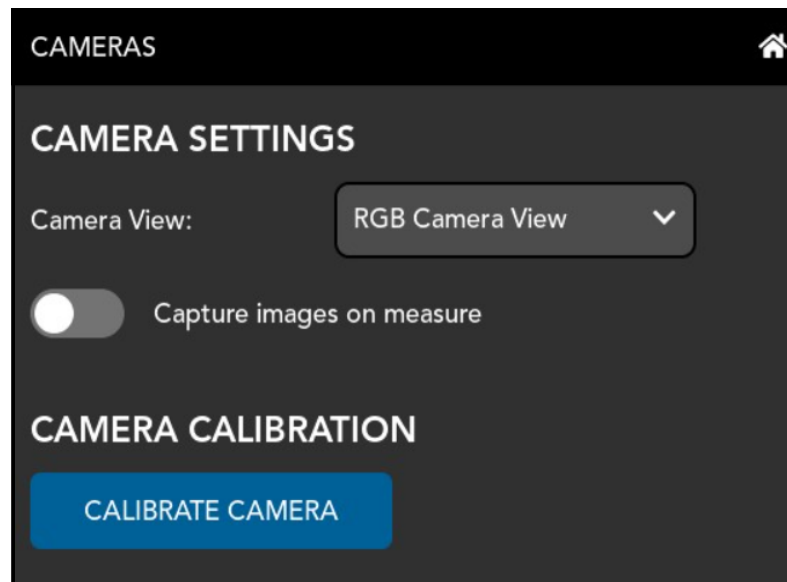


Figure 34
Cameras

Camera View Select the desired camera view for the display window on the home screen:

– **RGB Camera View**

Selecting RGB Camera View will display a live color image of the measurement area.

– **Depth Camera View**

Selecting Depth Camera View will display a color-coded overlay of the live view, where each color represents the distance from the camera. Pixels toward the red spectrum represent distances closer to the camera and pixels toward the blue spectrum represent distances farther from the camera.

– **3D View**

Selecting 3D View will display a 3D rendering of the scanned object.

– **Object View**

Selecting Object View will display a color-coded view similar to the Depth Camera View, but only for the scanned object. This view is mainly for diagnostics for the camera and is not recommended for regular measurements.

Capture images on measure Toggle Capture images on measure to have the Cubiscan save pictures of objects measured. These images are saved to disk. They may be downloaded from the administration screen on the webserver or directly from the URL (`downloads/image.jpg`).

Calibrate Camera

Tap **[Calibrate Camera]** to begin camera calibration. First clear area under the camera of all debris. Then, tap **[Start Calibration]**. For more details on calibrating the camera, see "Camera Calibration" on page 18.

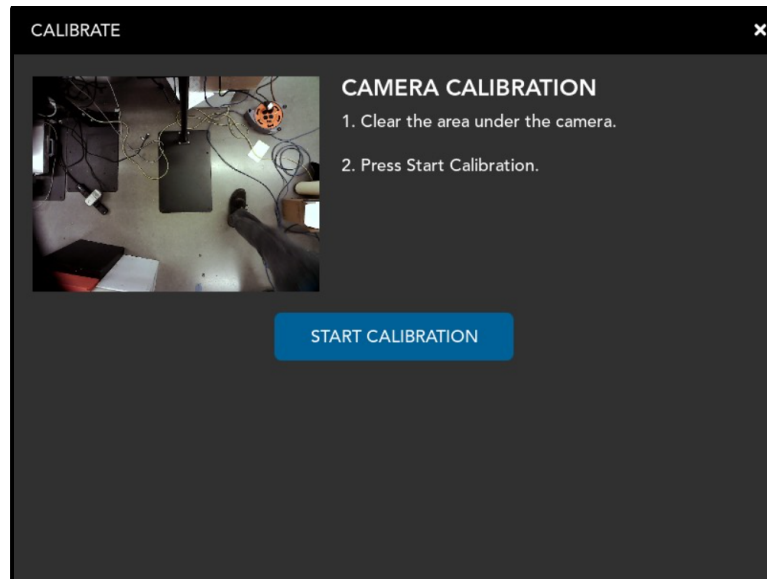


Figure 35
Camera calibration

Touchscreen



The touchscreen for the Cubiscan 75 Pro is calibrated before it is shipped to the customer. However, there may be occasion where a calibration may be needed. To calibrate the touchscreen, complete the following steps:

1. Tap the menu icon in the upper left corner of the home screen.
2. From the menu side panel, select **TOUCHSCREEN**.

3. Tap [Calibrate Touchscreen] to begin the calibration.

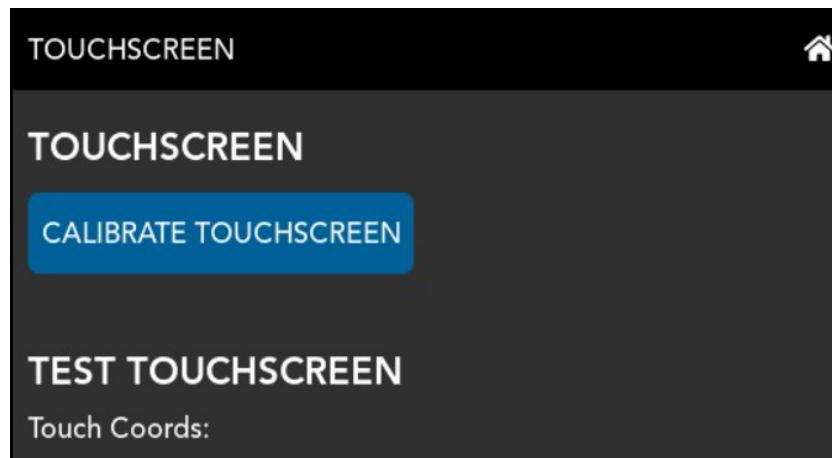


Figure 36
Touchscreen calibration

4. When Prompted, tap the + on the screen
5. Once complete, a green check mark will appear, indicating the calibration is complete.

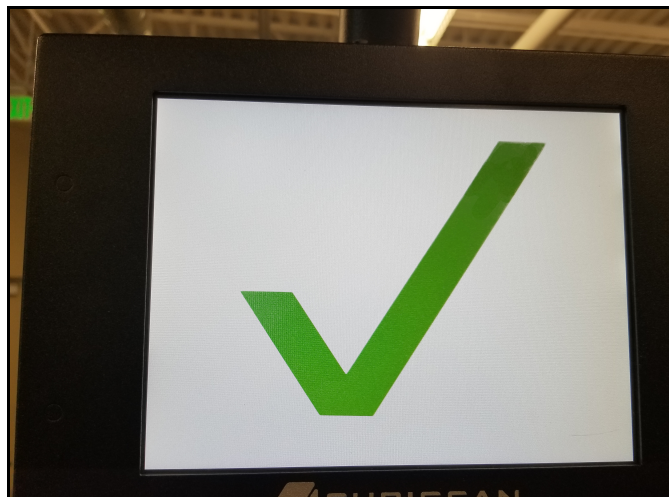


Figure 37
Calibration complete

CHAPTER 5

MAINTENANCE

This chapter Provides information on the care and maintenance of the Cubiscan 75 Pro. Routine maintenance and careful handling will help keep the Cubiscan 75 Pro in good operating condition and prevent service calls or repairs.

Precautions



The Cubiscan 75 Pro should not be subjected to extremes in temperature or humidity, nor should it be subjected to excessive vibration. For environmental recommendations, see “Specifications” on page 3.

The Cubiscan uses a class 1 laser under IEC 60825-1. This class of laser is safe for basic use. However, tampering with the laser may result in excess radiation exposure that could potentially be harmful to the user. For this reason, the sensor is considered serviceable, except by a certified Cubiscan technician.

Before performing any maintenance on the Cubiscan, ensure the power it turned off and the Cubiscan is disconnected from the power outlet. No servicing should be done to electronic components without first contacting Cubiscan Technical Assistance at 801.451.7000 for assistance.

The sensor head and touchscreen contain sensitive and highly charged components that may cause serious injury if tampered with. The components may also compromise the integrity of the components causing malfunction which may void the warranty

Cleaning the camera covers

The RGB camera has a cover that must be maintained, while the depth camera does not have a cover. Still, the lens on the depth camera may need some maintenance.



Figure 38
Camera maintenance

While dust normally won't interfere with operation of the Cubiscan 75 Pro, the cover and lens of the cameras should be cleaned routinely to prevent the possibility of interference.

WARNING

This is a class 1 laser product under IEC 60825-1. Only operate the Cubiscan in the prescribed manner as outlined in this manual. Radiation from laser may damage eyes. Do not attempt any maintenance on the sensors without first turning off the power and unplugging the Cubiscan.

Before cleaning sensor lens, turn off the Cubiscan and unplug it from the outlet. This will ensure that there is no exposure to radiation from the laser while performing maintenance.

To clean the cover and lens, use a clean microfiber cloth and gently wipe the cover and lens located on the underside of the Cubiscan 75 Pro head. Do not get cover or lens wet and do not use solvents or compressed air to clean them as this may damage the camera.

CHAPTER 6

TROUBLESHOOTING

This chapter Provides assistance in identifying and solving common Problems with the Cubiscan 75 Pro. If you encounter Problems not covered in this chapter, or if a defect is suspected, contact your system integrator or call **Cubiscan Technical Assistance** at **801.451.7000** for assistance.

No response when you turn power on



If there is no response when you power on the Cubiscan 75 Pro, do the following:

1. Wait at least 30 seconds after powering on for signs that the system is booting up. The system may take a few minutes to boot, especially if this is the first time that it is being turned on.
2. The power cable consists of two cables that plug into each other, make sure these cables are undamaged and securely plugged into each other.
3. Make sure that both ends of the power cable are securely plugged in and the power cable is connected to an active outlet or alternative power source.
4. Contact **Cubiscan Service and Support** at **801.451.7000** if you require additional help.

Dimension readings are not accurate



If you suspect that the Cubiscan 75 Pro dimension readings are inaccurate (varying by more than $\pm 0.2''$), do the following:

1. Make sure that no other objects are interfering with measurements. An area of at least 18" around the measurement area should be

maintained. This area should be clear of all objects that are not being measured.

2. Sometimes black, shiny surfaces are difficult for the Cubiscan 75 Pro to dimension. Try measuring an object with a different surface to see if the surface is causing a Problem.
3. Check the color-depth image to see what is being measured. Make sure that hands, arms, or other items are not included in measurements.
4. Direct sunlight can interfere with Cubiscan 75 Pro measurements. Move the Cubiscan 75 Pro if direct sunlight is in the measurement area.
5. Cycle the power.
6. Repeat the camera calibration Process, for more information, see ["Camera Calibration"](#) on page 18.
7. Contact Cubiscan at **801.451.7000** if you require additional help.

Measurement error



If the Cubiscan 75 Pro reports a measurement error, complete the following steps.

1. Ensure the measurement area is free from objects not being measured, including hands that may be captured during the measurement. It may be helpful to use a different display mode to identify any unwanted measurements.
2. In some case a recalibration may be needed to ensure the Cubiscan is measuring properly, see ["Camera Calibration"](#) on page 18.
3. If problem persists, cycle the power and remeasure.
4. If you are still receiving a sensor error, contact Cubiscan at **801.451.7000**.

Version



This section describes the Version menu of the Cubiscan 75 Pro. The Version menu contains useful information and records of the Cubiscan 75 Pro.

To access the version information, perform the following steps:

1. Tap the menu icon in the upper left corner of the home screen.
2. From the menu side panel, select **VERSION**.

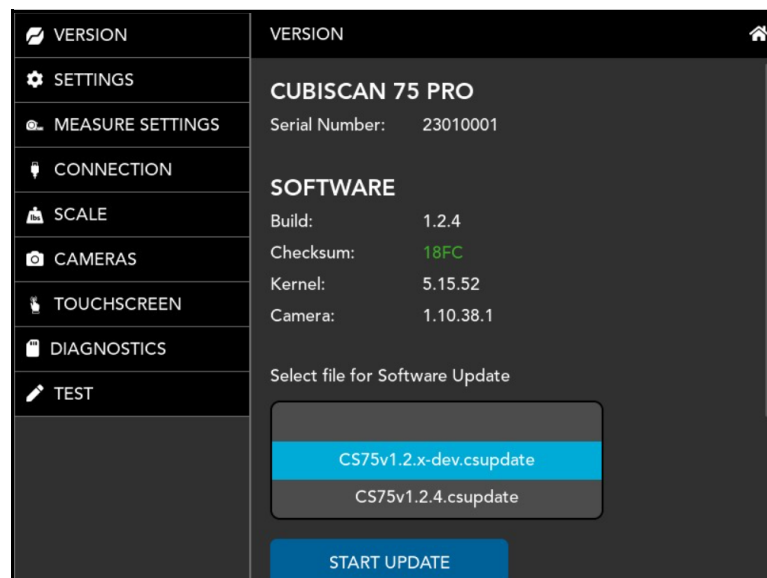


Figure 39
Version

Version The model and firmware version of the Cubiscan is displayed at the top of the Version screen.

Serial Number This field displays the serial number of the Cubiscan.

Software

Build This field displays the version of the software.

Checksum This field displays the checksum for the software.

Kernel This field displays the version of the operating system kernel running on the Cubiscan.

Software Update To update system software, select the update software from menu and tap [Start Update].

Diagnostics

The following options can be used for diagnostic purposes of your Cubiscan 75 Pro. Three types of logs exist with diagnostic information about the system: **the diagnostic log, config-audit log, and calibration audit log**. Use these logs and other information available in the **Diagnostics** menu to troubleshoot possible issues with the CS 75 Pro.

To access the diagnostic information, perform the following steps:

1. Tap the menu icon in the upper left corner of the home screen.
2. From the menu side panel, select **DIAGNOSTICS**.
3. Select the diagnostic information you wish to view.

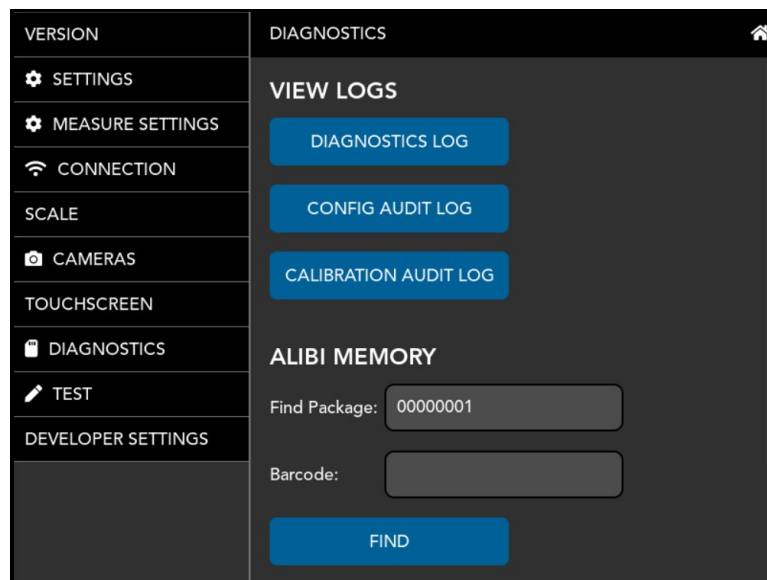


Figure 40
Diagnostics screen

Diagnostics Log

The diagnostics log displays system messages, including error messages. Each entry is stamped with the date and time that it occurred.

To access the diagnostics log, tap **[DIAGNOSTICS LOG]** from the **Diagnostics** menu. The Diagnostics Log will display on the screen.

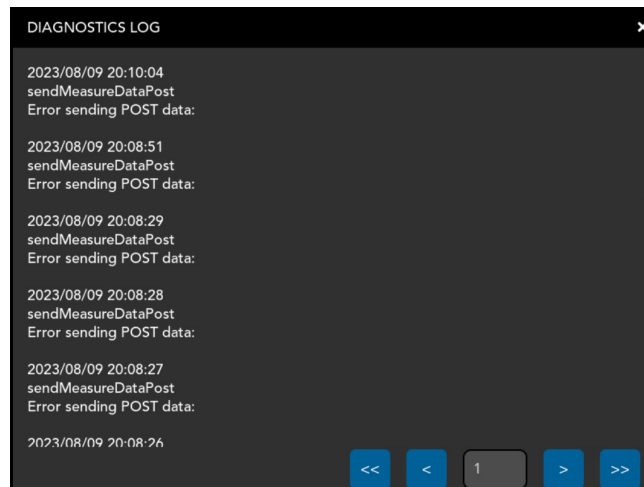


Figure 41
Diagnostics log

Config-Audit

The Config Audit displays the configuration audit trail. When configuration changes are made to the Cubiscan 75 Pro, the changes are recorded here. Changing dimension units, weight units, and dim factors are examples of the changes that are stored here.

To access the configuration audit log, tap **[CONFIG AUDIT LOG]** from the **Diagnostics** menu. The Configuration Audit Log will display on the screen.

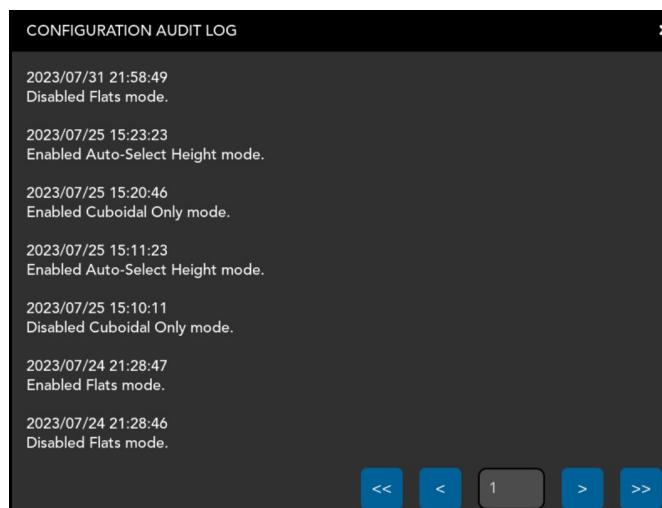


Figure 42
Configuration audit

Calib-Audit

The Calib-Audit displays the calibration audit trail. You can view the calibration history of the sensor here.

To access the configuration audit log, tap [CALIBRATION AUDIT LOG] from the **Diagnostics** menu. The Calibration Audit Log will display on the screen.

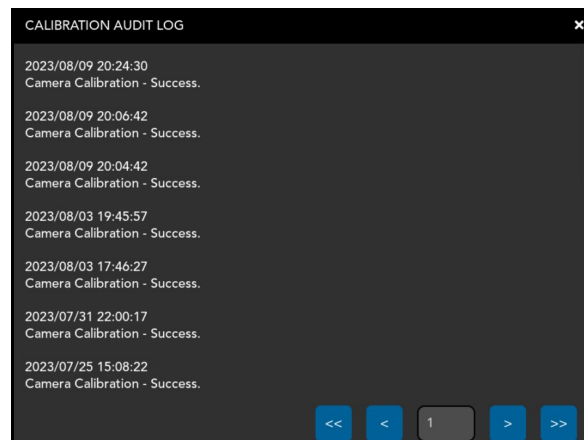


Figure 43
Calibration audit

Alibi

Alibi Memory lets you look up a specific package number. Measurements are recorded sequentially starting with the number one. While the Alibi memory can hold up to 2,500,000 records, any measurements older than 90 days are deleted.

To access the configuration alibi memory, enter the package ID or scan the barcode, then tap **[FIND]**. The alibi memory log will display on the screen.

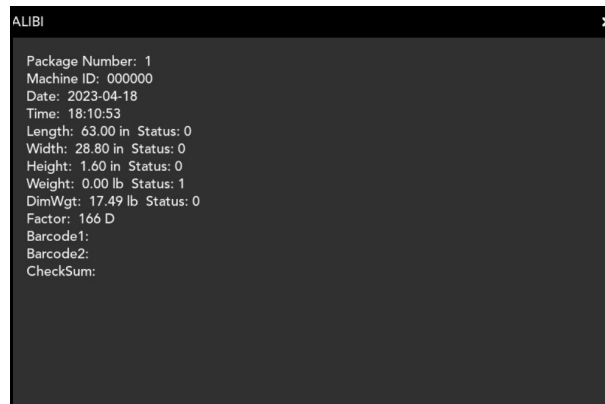


Figure 44
Alibi

APPENDIX A

PARTS LIST

Following is a list of parts that can be purchased for the Cubiscan 75 Pro as spare parts or if replacement is necessary.

Part No.	Description	Quantity/Unit
16532	SENSOR ASY, CUBISCAN 75-3H	1
15473	DISPLAY ASY, CS75	1
16543	POST, SENSOR MOUNT CS75-3	1
16542	POST, DISPLAY MOUNT CS75-3	1
16541	PLATE, BASE CS75-3	1
14398	LABEL, BOX PLACEMENT, 75	1
13907	WASHER, LOCK SPLIT #10, SS	4
13906	WASHER, FLAT #10, SS	4
13903	NUT, HEX 10-32, SS	4
15483	SCREW, FHP 10-32 x 1/2, SS	4
10016	WASHER, FLAT 3/8, ST	1
16540	KNOB, 3/8-16 X 2 IN COMFORT GRIP	1
14840	SCREW, PHP 8-32 x 1/2, SS	1
16567	SCREW, FHP 5/16-18 X 3/4 SS	4
16555	INFO PLATE, CS75-3H	1
11041	WASHER, FLAT #8, ST	1
12340	WASHER, LOCK SPLIT #8, ST	1