CubiScan® 100-T

Operations and Technical Manual

Version 1.0

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Cubing and Weighing System

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CUBISCAN® CUBING & WEIGHING SYSTEMS BY QUANTRONIX

CubiScan 100-T Operations and Technical Manual

CAUTION

The CubiScan 100-T should only be serviced by qualified personnel.
Observe precautions for handling electrostatic sensitive devices when setting up or operating the CubiScan 100-T.

WARNING

Disconnect all power to the CubiScan 100-T before servicing or making any connections.

The CubiScan 100-T is to be used to determine freight charges of rigid, non-sound-absorbing, cuboidal objects only. Dimensions shown on the display are of the smallest cuboidal shape in which the object may be enclosed.

Limited Warranty Quantronix New Product

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In the event of the occurrence of a claim under this warranty, the Buyer shall have thirty (30) days to notify Seller in writing of the nature and specifics of the claimed defect; provided, however, that any and all claims must be received before the expiration of the Warranty Period. Failure to notify Seller within such time period shall void this warranty. Any claim of a warrantied defect is subject to inspection and analysis by Seller to conclusively identify or confirm the nature and cause of failure and application of this warranty.

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2. Been used with incompatible products.
3. Been operated under abnormal conditions or in an unintended manner.
4. Not been operated or maintained in accordance with Seller's instructions.
5. Been subject to misuse or abuse, negligent handling, improper installation, accident, damage by fire, flood, water or other liquid damage, abnormal electrical condition and/or power surge, earthquake, or other act of God.
6. Had serial numbers altered, defaced or removed.
7. Been operated beyond capacity.

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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.

Manual updated July 15, 2016.

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Chapter 1
Product Description

The CubiScan 100-T is a precision volume measuring and weighing instrument for use in applications in which precise weighing and measuring is required.

The CubiScan 100-T design is unique because it combines parcel dimensional measuring and weighing into one operation. The collected data is formatted and transmitted to a host computer via a serial RS-232, Ethernet, or USB port. The collected data is also displayed on the control panel.

The CubiScan 100-T has three sensors (ultrasonic transducers) that determine the length, width, and height of an object placed on its measuring surface. The object is simultaneously weighed by a precision aluminum load cell. The load cell and sensors are controlled by a proprietary Quantronix controller. The controller, load cell, and support circuitry are located in the base of the CubiScan 100-T.

The CubiScan 100-T has been designed for use in industrial environments. The load cell, frame, and sensor housing are made of forged and machined aluminum. A mobile cart and useful accessories such as a portable power supply are available to create a completely mobile cubing, weighing, and identification workstation.

The CubiScan 100-T is easy to assemble, set up, operate, and maintain. Its simple design and extreme accuracy coupled with intelligent, self-contained circuitry make the CubiScan 100-T a valuable weighing and measuring tool.

The CubiScan 100-T was calibrated at the factory, but may require recalibration due to handling during shipping. For complete calibration instructions for the CubiScan 100-T, see “Calibration” on page 34.

Figure 1
CubiScan 100-T

Specifications

Electrical

Voltage:	100-240 VAC, 47-63 Hz
Current:	1.05 A maximum current draw, 0.15 A typical
Power Supply:	External switching +12V DC @ 3.75 A

Measuring Capacities

Minimum Package Dimensions: 0.5 x 0.5 x 0.5 in
(1.0 x 1.0 x 1.0 cm)

Maximum Package Dimensions: 24 x 24 x 36 in
(60 x 60 x 90 cm)

Dimension Increment: 0.1 in (0.2 cm)

Maximum Package Weight: 100 lb (50 kg)

Weight Increment: 0.05 lb (0.02 kg)

Environmental

Operating Temperature: 14° to 104° F
(-10° to 40° C)

Humidity: 0 to 90% non-condensing

Physical

Measuring Surface: 24 x 24 in (61 x 61 cm)

Total Footprint Required: 30 x 30 in (76 x 76 cm)

Height: 46 in (117 cm)

Shipping Weight: 70 lb (32 kg)

Net Weight: 57 lb (26 kg)

Shipping Dimensions: 34 x 46.5 x 8.5 in (86 x 118 x 22 cm)

User Interface

Minimum PC Specifications:
Windows XP or newer, Pentium II processor, 20 megabytes of disk space, screen resolution setting of 800 x 600

Quantronix's QBIT™ software can be used to interface with the CubiScan 100-T.

Display:
Integrated TFT LCD touchscreen displays L, W, H, weight, unit of measure, and diagnostic codes

Outputs:
Serial (1), Ethernet (1), USB-A (1), USB-B (1)

Chapter 2
Setup

This chapter provides instructions for assembling and setting up the CubiScan 100-T. Perform the steps to set up the CubiScan 100-T in the following order:

- Unpack the CubiScan (page 5)
- Place the CubiScan where you will be using it (page 6)
- Assemble the CubiScan (page 7)
- Remove the shipping bolts (page 12)
- Level the CubiScan (page 13)
- Connect power to the CubiScan and place the sound dampening cover and base cover on the base (page 15)
- Turn on the CubiScan 100-T (page 16)
- Connect the CubiScan to a computer or network (optional) (page 16)
- Connect the CubiScan to a barcode scanner (optional) (page 19)
- Install the Qbit software (optional) (page 21)

Unpacking

Examine the container and the CubiScan 100-T carefully for any damage. If, after unpacking, you discover any damage to the CubiScan 100-T, contact the carrier immediately.

The CubiScan 100-T is shipped in a single container with all components. Refer to the list below to identify the components.

Base
Side panels (right side panel has standoffs, left side panel has wrap-around edge)
Base cover
White sound dampening pad
(3) sensors in aluminum housings with mounting screws and washers

AC power cord
USB cable
Calibration cube
Qbit software CD (optional)
Operations and Technical Manual (in PDF form on the CD)
Bag with tare strips, two bent and one square

Accessories and tools packed with the CubiScan 100-T include the following:

(6) M5 x 0.8 x 14 screws (for sensor mounting)
(6) M5 split washers (for sensor mounting)
(5) M5 x 0.8 x 12 screws (for spine mounting)
2.5 mm Allen wrench
4.0 mm Allen wrench
5.0 mm Allen wrench
6.0 mm Allen wrench

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

NOTE ☞ *A power strip (not included) is recommended for turning power off and on.*

Placement

The CubiScan 100-T 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 to extremes in temperature or humidity. Locate the CubiScan as far from open freight doors as possible. Heaters or air conditioners should not blow directly on the CubiScan.
- Protect the CubiScan from static electricity, especially the control panel.
- Place the CubiScan on a flat, sturdy surface as free from vibration as possible. Excess vibration can reduce the accuracy of the CubiScan 100-T scale.
- The CubiScan's platform is free-floating—it is resting on a spring (load cell). Maintain a minimum of one-inch clearance at the back and sides of the CubiScan. Do not rest objects against or set objects on the CubiScan when not in use.
- If a computer is used, place it as close to the CubiScan as possible. The operator needs to use the keyboard or mouse on the computer while cubing and weighing packages using the CubiScan 100-T.

- Orient the CubiScan so the control panel faces the operator.

An optional cart and portable power supply are available from Quantronix to create a completely mobile cubing, weighing, and identification workstation.

Assembling the CubiScan 100-T

This section provides instructions for assembling the CubiScan 100-T by taking the following steps:

- Attach the side panels to the base (page 8)
- Route the height sensor cable through the corner channel where the right and left panels meet (page 9)
- Attach the sensors to the frame (page 10)
- Connect the RJ-45 connectors on the sensor cables to the sensors (page 10)

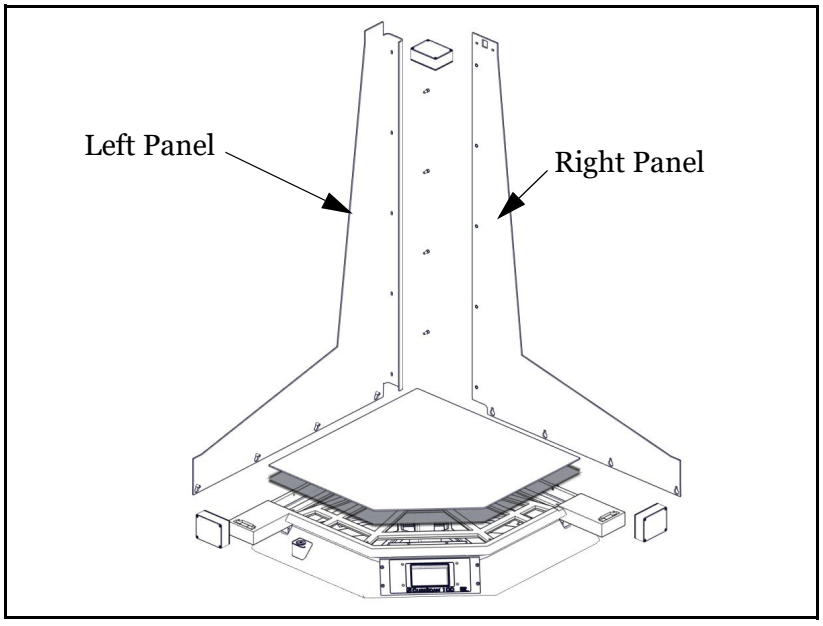

Figure 2
CubiScan 100-T Assembly Overview

Attaching the Side Panels

The left and right side are determined when facing the front of the CubiScan. The left side panel has a wrap-around edge and the right side panel has standoffs that extend from the edge. Each side panel has five tapered holes that align with the mounting screws. Figure 3 shows the panels aligned but not attached. Figure 4 shows the panels attached.

NOTE ☞ *Do not remove the four (total of eight) mounting screws along each side of the CubiScan base.*

Take the following steps to attach the two side panels to the CubiScan 100-T base.

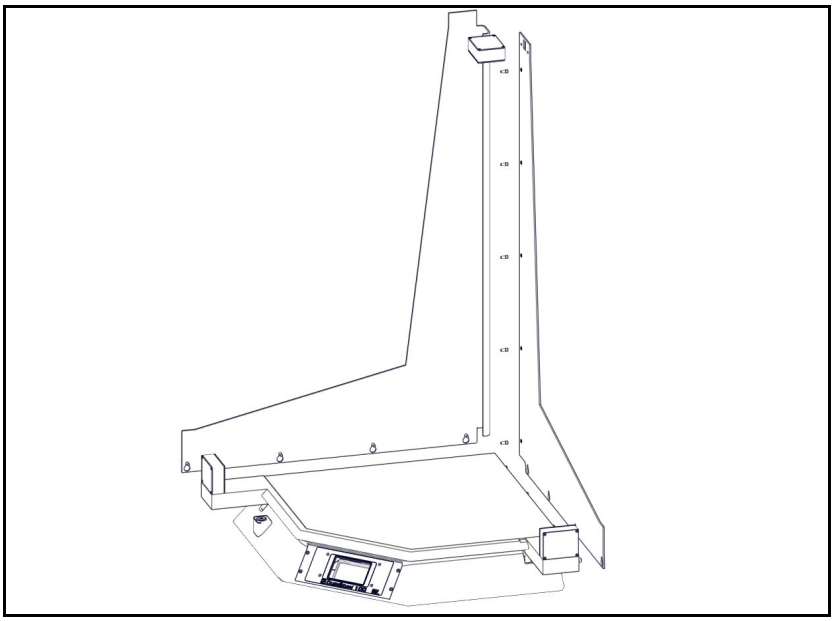

Figure 3
Side Panels Aligned (not attached)

1. Loosen the eight bolts that attach the panels at the base.

2. Align the tapered holes along the **right** side panel's bottom edge with the four mounting screws on the right side (when facing the front of the CubiScan) of the CubiScan base.

3. Push the panel into place so that the widest part of the holes are over the screws, and let the screws slide into the narrow part of the holes.

4. Using the 5.0 mm Allen wrench, tighten all of the screws except the one closest to the front (you will tighten it later).

5. Align the tapered holes along the **left** side panel's bottom edge with the four mounting screws on the left side (when facing the front of the

CubiScan) of the CubiScan base. The back edge of the panel will wrap around the back edge of the right panel.

6. Push the panel into place so that the widest part of the holes are over the screws, and let the screws slide into the narrow part of the holes.

7. Using the 5.0 mm Allen wrench, tighten all of the screws except the one closest to the front (you will tighten it later).

NOTE ☞ *Do not attach the five screws that hold the side panels together at the back. You will attach them later.*

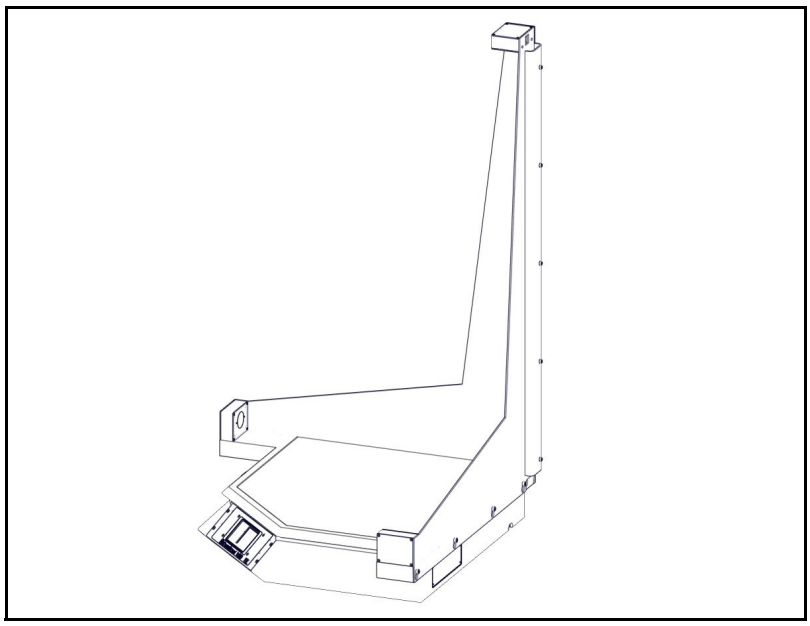

Figure 4
Side Panels Attached

Routing the Height Sensor Cable

The height sensor cable (gray cable with an RJ-45 connector) is coiled and tied inside the base frame. Do the following to route the cable to the top of the CubiScan.

1. Untie the cable and route the end of it through the hole in the back corner of the base.

2. Moving to the outside of the CubiScan, pull the length of the cable out through the hole.

NOTE ☞ ***Do not pull the cable too tightly.*** *Because the height sensor cable crosses between the scale platform and the base, if the cable is too tight, the resulting tension may restrict scale movement.*

The screws that hold the two panels together should not be attached. If they are, you need to remove them.

3. Slip the cable between the panels into the channel that is formed at the corner (see Figure 5).

Figure 5
Routing the Height Sensor Cable Between the Side Panels

4. Route enough of the cable through the channel so the connector extends from the top. Use a tie or bend the cable to keep it from falling back into the channel. Do not apply pressure to the other end of the cable.

5. Attach the five M5 x 0.8 x 12 screws to the back vertical corner where the two panels come together. Verify that the cable is free and the connector still extends from the top, and then tighten the screws.

Attaching the Sensors

Though the height, width, and length sensors are each the same type of sensor, they have been calibrated to position. The height sensor is labeled "Top," the length sensor is labeled "Left," and the width sensor is labeled

"Right." Take the following steps to attach the three sensors to the CubiScan frame.

WARNING Do not touch the gold foil screens on the front of the sensors.

1. Place the width sensor, labeled "Right," on the right, front corner of the base (see Figure 6). You will need to push the side panel out slightly to place the sensor in the correct position. If you tightened the front-most screw, you need to loosen it.

2. Align the threaded holes in the bottom of the sensor casing with the holes in the base frame.

3. Insert the M5 hex-head screws with split washer up through the frame and thread them into the sensor casing.

4. Attach the length sensor, labeled "Left," on the left front corner, in the same manner.

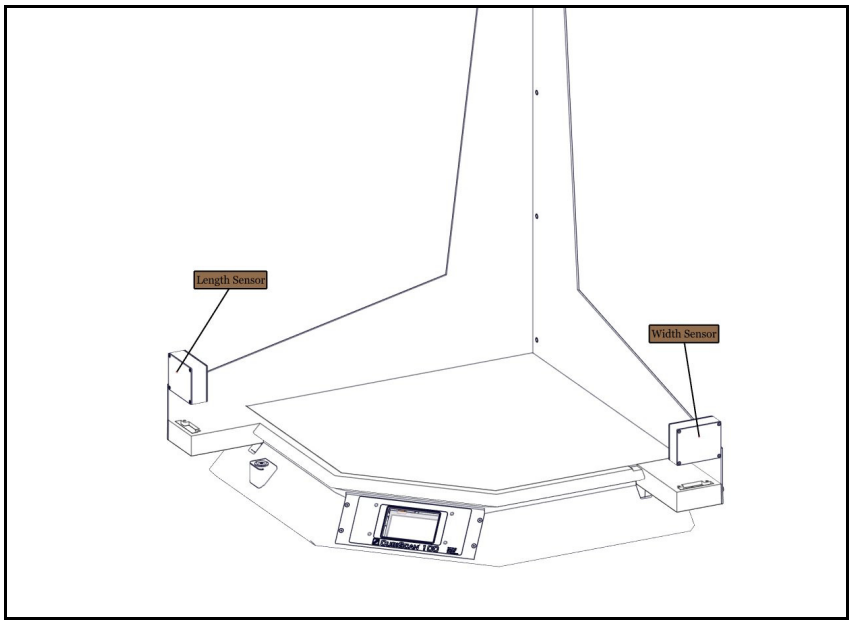

Figure 6
Attaching the Length (Left) and Width (Right) Sensors

5. Place the height sensor, labeled "Top," at the top of the corner where the side panels meet (see Figure 7), and align the screw holes.

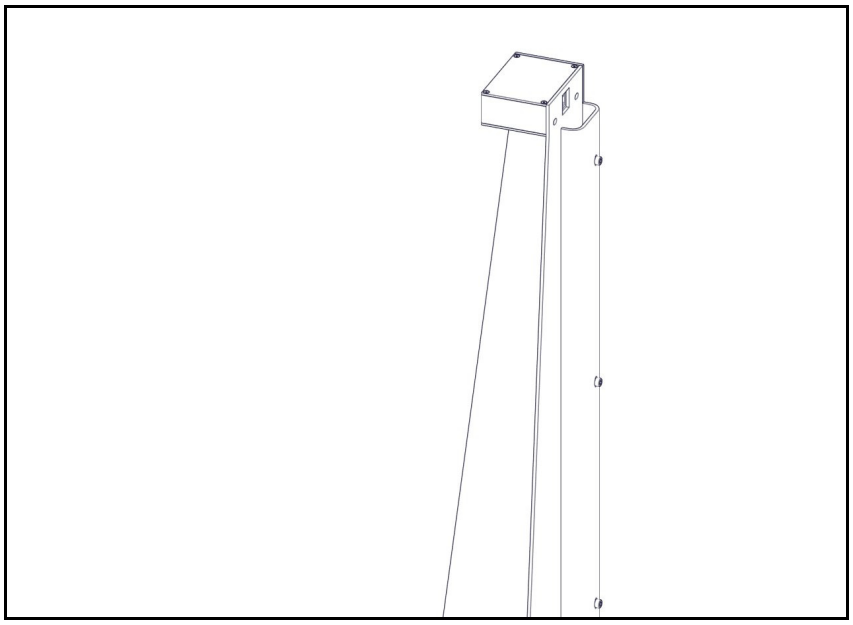

Figure 7
Attaching the Height (Top) Sensor

6. Insert the M5 hex-head screws with split washers through the holes in the back of the corner, and thread them into the sensor casing.

7. Connect the RJ-45 connector at each sensor location to the connector on the back of the sensor.

8. Tighten the front screws that hold the side panels to the base, and verify that all screws are securely tightened.

Removing the Shipping Bolts

Three shipping bolts are located on the CubiScan base to anchor the load cell to the base during shipping. The shipping bolts are fastened through the frame arm and the base leg. The pointers in Figure 8 show the bolt locations.

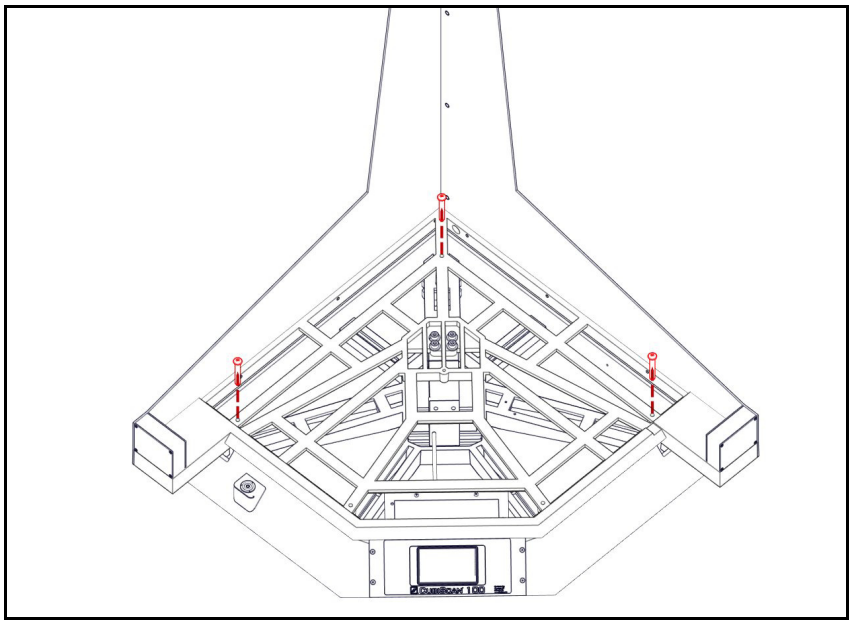

Figure 8
Shipping Bolt Locations

1. After the CubiScan is assembled, use the 6.0 mm Allen wrench to remove the shipping bolts.

2. Proceed to the next section for information on leveling the CubiScan. Do not place the sound dampening pad and base cover on the base until you have leveled the CubiScan and connected all cables, as described in the following sections.

NOTE ☞ *The bolts protect the load cell from damage during shipment. Retain the shipping bolts and reattach them if you move the CubiScan or ship it to a different location.*

Leveling

After assembling the CubiScan and removing the shipping bolts, take the following steps to level the CubiScan base.

1. Locate the five leveling legs under the base. Their positions are indicated by the pointers in Figure 9 below.

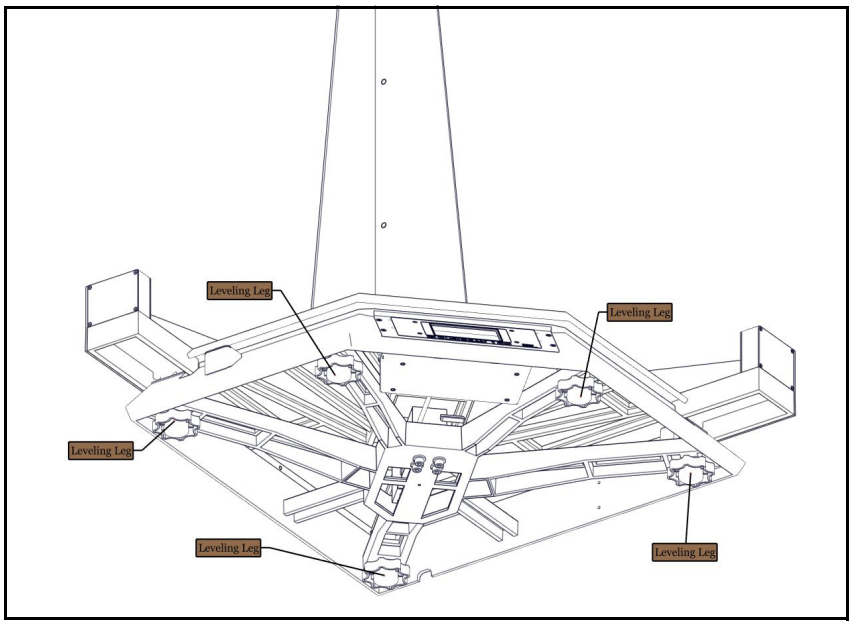

Figure 9
Leveling Legs Positions

2. Figure 10 shows the location of the leveling bubble. Look at the leveling bubble and determine if the CubiScan 100-T is level.

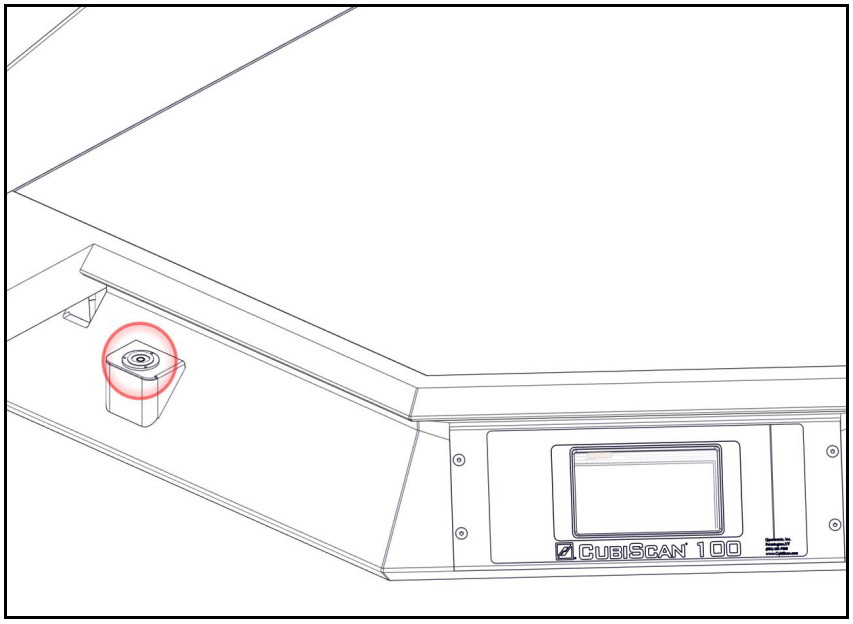

Figure 10
Leveling Bubble Location

A close-up of the bubble level is shown below.

3. If the base is not level, adjust the legs up or down until the bubble is centered in or touching the center circle of the level. To adjust the height of a leg, lift the base slightly and turn the threaded leg. Looking toward the leg, turn it clockwise to lower it and counterclockwise to raise it.

NOTE ☞ *When you are finished leveling the CubiScan, verify that all five of the CubiScan's legs are resting on the supporting surface. If the CubiScan does not sit flat, it may wobble or vibrate during measurements, which can cause errors.*

4. Proceed to the following sections for information on connecting a computer (optional), a barcode scanner (optional), and power to the CubiScan. Do not place the sound dampening pad and base cover on the base until you have connected all cables.

Connecting Power

The CubiScan 100-T uses an external AC power adapter. Take the following steps to connect power to the CubiScan.

1. Locate the AC power adapter, which is bundled inside the CubiScan base. The DC power cord from the power adapter is attached to the controller box.

2. Locate the AC power cord (supplied), and connect it to the AC power adapter.

3. Route the AC power cord under the CubiScan base so it cannot be crushed, bent, or pulled loose.

4. Connect the other end of the AC power cord to a standard power strip equipped with an ON/OFF switch.

5. Place the white sound dampening pad and then the black base cover on the top of the base. When properly inserted, the cover should rest flush with the edge of the base.

6. Use the power strip switch to turn the CubiScan on and off (see "Turning on the CubiScan" on page 16).

Turning on the CubiScan

Specific procedures must be followed each time you turn on the CubiScan 100-T, as follows:

1. Make sure there are no packages or other objects on the CubiScan platform.

2. Turn on the CubiScan 100-T via the power strip (see "Connecting Power" on page 15).

   The CubiScan performs self-calibration and diagnostic procedures that take about five seconds. Do not touch the CubiScan platform during these five seconds.

Connecting to a Computer or Network

To operate the CubiScan 100-T, you can connect it to a computer or a network, or you can use the control panel, as follows:

- Connect it via a USB to USB cable. Use Qbit software on the computer to run the CubiScan 100-T.
- Connect it to a host system via a standard 10-BaseT Ethernet TCP/IP port.
- Connect it to a PC using a serial RS-232 cable.

USB Connection

Complete the following steps to connect the CubiScan 100-T to a computer using a USB connection. The USB connection method is the recommended method, and all materials needed for communicating with a computer are supplied.

1. Place the computer in its permanent location, generally close to the CubiScan. (Refer to "Placement" on page 6 for more information.)

2. Route the USB cable under the base so it cannot be crushed, bent, or pulled loose.

3. The CubiScan controller is located just behind the control panel at the front of the base. Connect one end of the USB cable to the USB connector on the back of the CubiScan controller, as shown below.

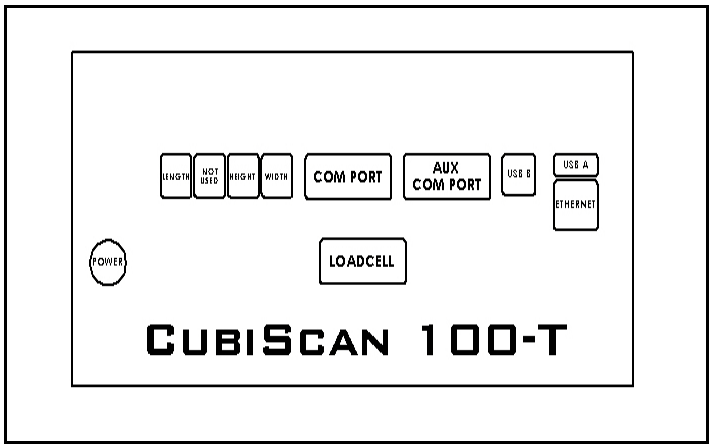

Figure 11
Back of Controller

4. Locate a free USB port on your computer and connect the other end of the USB cable to the port.

When you have completed these steps, the CubiScan 100-T should communicate with a computer.

Ethernet Connection

Complete the following steps to connect the CubiScan 100-T to a computer using an Ethernet connection.

1. Place the computer in its permanent location, generally close to the CubiScan. (Refer to "Placement" on page 6 for more information.)

2. Route the Ethernet cable under the base so it cannot be crushed, bent, or pulled loose.

3. The CubiScan controller is located just behind the control panel at the front of the base. Connect one end of the Ethernet cable to the Ethernet connector on the back of the CubiScan controller, as shown below. Push the connector in until it locks. There should be an audible snap when it locks.

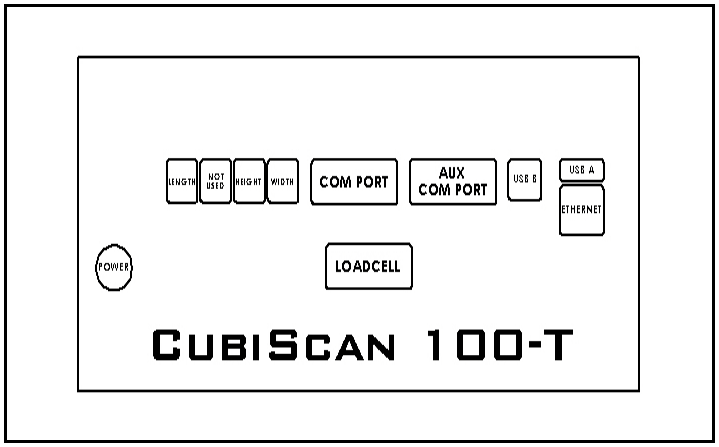

Figure 12
Back of Controller

4. Insert the connector on the other end of the cable into the computer's network socket until it locks.

5. Refer to Appendix A "Communications Protocol" for information on the TCP/IP command protocol and setup parameters. Contact Quantronix if you need additional assistance.

For information on the Ethernet cable pin-outs, refer to Ethernet cable pin assignments on page 60.

Serial Connection

Complete the following steps to connect the CubiScan 100-T to a computer using a serial connection.

1. Place the computer in its permanent location, generally close to the CubiScan. (Refer to "Placement" on page 6 for more information.)

2. Route the RS-232 serial communications cable through the opening in the base so it cannot be crushed, bent, or pulled loose.

3. The CubiScan controller is located just behind the control panel at the front of the base. Connect one end of the serial cable to the serial connector on the back of the CubiScan controller, as shown below.

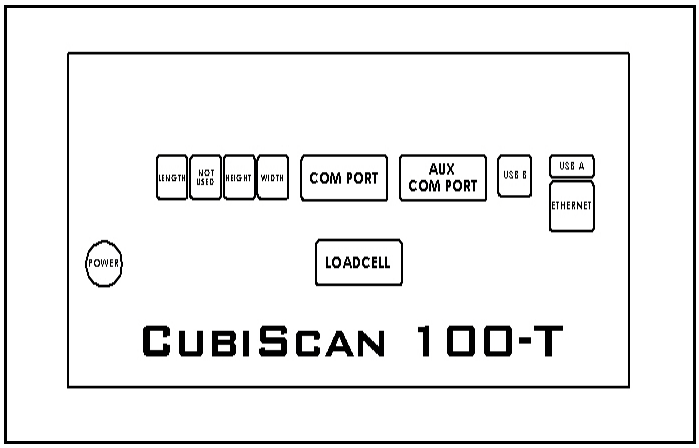

Figure 13
Back of Controller

4. Locate a free serial port on the back of your computer and connect the other end of the serial cable to the port.

5. To secure the serial cable, tighten the screws (two on each connector) at both ends of the cable. It is important that the cable be secure.

For information on the serial cable pin-outs, refer to cable pin assignments on page 59.

Connecting to a Barcode Scanner (Optional)

The CubiScan 100-T has an additional USB port for connecting to a barcode scanner. To connect the CubiScan to a barcode scanner, complete the following steps.

NOTE ☞ *This barcode connection option is for non-Qbit software users. If you are using Qbit software, you will connect the barcode scanner directly to the PC.*

1. Route the barcode scanner USB cable under the CubiScan base so it cannot be crushed, bent, or pulled loose.

2. The CubiScan controller is located just behind the control panel at the front of the base. Connect the free end of the USB cable to the barcode

scanner connector on the back of the CubiScan controller, as shown below.

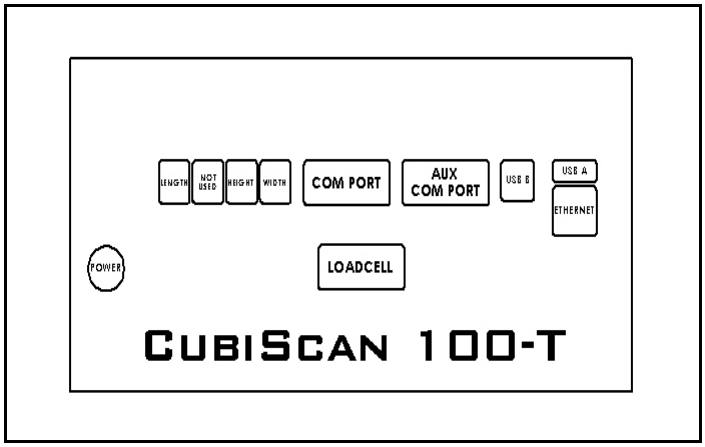

Figure 14
Back of Controller

3. Once the barcode scanner is connected to the CubiScan 100-T, you need to turn the barcode feature on. On the CubiScan 100-T touchscreen, go to **CONFIGURE > Operation**.

4. Check the **Enable Barcode** box, as shown below. Make sure that the **Enable Expanded Protocol** box is also checked. This option must be enabled for the barcode to work properly.

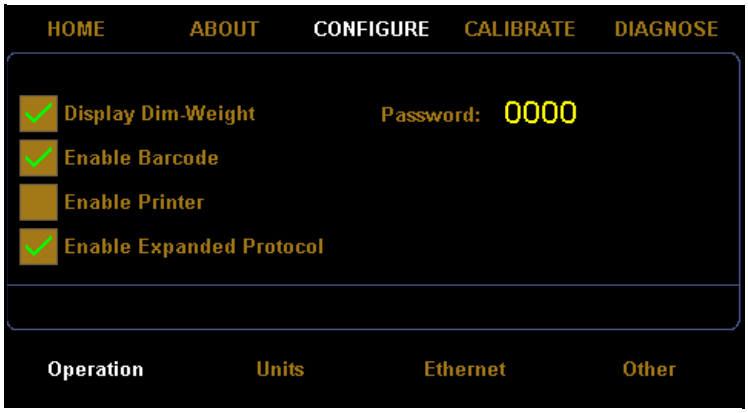

Figure 15
Barcode Enabled

A new barcode field will appear on the home screen and the barcode data will be included in the data packet.

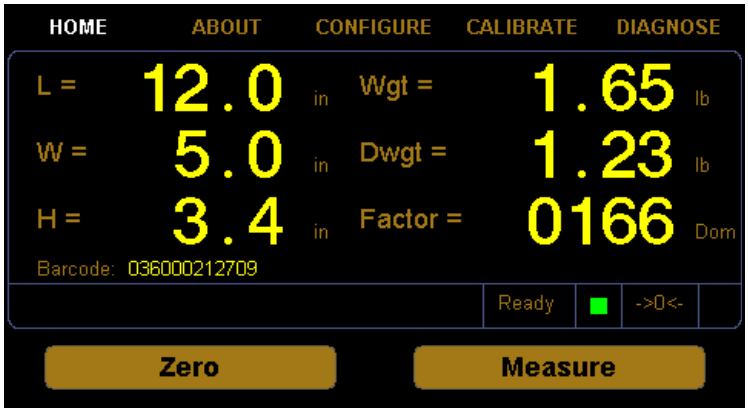

Figure 16
Home Screen Barcode Enabled

Installing Qbit (Optional)

A CD-ROM is available containing the Qbit application, which can be used to operate the CubiScan 100-T.

The *Qbit User Guide*, located on the CD-ROM, provides instructions for installing and using Qbit. You can also download the user guide from the Quantronix website at www.cubiscan.com.

Setup Checklist

Before using the CubiScan 100-T for the first time, verify the following:

- Have the CubiScan 100-L and the computer (if applicable) been placed in the proper operating environment? (page 6)
- Has the CubiScan been fully assembled? (page 7)
- Have the three sensors been attached to the CubiScan, and have the sensor cables been connected to the sensors? (page 10)
- Have all screws, bolts, and nuts been tightened?
- Have the shipping bolts been removed? (page 12)
- Has the base of the CubiScan been leveled? (page 13)

- Is the CubiScan free moving? The CubiScan should not be pushed up against a wall and no object, cable, etc., should be resting on it or against it. (page 6)
- Has the AC power adapter been connected correctly? (page 15)
- Has the CubiScan 100-T been set up to communicate with a computer (if applicable)? (page 16)
- (Optional) Has the barcode scanner been connected properly? (page 19)
- If you are using Qbit to operate the CubiScan 100-T, has the application been copied onto your computer's hard-disk drive? (Refer to the *Qbit User Guide* for information.)
- Does the CubiScan require recalibration? The CubiScan 100-T was calibrated at the factory, but *may* require recalibration due to handling during shipping. Refer to page 34 for information on calibrating the CubiScan 100-T. If you are using Qbit software, check the status of the CubiScan before operating it. Refer to the *Qbit User Guide* for information on checking the CubiScan's status.

Chapter 3
Operation

This chapter provides instructions for operating the CubiScan 100-T.

NOTE ☞ *The platform of the CubiScan should be kept clean and free of objects that are not being measured.*

Before You Begin

Follow the procedures below to turn on the CubiScan. The CubiScan should be turned on before you start Qbit (if applicable).

1. Make sure there are no packages or objects on the CubiScan platform.
2. Turn on the CubiScan 100-T via the power strip. The CubiScan performs self-calibration and diagnostic procedures that take about five seconds. Do not touch the CubiScan platform during these five seconds.

NOTE ☞ *Do not lean on or touch the CubiScan platform or the package while a package is being cubed and weighed. Any kind of contact with the platform during the measurement process can alter the weight or sensor reading.*

NOTE ☞ *You should occasionally verify that the zero settings on the CubiScan are correct. To do this, take a measurement with nothing on the scale and see if all values recorded are zero. The CubiScan's empty weight and measurements can be reset to zero (zeroed) at any time (refer to the Qbit User Guide or to* "Zeroing the CubiScan 100-T" on page 26*).*

WARNING

Disconnect all power to the CubiScan 100-T before servicing or making any connections.

Cubing and Weighing Using Qbit for Windows

Refer to the *Qbit User Guide* for instructions on cubing and weighing and other functions in Qbit. The *Qbit User Guide* is provided on CD-ROM or you can download it from the Quantronix website at www.cubiscan.com.

NOTE ☞ *For information on measuring odd-shaped packages, refer to* "Measuring Odd-Shaped Packages" on page 25.

Cubing and Weighing Using the Touchscreen

All controls and displays for the CubiScan 100-T are located on the touchscreen at the front of the base. If a computer is not connected, you can use the control panel to cube and weigh packages. Measurements and weight are displayed on the touchscreen.

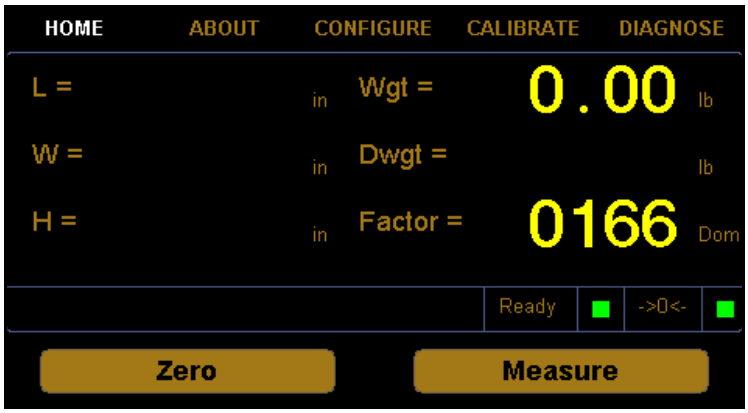

Figure 17
CubiScan 100-T Touchscreen

L=
W=
H= These display the measured dimensions in inches (in) or centimeters (cm) as selected.

Wgt= This displays the measured weight in pounds (lb) or kilograms (kg) as selected.

Dwgt= This displays the dimensional weight in pounds (lb) or kilograms (kg) as selected.

Factor= This displays the dimensional factor currently being used to calculate the dimensional weight. This option can be turned on or off.

Ready (indicator) This indicates that the CubiScan 100-T is ready for cubing and weighing.

->0<- This indicates that the scale platform is empty and ready to receive a package. This indicator must be lit before you can place a package on the platform. When you place a package on the platform, the indicator goes off.

Zero (button) Tap this key to reset the sensors and scale to "zero" (make sure the platform is empty). Refer to "Zeroing the CubiScan 100-T" on page 26.

Measure (button) Tap this key to prompt a measurement. The weight and dimensions of the object on the platform will be displayed on the screen.

Take the following steps to cube and weigh a package using the touchscreen to control the CubiScan.

1. Verify that the CubiScan platform is empty. The **->0<-** indicator should be lit, and **0.00** should be displayed in the **Wgt=** field. Except for the **Factor** field, the rest of the display should be clear.

2. Place the package or object to be cubed and weighed on the platform and slide it against the back corner until it is in contact with both side panels. The **->0<-** indicator light should go out.

NOTE ☞ *Do not lean on or touch the CubiScan platform or the package while a package is being cubed and weighed. Any kind of contact with the platform during the measurement process can alter the weight or sensor reading.*

3. Press **Measure**. The length, width, height, weight, and dim weight of the package are displayed. The factor used to determine the dim weight is also displayed.

4. Remove the package from the platform. Wait for the **->0<-** indicator to light before placing the next package on the platform.

If the **->0<-** does not light, it means that the scale needs to be zeroed. To zero the scale, make sure that the platform is free of all objects, then press **Zero**.

Measuring Odd-Shaped Packages

The CubiScan 100-T is designed to measure dimensions on "cube-like" packages (packages that are square or rectangular) with a distinct width, length, and height. Packages that have odd shapes or irregular surfaces may be measured using the CubiScan 100-T; however, the dimensions will be determined by the closest straight edge or corner and may not accurately represent the actual width, height, and length of the package.

When measuring objects with irregular or porous surfaces that do not reliably reflect sound, it may be necessary to place a rigid sheet of plastic or metal against the irregular side or sides so the sensors can record the dimensions. For example, when measuring books, a rigid sheet should be placed against the paper edge of the books.

NOTE ☞ *If rigid sheets are used when measuring objects, tare values should be entered to compensate for the thickness and weight of the sheet. Set tare values using the Options function on the Tools menu of Qbit (refer to the* Qbit User Guide*).*

Zeroing the CubiScan 100-T

Tap the **[Zero]** button on the touchscreen to "zero" the CubiScan 100-T (set all empty measurements and weight to zero). The weight of the platform and the measurement from each sensor to the platform sides when the platform is empty must be set to zero for the CubiScan 100-T to operate properly. The CubiScan 100-T tries to zero itself automatically every five seconds when it is not in the Measure mode. However, you may need to use this option in the following circumstances.

- If, during a long measuring session, environmental conditions (temperature and humidity) have changed noticeably.
- If you suspect that the last zeroing was in error (something was on the platform).

NOTE ☞ *Make certain that the platform is free of all objects before using Zero. If not, the zero reading will not be accurate.*

Chapter 4
Configuration

This chapter provides instructions for using the CubiScan 100-T touchscreen to set up the height, width, and length measurements, configure the units, dimensional weight factor, and other settings.

If you have a computer connected to the CubiScan 100-T with Qbit installed, you can use Qbit to set up the measurement and dimensional weight units, perform calibration, and other functions. Refer to the Qbit User Guide for instructions on measuring and other functions in Qbit. The Qbit User Guide is provided on the CD-ROM with the Qbit application, or you can download it from the Quantronix website at www.cubiscan.com.

System Configuration

The following options can be used to configure your CubiScan 100-T. The options available on the configure menu are Operation, Units, Ethernet, and Other.

Operation

This section discusses the options available on the operation menu. Complete the following steps to access the operation menu.

1. From the home screen, tap **CONFIGURE**.

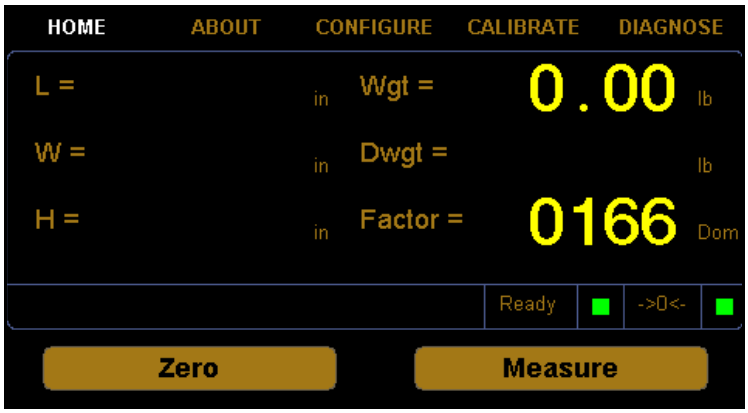

Figure 18
Home Screen

2. The configuration menu is displayed at the bottom of the screen. Select the **Operation** option if it is not already selected.

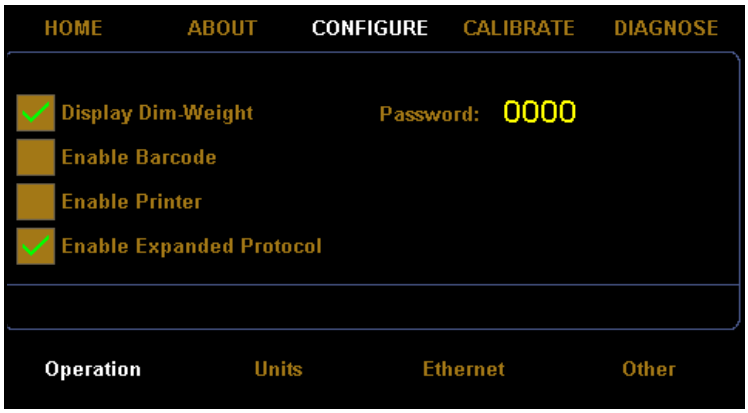

Figure 19
Configure Operation

Display Dim-Weight Check this box if you want the dim weight and factor to be displayed on the home screen.

Enable Barcode Check this box if you want to enable a barcode scanner to work with the CubiScan 100-T. If this box is enabled a new barcode field will appear on the home screen. The **Enable Expanded Protocol** box must also be checked for the barcode option to work.

Enable Printer Check this box if you want to enable a printer to work with the CubiScan 100-T. When this box is enabled a label will be printed each time a measurement is taken.

Enable Expanded Protocol Enabling the expanded protocol allows more information to be sent in a data packet. When this option is disabled, the CubiScan 100-T is backwards

compatible with the CubiScan 100-T. When the expanded protocol is enabled it includes, among other things, the packet number, date and time, length, width, height, weight, dimensional weight, the dimensional factor, and barcode information.

This option must also be enabled when enabling a barcode scanner.

Password This field displays the current password.

To set a password, tap the digits displayed in the password field. Enter your preferred password. When the CubiScan 100-T is first turned on the password must be entered before access is granted to the Configure, Calibrate, and Diagnose menus.

If the password is set to all zeros, no password is required to access the CubiScan 100-T.

Units

This section discusses the options available on the operation menu. Complete the following steps to access the operation menu.

1. From the home screen, tap **CONFIGURE**.

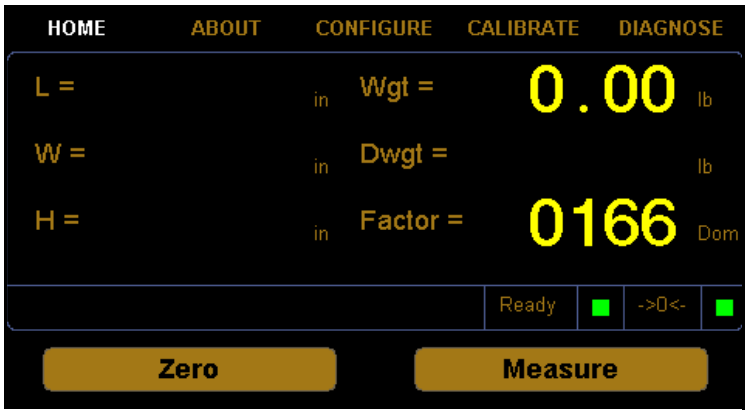

Figure 20
Home Screen

2. The configuration menu is displayed at the bottom of the screen. Select the **Units** option if it is not already selected.

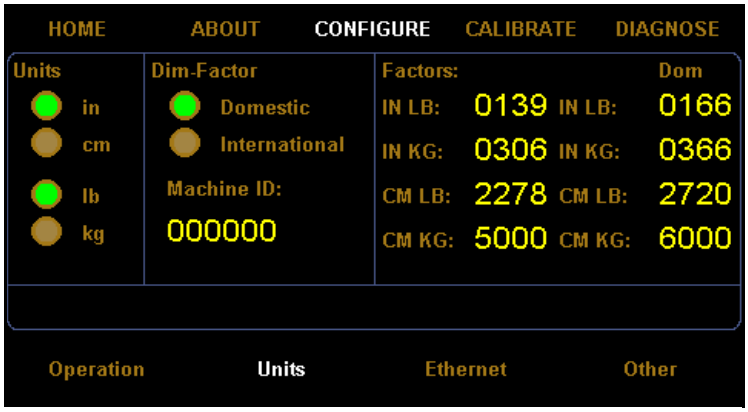

Figure 21
Configure Units

Units In this field you can select the units that will be used. The options are inches (in), centimeters (cm), pounds (lb), or kilograms (kg).

Dim-Factor In this field you can select the dim factor that will be used. The options are domestic and international.

Machine ID In this field you can enter a unique ID for your CubiScan 100-T. This can be helpful if you have more than one CubiScan on site.

Factors In this field you can view or change the current dim factor values.

The following table displays the default dimensional weight factors used by the CubiScan.

Dimensional Factor	Domestic	International
Cubic inches per pound	166	139
Cubic inches per kilogram	366	306
Cubic centimeters per pound	2720	2278
Cubic centimeters per kilogram	6000	5000

Ethernet

This section discusses the options available on the Ethernet menu. Complete the following steps to access the Ethernet menu.

1. From the home screen, tap **CONFIGURE**.

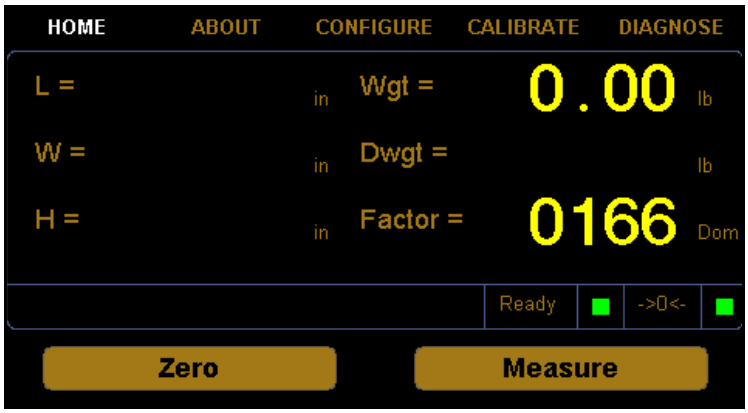

Figure 22
Home Screen

2. The configuration menu is displayed at the bottom of the screen. Select the **Ethernet** option if it is not already selected.

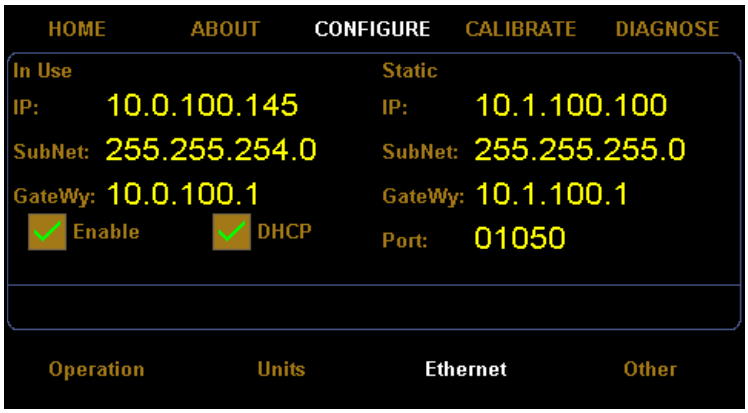

Figure 23
Configure Ethernet

In Use

This section describes the various settings and options of the Ethernet in use.

IP This is the current IP address.

SubNet This is the current subnet mask.

GateWy This is the current gateway setting.

Enable Check this box to enable or disable the in use Ethernet.

DHCP Check this box to enable or disable the DHCP.

Static

This section describes the various settings and options of the static Ethernet.

IP This is the current IP address.

SubNet This is the current subnet mask.

GateWy This is the current gateway setting.

Port This is the current port setting.

Other

This section discusses the options available on the Other menu. Complete the following steps to access the Other menu.

1. From the home screen, tap **CONFIGURE**.

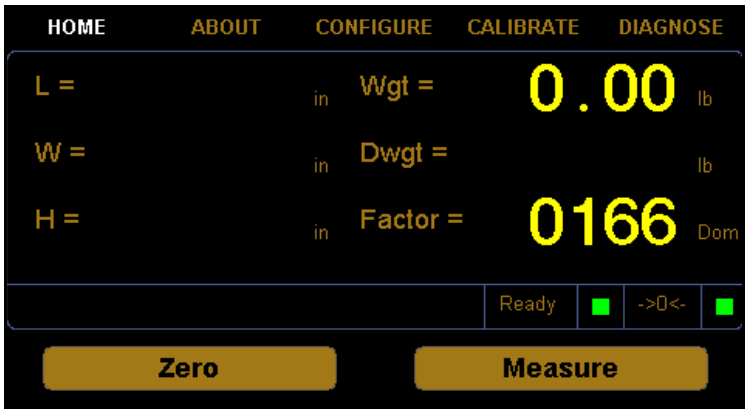

Figure 24
Home Screen

2. The configuration menu is displayed at the bottom of the screen. Select the **Other** option if it is not already selected.

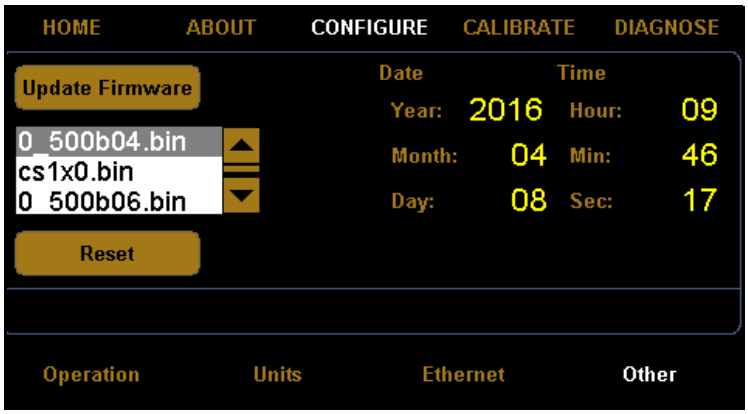

Figure 25
Configure Ethernet

Update Firmware Tap this button to update the firmware.
The field below the button displays all firmware files that are saved on the SD card. If you would like to update the CubiScan 100-T to a certain firmware file, select it in the list displayed and tap **[Update Firmware]**.

Reset Tap this button to reboot the system and update the firmware. The system must be rebooted each time the firmware is updated.

Date/Time This displays the current date and time.

Chapter 5
Calibration

This chapter provides instructions for calibrating the CubiScan 100-T. The CubiScan 100-T is calibrated at the factory; however, some circumstances in which recalibration may be required include the following:

- Calibrate the CubiScan 100-T if you have problems cubing and weighing after assembly and setup.
- Calibrate the CubiScan if it is subjected to any type of mechanical shock or collision with a heavy object.
- Calibrate the CubiScan as part of a regular maintenance schedule. If the CubiScan is used heavily, scale calibration should be performed monthly and sensor calibration yearly.

NOTE ☞ *If an error message appears during calibration, power the CubiScan off and back on and start calibration over (refer to* Chapter 5 "Calibration" *for more information).*

Before You Begin

Before calibrating the CubiScan 100-T, remove all packages or other material from the platform, and blow any dust off the sensor screens. Refer to page 43 for information on cleaning the sensors.

All controls and displays for the CubiScan 100-T are located on the touchscreen at the front of the base. For information on the controls and indicators, refer to "Cubing and Weighing Using the Touchscreen" on page 24.

If you want to calibrate using Qbit, refer to the *Qbit User's Guide*.

NOTE ☞ *The calibration cube should be kept clean and undamaged—you will need it each time you calibrate the CubiScan 100-T.*

Calibrating the Scale

To perform the calibration, you will need the following:

- Official test weight in the range of 50-100 pounds (25-50 kg) (it is recommended that you calibrate with the maximum weight)

Calibrating without an accurate known weight can make all future weight readings inaccurate. To calibrate the scale using the touchscreen, proceed as follows.

NOTE ☞ *When calibrating the scale, the CubiScan 100-T must be stable with no movement of the platform such as that caused by vibration or air movement.*

1. At the home screen, tap **CALIBRATE**.

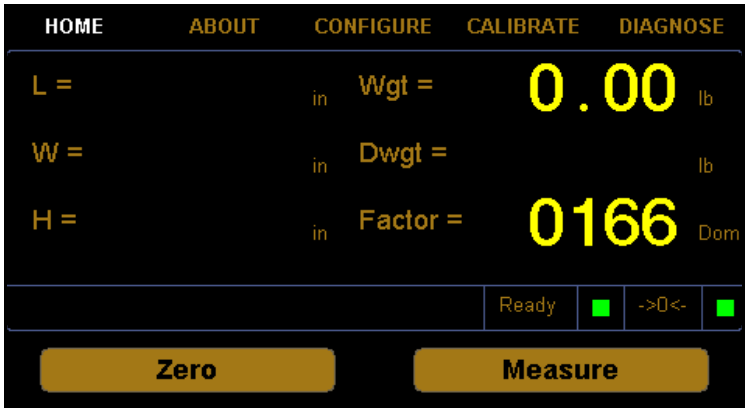

Figure 26
Home Screen

2. The calibration menu is displayed at the bottom of the screen. Select the **Scale** option if it is not already selected. If the weight units displayed

are correct for the test weight you are using, tap **[Next]** to begin the scale calibration.

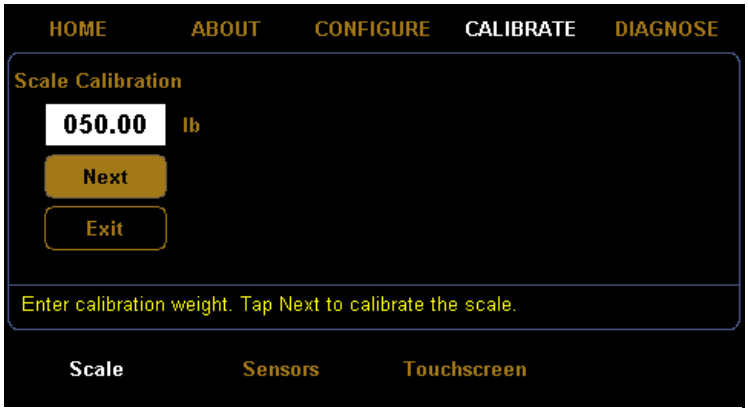

Figure 27
Scale Calibration Menu

3. Make sure there is nothing on the CubiScan 100-T platform, then tap **[Next]**.

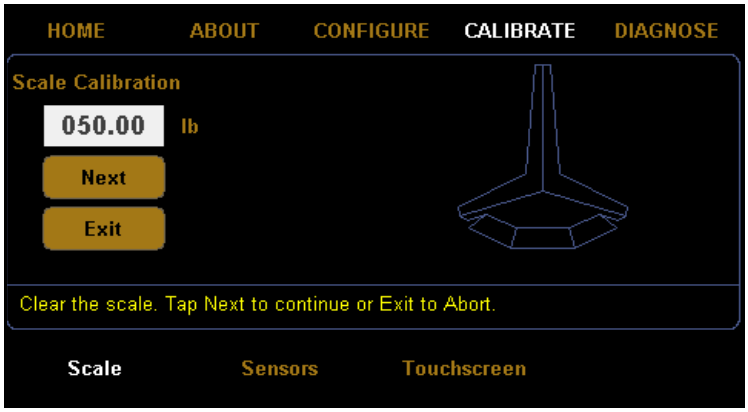

Figure 28
First Scale Calibration Screen

4. The following screen is displayed. Place the calibration weights on the CubiScan 100-T platform.

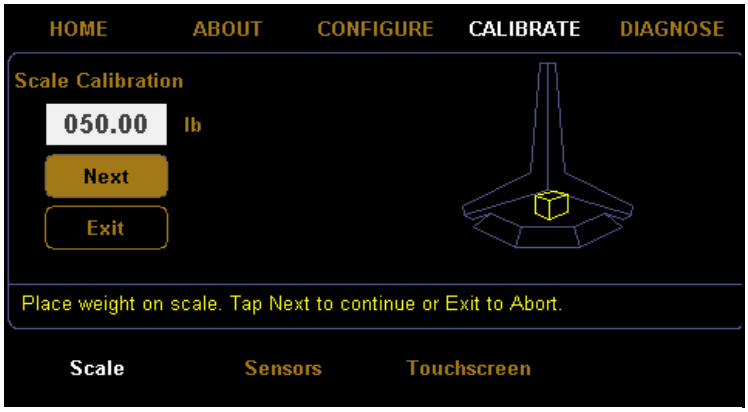

Figure 29
Second Scale Calibration Screen

5. Tap **[Next]** to continue, and the following screen is displayed.

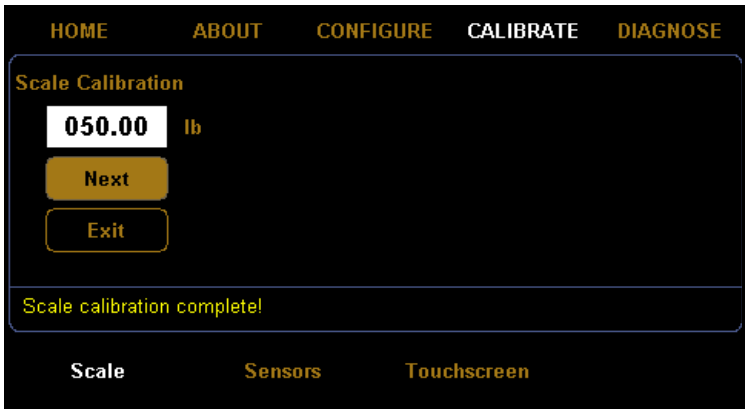

Figure 30
Scale Calibration Complete

6. You have now finished calibrating the scale. Tap **HOME** to return to the home screen or if you would like to try calibrating the scale again, tap **[Next]**.

Calibrating the Ultrasound Sensors

To perform the calibration, you will need the following:

- 12" x 5" x 3.6" calibration cube, supplied with the CubiScan

To calibrate the sensors using the touchscreen, proceed as follows.

1. At the home screen, tap **CALIBRATE**.

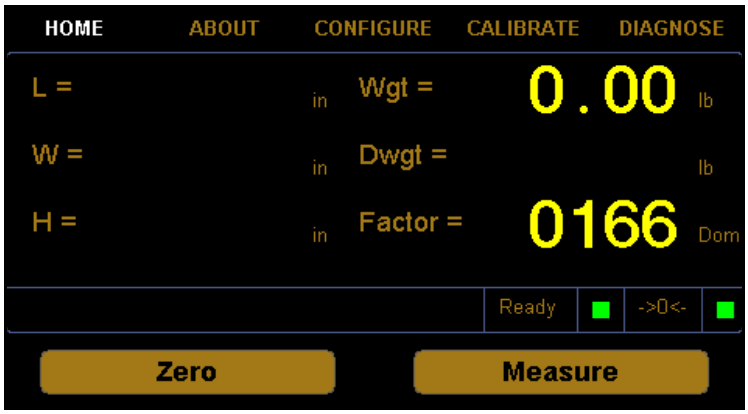

Figure 31
Home Screen

2. The calibration menu is displayed at the bottom of the screen. Select the **Sensors** option if it is not already selected. Tap **[Next]** to begin the sensor calibration.

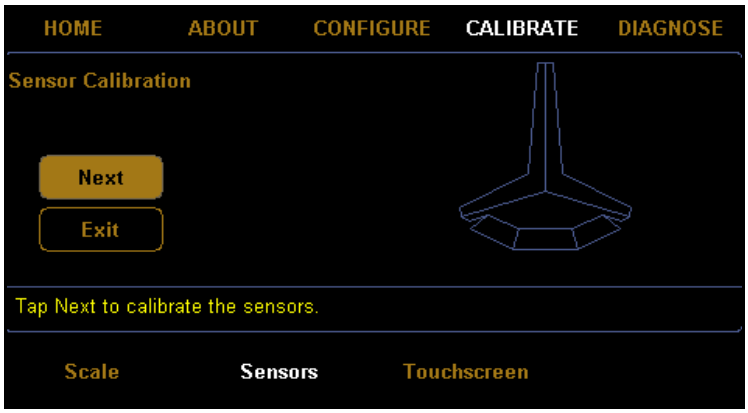

Figure 32
Sensors Calibration Menu

3. Make sure there is nothing on the CubiScan 100-T platform, and tap **[Next]** to continue.

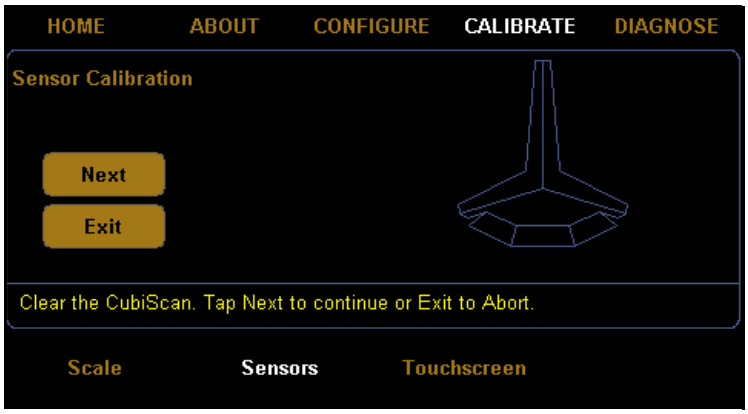

Figure 33
First Sensor Calibration Screen

4. The following screen is displayed. Place the calibration cube on the platform in the left position, as shown below.

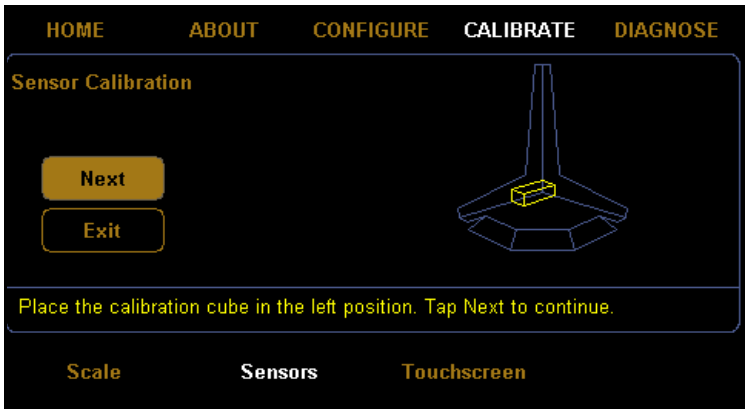

Figure 34
Second Sensor Calibration Screen

5. Tap **[Next]** to continue, and the following screen is displayed.

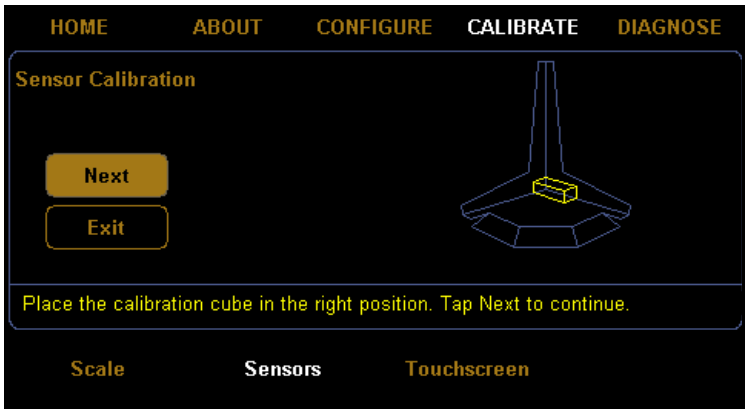

Figure 35
Third Sensor Calibration Screen

6. Place the calibration cube on the platform in the right position, as shown above.

7. Tap **[Next]** to continue, and the following screen is displayed.

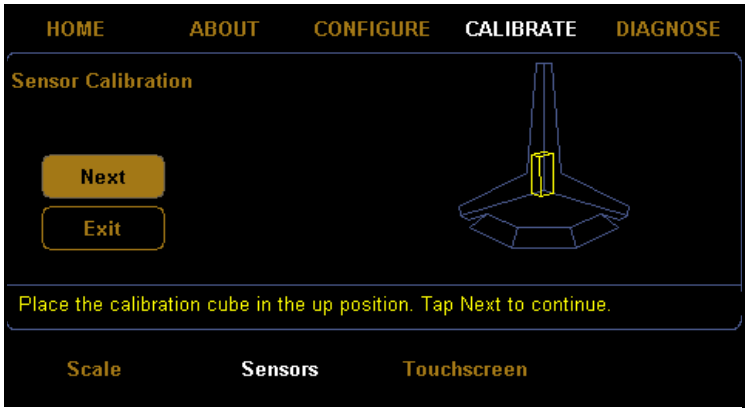

Figure 36
Fourth Sensor Calibration Screen

8. Place the calibration cube on the platform in the up position, as shown above.

9. Tap **[Next]** to complete the sensor calibration. The following screen is displayed.

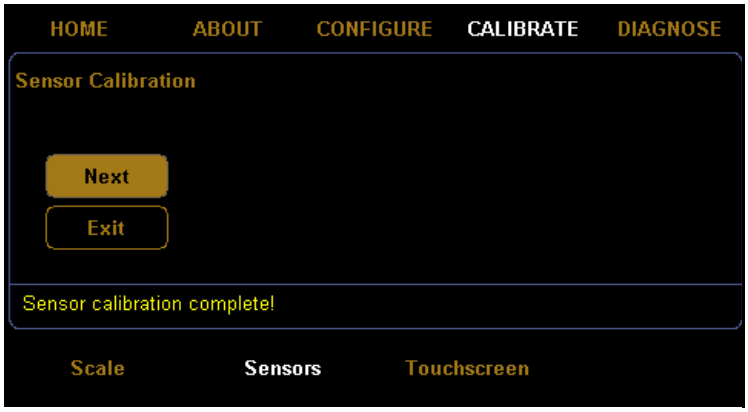

Figure 37
Sensor Calibration Complete

10. You have now finished calibrating the sensors. Tap **HOME** to return to the home screen or if you would like to try calibrating the sensors again, tap **[Next]**.

Calibrating the Touchscreen

If you are having problems selecting functions on the touchscreen, you may need to recalibrate it. You should recalibrate any time it becomes difficult to select options on the screen.

Take the following steps to calibrate the touchscreen.

1. At the home screen, tap **CALIBRATE**.

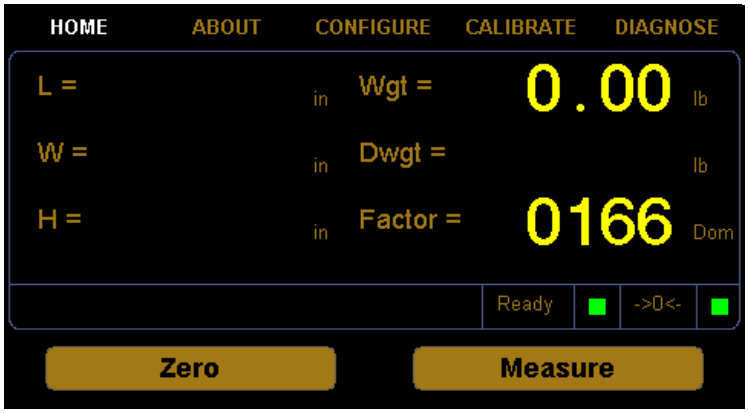

Figure 38
Home Screen

2. The calibration menu is displayed at the bottom of the screen. Select the **Touchscreen** option if it is not already selected.

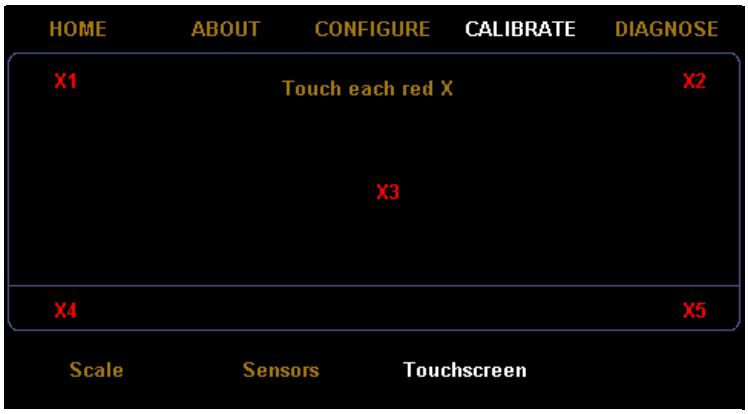

Figure 39
Touchscreen Calibration

3. Tap each red **X** until it turns green.

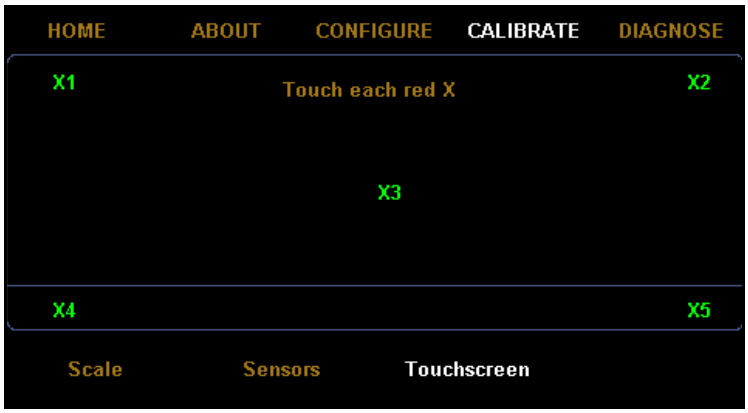

Figure 40
Touchscreen Calibration Complete

4. When each **X** has turned green, the touchscreen calibration is complete. Tap **HOME** to return to the home screen.

Chapter 6
Maintenance

This chapter provides information on the care and maintenance of the CubiScan 100-T. Routine maintenance and careful handling will help keep the CubiScan 100-T in good operating condition and prevent service calls or repairs.

Precautions

The CubiScan should not be subjected to extremes in temperature or humidity, nor should it be subjected to excessive vibration. For environmental recommendations, see “Placement” on page 6.

Do not put packages on the platform that are known to be over 100 pounds (50 kg). All objects, especially heavy ones, should be placed on the platform gently. Shock loading will occur if an object is dropped or thrown onto the platform. This puts unnecessary and potentially damaging pressure on the load cell.

The CubiScan has been designed to accept overload without damage. However, rough handling and abuse, over time, can cause the load cell to lose much of its spring action. In addition, severe shock loading can cause permanent zero shift, making the scale inoperable.

Cleaning the Sensors

The sensors should be kept clean. While dust normally won’t interfere with sensor operation, they should be cleaned routinely to prevent the possibility of interference. To clean, gently blow dust from the gold foil surface.

CAUTION

The gold foil screen on the front of the sensor is delicate. Do not use high pressure air or water lines to clean the surface of the gold foil and do not touch it with fingers, tools, or brushes. Doing so may result in damage.

Removing the Controller Box

If you suspect a problem with the CubiScan 100-T controller, first review the Troubleshooting chapter and take any recommended action. If the problem persists, contact Quantronix Technical Assistance at +1 (801) 451-7000 for assistance.

If Quantronix recommends removing the controller box and returning it for service, proceed as follows.

1. Turn off the power switch (on the power strip), and disconnect the power cord from the power strip.

2. Remove the base cover from the CubiScan base. The cover is recessed and can simply be lifted out.

3. Remove the white sound dampening pad.

4. Place the cover and white pad in a safe location where they will not get stepped on or bent.

5. Locate the controller box (the metal box directly behind the control panel) inside the base.

6. Disconnect all connectors that are attached to the controller box, as follows:

   - To remove a sensor connector, press the tab on the connector to release it, and pull it straight out.
   - To remove the Ethernet cable connector, press the tab on the connector to release it, and pull it straight out.
   - To remove the load cell connector, turn the screws to loosen the connector, and pull it straight out.
   - To remove the power connector, take hold of the connector close to the panel, and pull it straight out using even pressure.
   - To remove a serial cable, loosen the screws (with a screwdriver if necessary), and pull the cable connector out using even pressure.

7. Remove the four Allen head screws on the corners of the controller box mounting plate using the 2.5 mm Allen wrench. The control panel is in the center of the mounting plate, and the mounting plate is attached to the front of the CubiScan base.

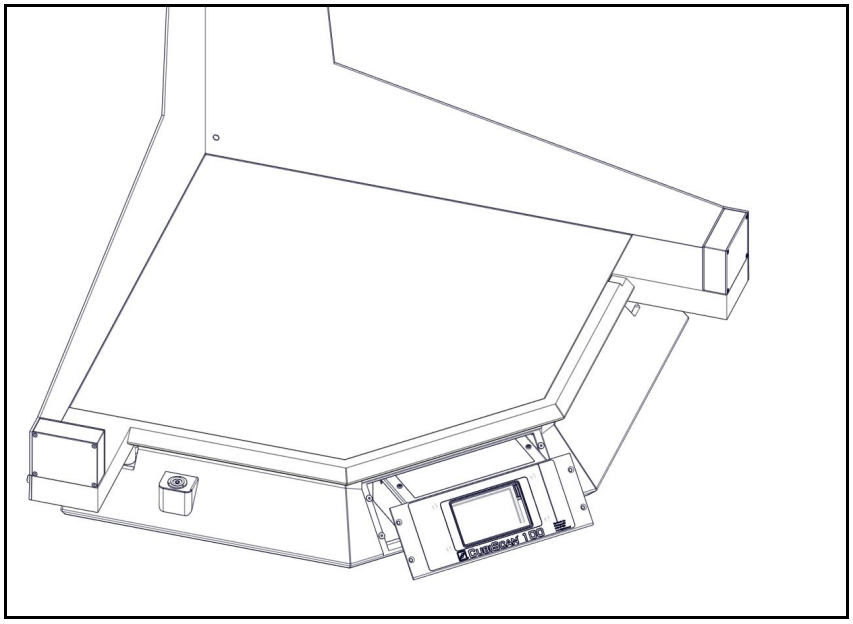

Figure 41
Removing the Controller Box

8. Verify that all cables have been removed from the controller box, then pull the box out through the front panel.

Chapter 7
Troubleshooting

This chapter provides assistance in identifying and solving common problems with the CubiScan 100-T. 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 +1 (801) 451-7000 for assistance.

After installation, most problems are caused either by incorrect cabling or because the system setup is not correct. If you are having problems with the CubiScan 100-T, first verify that all cables attached to the controller box inside the base (serial communications cables, sensor cables, power cord, Ethernet cable, load cell cable) are fully seated and secure (locking rings, clips, or screws). Then, verify that the setup is correct.

Problems with your computer may affect operation of the CubiScan 100-T system. If you have trouble starting Qbit or if you encounter problems with your computer (including computer related error messages), refer to your computer manual or contact your computer representative or dealer for assistance.

Frequent computer errors may be caused by dust or static electricity. It is important that your computer be kept as clean and static free as possible. consult your computer manual for information.

If problems continue, review the following sections for more information.

No Response When You Turn Power On

If there is no response when you power on the CubiScan 100-T, do the following:

1. Verify that the power strip is “live” and that the AC power cord is properly and securely connected to the power adapter and to the power strip.

2. Verify that the DC power cord is securely connected to the power connector on the back of the CubiScan.

Readings Are Not Accurate

If you suspect that the CubiScan 100-T readings are inaccurate, do the following:

1. Zero the scale by making sure the platform is free of all objects and then selecting **Zero** from the toolbar or Tools menu in Qbit. (If a computer is not connected, press **[Zero]** on the touchscreen.)

   If the CubiScan does not return to zero or is slow to return to zero, level the CubiScan and make certain that all five leveling legs are resting on the supporting surface. Refer to "Assembling the CubiScan 100-T" on page 7.

2. Move the CubiScan if it is located close to open freight doors or where hot air is blowing on it. Extreme changes in temperature and humidity can affect the accuracy of the CubiScan 100-T. Refer to "Placement" on page 6.

3. Recalibrate the CubiScan. Refer to "Calibration" on page 34.

Computer Error Messages

The following error messages generated by Qbit indicate a communications problem between the CubiScan and the computer.

No Communications with CubiScan

This message indicates that no communication is taking place between the computer and the CubiScan 100-T.

Transmission Error

This message indicates that erroneous data or garbled data is being sent from the CubiScan.

If you receive one of these messages, verify the following.

1. Is the CubiScan turned on and securely connected to power?

2. Is the USB, serial, or Ethernet cable securely connected?

3. Is there a problem with the CubiScan 100-T? Perform the Status function in Qbit to check the status of the CubiScan.

4. Is there a problem with the computer or network? Refer to your computer manual for information on troubleshooting the computer, or contact your network administrator.

About

This section describes the About menu of the CubiScan 100-T. The About menu contains useful information and records of the CubiScan 100-T.

Version

This section discusses the options available on the version menu. Complete the following steps to access the version menu.

1. Tap **ABOUT** at the home screen.

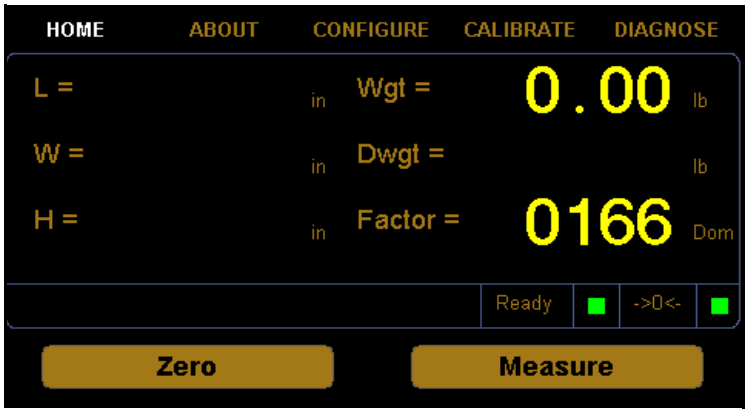

Figure 42
Home Screen

2. The about menu is displayed at the bottom of the screen. Select the **Version** option if it is not already selected.

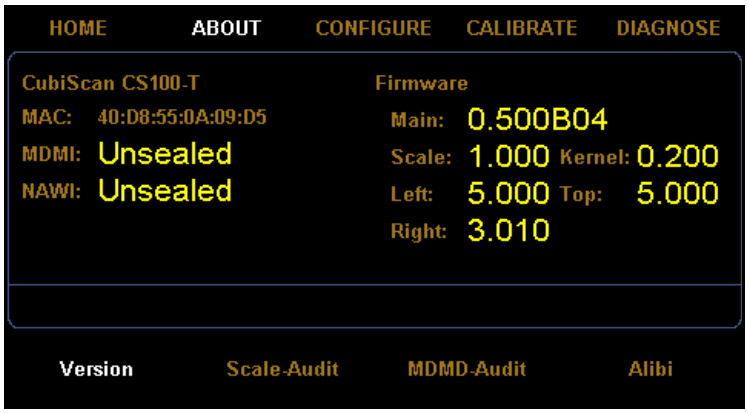

Figure 43
About Version

MAC This field displays the Media Access Control (MAC) address.

MDMI This field displays the Multiple Dimensional Measuring Instrument (MDMI) status. This status can either be sealed or unsealed.

NAWI This field displays the Non-Automatic Weighing Instrument (NAWI) status. This status can either be sealed or unsealed.

Firmware The fields listed under the firmware heading list the firmware being used for that specific part. Firmware information is displayed for the main, scale, kernel, left sensor, top sensor, and right sensor.

Scale-Audit

This section discusses the options available on the scale-audit menu. Complete the following steps to access the scale-audit menu.

1. Tap **ABOUT** at the home screen.

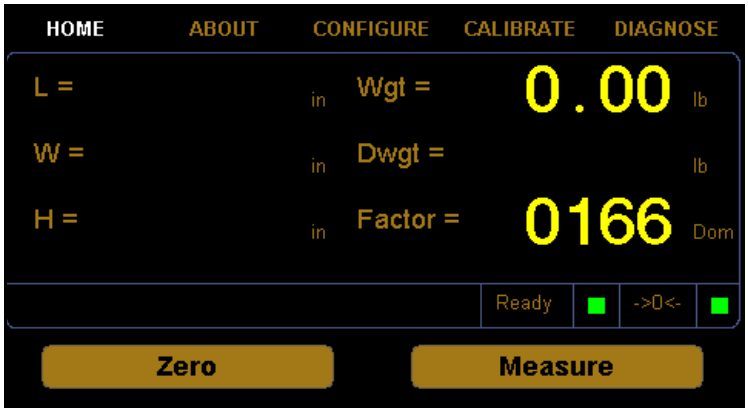

Figure 44
Home Screen

2. The about menu is displayed at the bottom of the screen. Select the **Scale-Audit** option if it is not already selected.

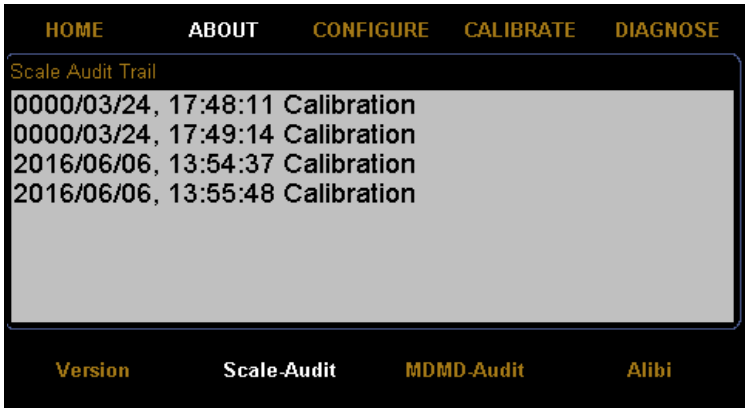

Figure 45
About Scale-Audit

Scale Audit Trail This field displays the scale calibration history.

MDMD-Audit

This section discusses the options available on the MDMD-Audit menu. Complete the following steps to access the MDMD-Audit menu.

1. Tap **ABOUT** at the home screen.

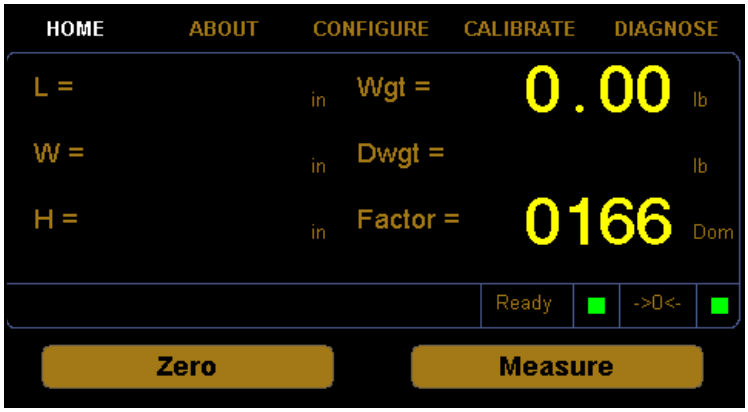

Figure 46
Home Screen

2. The about menu is displayed at the bottom of the screen. Select the **MDMD-Audit** option if it is not already selected.

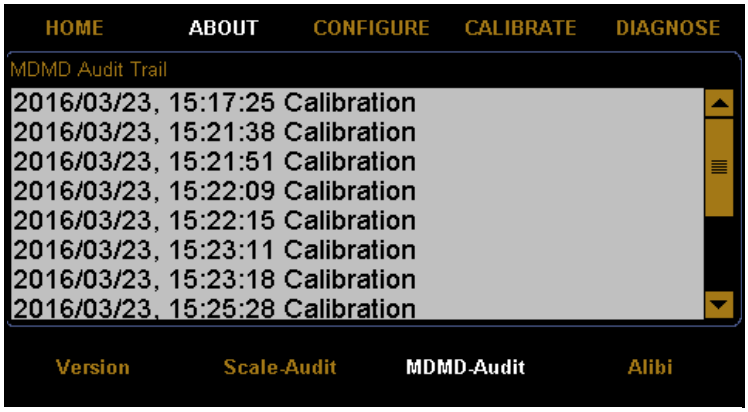

Figure 47
About MDMD-Audit

MDMD Audit Trail This field displays the sensor calibration history.

This section discusses the options available on the version menu. Complete the following steps to access the version menu.

1. Tap **ABOUT** at the home screen.

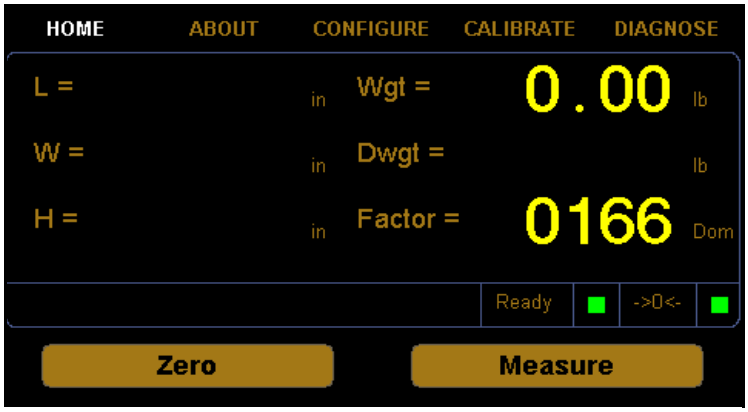

Figure 48
Home Screen

2. The about menu is displayed at the bottom of the screen. Select the **Alibi** option if it is not already selected.

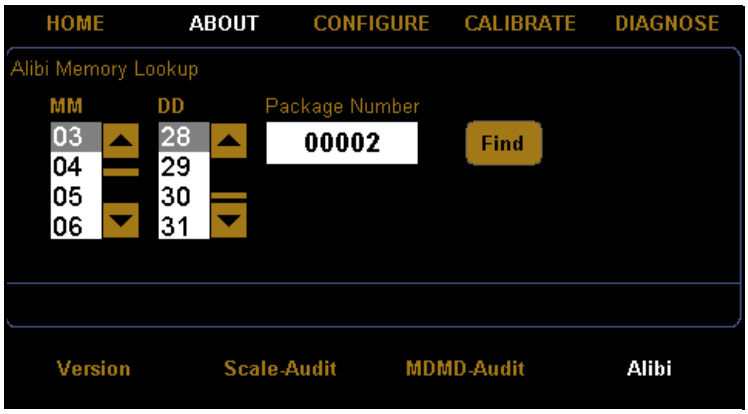

Figure 49
About Alibi

From this screen you can look up measurement data.

MM Enter the month of the measurement you are looking for.

DD Enter the day of the measurement you are looking for.

Package Number Enter the package number of the measurement you are looking for. The package number automatically starts at 00001 each morning.

Find Tap this button to look up the measurement data after you have entered the month, day, and package number information.

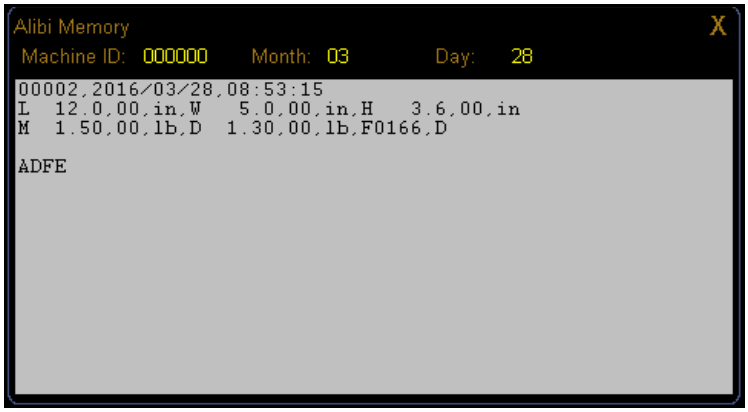

Figure 50
Alibi Memory

Diagnostics

This section describes the diagnostic capabilities of the CubiScan 100-T.

Scale Diagnostics

Complete the following steps to view the scale diagnostics.

1. From the home screen, tap **DIAGNOSE**.

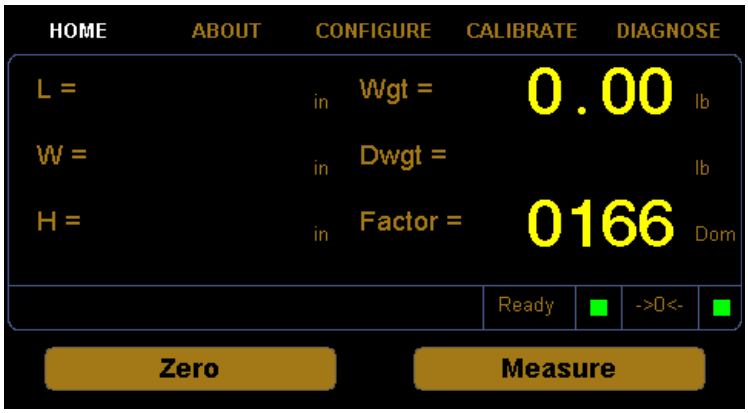

Figure 51
Home Screen

2. The diagnostic menu is displayed at the bottom of the screen. Select the **Scale** option if it is not already selected.

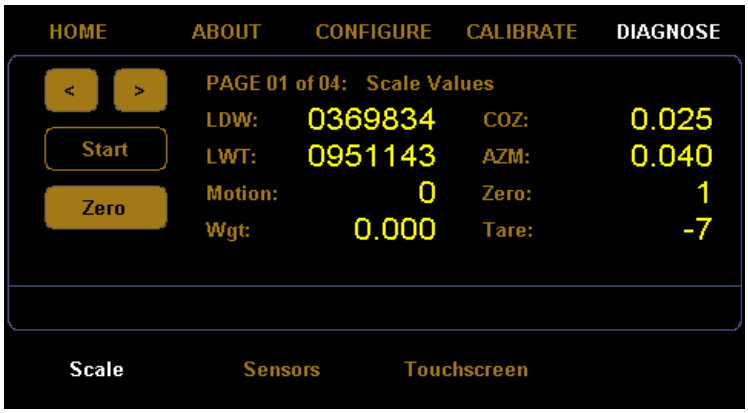

Figure 52
First Scale Diagnostic Screen

From this screen you can view the diagnostic scale values.

LDW This field displays the dead weight count.

LWT This field displays the full weight count.

Motion This field displays the motion status of the scale.
0=No motion
1=Motion

Wgt This field displays the current weight.

COZ This field displays the center of zero.

AZM This field displays the auto zero tracker.

Zero This field displays whether there is weight on the scale or not.
0=Weight on scale
1=No weight on scale

Tare This field displays the zero adjustment count. This value should typically be near zero.

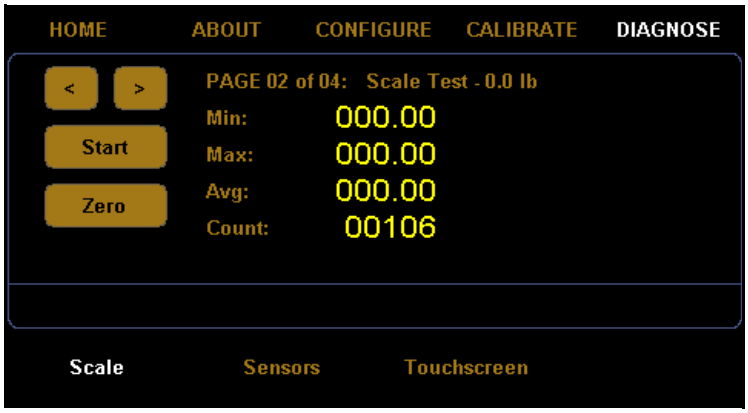

Figure 53
Second Scale Diagnostic Screen

3. Tap the **[>]** button until you reach the first scale test screen.

Scale diagnostic screens two through four are for factory scale testing at various weights (0, 25, and 50 lbs). To begin the test, place the appropriate weight on the platform, and tap **[Start]**.

Tap the left arrow button **[<]** to navigate left through the diagnostic scale screens.

Tap the right arrow button **[>]** to navigate right through the diagnostic scale screens.

Tap the **[Start]** button to start the diagnostic test. After the test has started, this button will read **[Stop]**. Tap this button to stop the test.

Tap the **[Zero]** button to zero the scale. Make sure nothing is on or touching the platform when you zero the scale, or all future scale readings will be inaccurate.

Min This field displays the minimum weight detected during the scale test.

Max This field displays the maximum weight detected during the scale test.

Avg This field displays the average weight detected during the scale test.

Count This field displays the count accrued during the scale test.

Sensor Diagnostics

Complete the following steps to view the sensor diagnostics.

1. From the home screen, tap **DIAGNOSE**.

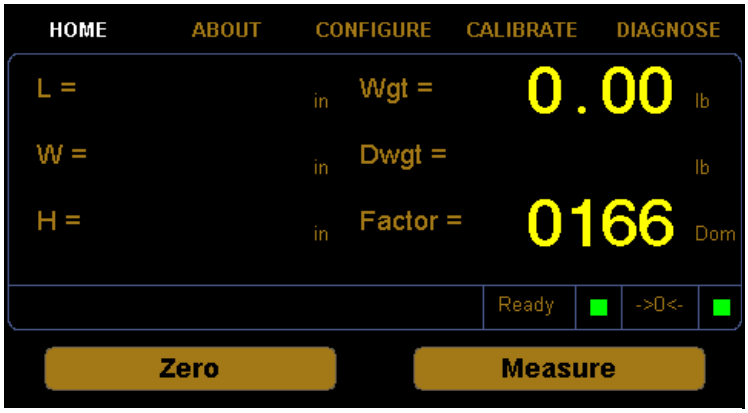

Figure 54
Home Screen

2. The diagnostic menu is displayed at the bottom of the screen. Select the **Sensors** option if it is not already selected.

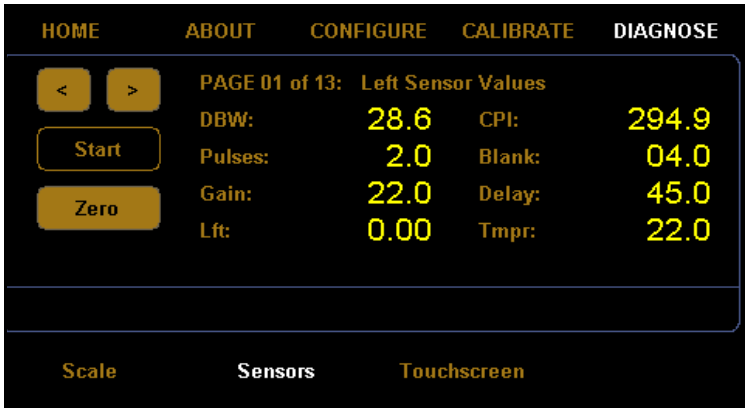

Figure 55
First Sensor Diagnostic Screen

Sensor diagnostic screens one through three display information for the left, right, and top sensor. From the example shown you can view the left sensor diagnostic values. To view the values for the right and top sensors, tap the **[>]** button.

DBW This field displays the Distance to the Back Wall (DBW).

Pulses This field displays the number of pulses the sensor has received.

Gain This field displays the gain step distance and affects the sensor sensitivity.

Lft This field displays the distance in inches of how far sound waves travel from the sensor before they are interrupted. (Lft stands for left sensor, Rgt stands for right sensor, and Top stands for top sensor.)

CPI This field displays the Counts Per Inch (CPI).

Blank This field displays the blanking zone, which is the dead zone in front of the sensor.

Delay This field displays the internal timing parameter in milliseconds.

TMPR This field displays the internal temperature of the sensor.

3. Tap the **[>]** button until you reach the left sensor test screen.

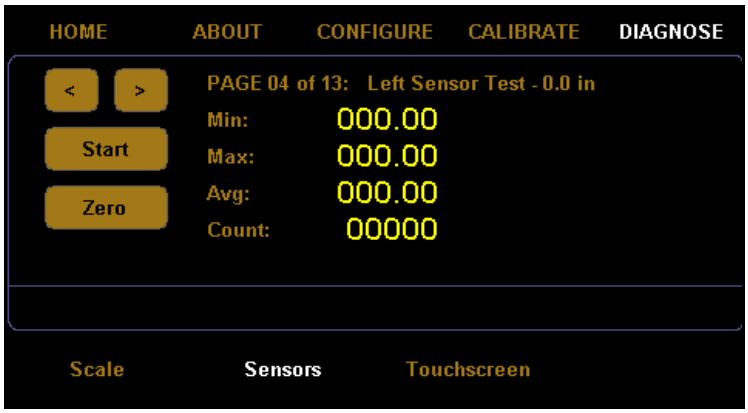

Figure 56
Fourth Sensor Diagnostic Screen

Sensor diagnostic screens four through thirteen are for factory sensor testing at various sensors and lengths (0, 12, and 24 inches). To begin the test, place the calibration cube in the appropriate position on the platform,

Tap the left arrow button **[<]** to navigate left through the diagnostic sensor screens.

Tap the right arrow button **[>]** to navigate right through the diagnostic sensor screens.

Tap the **[Start]** button to start the diagnostic test. After the test has started, this button will read **[Stop]**. Tap this button to stop the test.

Tap the **[Zero]** button to zero the scale. Make sure nothing is on or touching the platform when you zero the scale, or all future scale readings will be inaccurate.

Min This field displays the minimum length detected during the sensor test.

Max This field displays the maximum length detected during the sensor test.

Avg This field displays the average length detected during the sensor test.

Count This field displays the count accrued during the sensor test.

Touchscreen Diagnostics

Complete the following steps to view the touchscreen diagnostics.

1. From the home screen, tap **DIAGNOSE**.

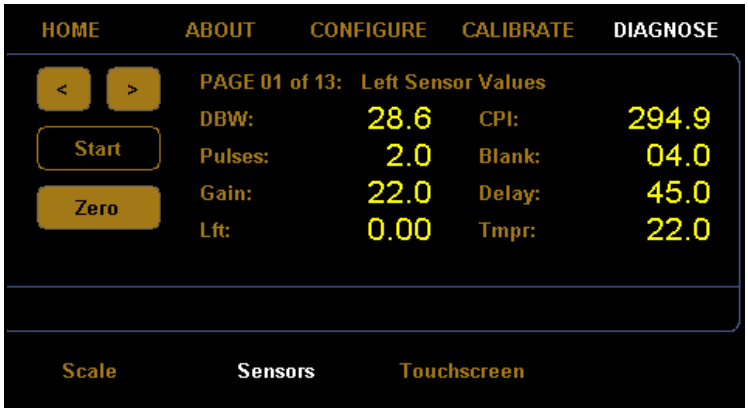

Figure 57
First Sensor Diagnostic Screen

2. The diagnostic menu is displayed at the bottom of the screen. Select the **Touchscreen** option if it is not already selected.

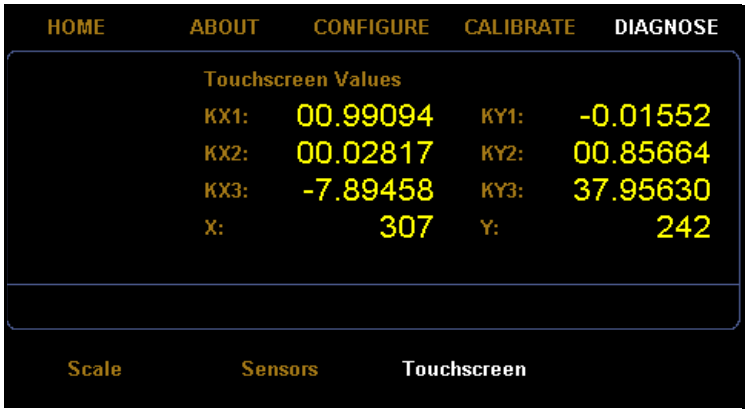

Figure 58
Touchscreen Diagnostics

From this screen you can view the touchscreen calibration values.

Appendix A
Communications Protocol

This appendix contains the cable pin assignments and command set description for the interface between the CubiScan 100-T and a host computer via a serial RS-232 connection as well as for the interface between the CubiScan 100-T and a network via an Ethernet TCP/IP connection.

"CubiScan 100-T Command Set" on page 62 lists the commands in the CubiScan 100-T command set used for cubing and weighing and to set up the CubiScan 100-T for cubing and weighing. "CubiScan 100-T Command Set" on page 62 lists the commands used to set up the CubiScan 100-T for TCP/IP communications with a network.

Serial (RS-232-C) Cable Pin Assignments

The CubiScan 100-T serial ports use the EIA RS-232-C communications protocol. The data is serially transmitted ASCII characters.

The following table shows the serial connector pin assignments. All other pins are not connected.

RS-232-C Male DB 9-Pin Assignments		
Pin	**Signal**	**Description**
Pin 2	RXD	Commands from the host computer
Pin 3	TXD	Data from the control unit to the host
Pin 5	SGND	Signal ground (DB-9 connector)

The following table shows the parameters for asynchronous communications through the RS-232 serial cable.

Asynchronous Communication Parameters	
Baud Rate	9600
Parity	None
Data Bits	8
Start Bits	1
Stop Bits	1

Ethernet (TCP/IP) Cable Pin Assignments

The CubiScan 100-T Ethernet port uses the 10/100Base-T TCP/IP communications protocol. The following table shows the Ethernet RJ-45 connector pin assignments.

RJ-45 Connector Pin Assignments		
Pin	**Signal**	**Description**
1	TD+	Transmit Data
2	TD-	Transmit Data
3	RD+	Receive Data
4	NC	No Connection
5	NC	No Connection
6	RD-	Receive Data
7	NC	No Connection
8	NC	No Connection

The Ethernet port can be configured via this command set or through the main controller. Commands exist to configure the Port, IP address, Subnet address and Gateway address. Ethernet port configuration (TCP) commands may be sent via the PC/COM (RS-232), USB ports, or the Ethernet port.

Socket Port (default)= 1050

USB Port Cable Pin Assignments

The USB port is configured as a HID device.VID = 0x1FC9, PID = 0x0081.

The CubiScan 100-T includes a USB 2.0 type B connector, as shown below.

The following table shows the USB 2.0 type B connector pin assignments.

USB 2.0 type B Connector Pin Assignments			
Pin	**Name**	**Cable Color**	**Description**
1	VCC	Red	+5 VDC
2	D-	White	Data -
3	D+	Green	Data +
4	GND	Black	Ground

It is configured as a communications device class (or USB CDC). The device attaches, on the USB side, to a RS-232 communications line and the computer operating system. This makes the USB device appear as a traditional RS-232 port.

Barcode Port

The Scanner/Barcode port can be enabled in the menus of the main controller. The Expanded Communication Protocol is utilized when it is enabled.

The barcode reader should be configured to send the barcode with a suffix of <LF>. The CubiScan uses the “End of Barcode” character as an indicator that the barcode has been scanned in its entirety. Scanned barcodes are transmitted with the next “Measure” command. If two barcodes are scanned and then a measurement is taken, the most recent barcode will be transmitted. If two barcode is scanned and then two measurements are taken, the first measurement will contain the barcode while the second measurement will contain no data for the barcode.

LFT (Sealed)

The CubiScan is placed into LFT mode by moving two sided Switches to the "ON" position. This seals metrological parameters.

Long Term Storage (Alibi Memory)

The long term storage is always enabled. A SD card must be installed in the main controller. This causes the CubiScan to write all measurement transactions to the SD card, where they are stored until they expire. The long term storage may be queried at any time.

CubiScan 100-T Command Set

This section describes the commands recognized by the CubiScan 100-T to cube and weigh packages and to set up the CubiScan 100-T for cubing and weighing (dimension units, factor toggle, calibration, zero, and so on).

All command packets begin with a STX (start of text) and end with a LF (line feed). Each command has a Command field and an optional Data field. For example:

<STX><COMMAND><DATA><ETX><CR><LF>

All commands receive either an Acknowledge response (ACK), or a Negative Acknowledge response (NACK). An ACK has an "A" in the third character position and may include a data field. A NACK has a "N" in the third character position, indicating that an error occurred. For example:

ACK: <STX><COMMAND><A><DATA><ETX><CR><LF>
NACK: <STX><COMMAND><N><ETX><CR>

The CubiScan 100-T responds with a question mark NACK to any unrecognized command. For example:

<STX><?><N><ETX><CR><LF>

When a NACK is sent by the CubiScan 100-T, the operation associated with that command is aborted due to the error.

The CubiScan 100-T recognizes the following commands from the command set for both a serial, Ethernet, and USB connection.

Command Set Summary

The CubiScan 100-T recognizes the following commands from the command set for a serial, USB, or Ethernet connection.

The table below shows the Command Set Summary.
(A) - Command Character
(B) - Command Hex Value(s)
(C) - Command Restricted When Sealed
(D) - Command Increments Calibration Counter
(E) - Command Increments Configuration Counter

Standard Communication Protocol					
User Command Name	(A)	(B)	(C)	(D)	(E)
Calibrate Dimensions	D	44h	Y	Y	N
Calibrate Scale	S	53h	Y	Y	N
Dimension Units	“	22h	N	N	N
Factor Toggle	F	46h	N	N	N
Get	g	67h	N	N	N
Key Coordinates	k	6Bh	N	N	N
Machine/Location Identification	L	4Ch	N	N	Y
Put	p	70h	Y	N	N
Measure	M	4Dh	N	N	N
Measure - Continuous	C	43h	N	N	N
Read Value	R	52h	N	N	N
Scale Data	s	73h	N	N	N
Test	T	54h	N	N	N
Units	U	55h	N	N	N
Values CS100-T	V	56h	N	N	N
Weight Units	#	23h	N	N	N
Write Value	W	57h	Y	N	Y
Zero	Z	5Ah	N	N	N
Expanded Communication Protocol					
User Command Name	(A)	(B)	(C)	(D)	(E)
Measure - Expanded	M	4Dh	N	N	N
Measure – Continuous Expanded	C	43h	N	N	N
Scale Data - Expanded	s	73h	N	N	N

Calibrate Dimensions:	Causes the instrument to enter the dimension calibration routine. Each time this command is sent, the instrument prompts the operator to follow a defined calibration pattern.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(D)	**Command**	(D)	**Command**	(D)
		Ack	(A)	**Nack**	(N)
		Identifier	(00)-(99)		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	5	**Length**	8	**Length**	6
Identifiers 01 Clear the CubiScan 02 Place 12” Target facing LEFT 03 Place 12” Target facing RIGHT 04 Place 12” Target facing UP 05 Dimension Calibration Complete					

Calibrate Scale:	Causes the instrument to enter the scale calibration routine. Each time this command is sent, the instrument prompts the operator to follow a defined calibration pattern.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(S)	**Command**	(S)	**Command**	(S)
Calibration Weight	(025.00) – (201.00)	**Ack**	(A)	**Nack**	(N)
		Identifier	(00)-(99)		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	11	**Length**	8	**Length**	6
Identifiers 01 Clear the CubiScan 02 Place Test Weight 03 Scale Calibration Complete					

Dimension Units:	Causes the instrument to change the current dimension units to either inches or centimeters.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**

Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(“)	**Command**	(“)	**Command**	(“)
English or Metric Units	(E) or (M)	**Ack**	(A)	**Nack**	(N)
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	6	**Length**	6	**Length**	6

Factor Toggle:	Causes the instrument to change its current shipping mode (international or domestic).				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(F)	**Command**	(F)	**Command**	(F)
Domestic or International	(D) or (I)	**Ack**	(A)	**Nack**	(N)
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	6	**Length**	6	**Length**	6

Get:	Causes the instrument to transmit a packet of data (files and images). The “packets” approach is used for Ethernet, the “stream” method is used for USB and serial.				
Packets Begin: This command is executed once. It initializes a file transfer, packet exchange sequence.					
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(g)	**Command**	(g)	**Command**	(g)
Read	(1)	**Ack**	(3)	**Error**	(5)
File Name	See Get File Table	**Packet Index**	(0001)-(9999)		
		Packet Size	(0000)-(1400)		
		Comma	(,)		
		Packet Data	Binary Data		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	6+	**Length**	15+	**Length**	6
Packets Data: This command is repeatedly executed after the Packets Begin command, until the complete file has been transferred. A Packet size of 1400 indicates that there are more packets. A Packet size smaller than 1400 designates the last packet, completing the file transfer.					
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>

Command	(g)	**Command**	(g)	**Command**	(g)
Send Data	(4)	**Ack**	(3)	**Error**	(5)
		Packet Index	(0001)-(9999)		
		Packet Size	(0000)-(1400)		
		Comma	(,)		
		Packet Data	Binary Data		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	6+	**Length**	15+	**Length**	6
Stream: Causes the instrument to transmit a stream of data (files and images)					
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(g)	**Command**	(g)	**Command**	(g)
Stream	(S)	**Ack**	(A)	**Nack**	(N)
File Name	See Get File Table	**Comma**	(,)		
		File Size	(0000000000)-(9999999999)		
		Comma	(,)		
		File Data	Binary Data		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	6+	**Length**	18+	**Length**	6

Get file table:

Cs1x0_01.bmp – Transfers the raw 32bit framebuffer image data.

Cs1x0par.txt – Transfers the parameter file.

Cs1x0tst.txt – Transfers the test data.

mdmdAud.txt – Transfers the MDMD calibration audit file.

scaleAud.txt – Transfers the Scale calibration audit file.

data\MM\DD.txt – Transfers the measurement log file, where MM\DD is the Month and Day.

Key Coordinates:	Causes the instrument to simulate a touch screen input at x,y.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(k)	**Command**	(k)	**Command**	(k)
X Coordinate	(0000)-(9999)	**Ack**	(A)	**Nack**	(N)
Comma	(,)				
Y Coordinate	(0000)-(9999)				
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	14	**Length**	6	**Length**	6

Machine/ Location ID:	Causes the instrument to change its current Machine/Location ID data field. This ID is a six digit code which uniquely identifies the instrument within the users operation. This ID is included in each measurement packet.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(L)	**Command**	(L)	**Command**	(L)
Location	(000000) - (999999)	**Ack**	(A)	**Nack**	(N)
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	11	**Length**	6	**Length**	6

PUT:	Causes the instrument to receive a packet of data (files and images). The "packets" approach is used for Ethernet, the "stream" method is used for USB and serial.				
Packets Begin: This command is executed once. It initializes a file transfer, packet exchange sequence.					
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(p)	**Command**	(p)	**Command**	(p)
Write	(2)	**Ack**	(4)	**Error**	(5)
File Name	See Put File Table				
Comma	(,)				
File Size	(0000000000)-(9999999999)				
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	17+	**Length**	6	**Length**	6
Packets Data: This command is repeatedly executed after the Packets Begin command, until the complete file has been sent. A Packet size of 1400 indicates that there are more packets. A Packet size smaller than 1400 designates the last packet, completing the file transfer.					
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(p)	**Command**	(p)	**Command**	(p)
Data	(3)	**Ack**	(4)	**Nack**	(5)
Packet Index	(0001)-(9999)				
Packet Size	(0000)-(1400)				
Comma	(,)				
Packet Data	Binary Data				
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>

Length	15+	**Length**	6	**Length**	6
Stream Begin: This command is executed first. It initializes a streaming file transfer.					
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(p)	**Command**	(p)	**Command**	(p)
Stream	(S)	**Ack**	(A)	**Nack**	(N)
File Name	See Put File Table				
Comma	(,)				
File Size	(0000000000)-(9999999999)				
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	27+	**Length**	6	**Length**	6
Stream Data: This command is executed second. It streams the file data.					
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(p)	**Command**	(p)	**Command**	(p)
Stream	(D)	**Ack**	(A)	**Nack**	(N)
File Data	Binary Data				
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	6+	**Length**	6	**Length**	6
Put file table: Cs1x0.bin – Sends a firmware file. Cs1x0par.txt – Sends a parameter file.					

Measure:	Causes the instrument to initiate and communicate a measurement. This is a non-legal for trade mode.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(M) or (C)	**Command**	(M)	**Command**	(M)
		Ack	(A)	**Nack**	(N)
		CubiScan OR Host	(C) or (H)	**CubiScan or Host**	(C) or (H)
		Location ID	(000000) – (ZZZZZZ)	**Measure or Zero**	(M) or (Z)
		Comma	(,)		
		Length	(L000.0) – (L999.9)		
		Comma	(,)		
		Width	(W000.0) – (W999.9)		
		Comma	(,)		
		Height	(H000.0) – (H999.9)		

		Comma	(,)		
		Dim Unit	(E) or (M)		
		Comma	(,)		
		Weight	(K000.00) – (K999.99)		
		Comma	(,)		
		Dim Weight	(D000.00) – (D999.99)		
		Comma	(,)		
		Weight unit	(E) or (M)		
		Comma	(,)		
		Factor	(F0000) – (F9999)		
		Comma	(,)		
		International OR Domestic	(D) or (I)		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	5	**Length**	62	**Length**	8

Read Value:	Causes the instrument to transmit a specific parameter.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(R)	**Command**	(R)	**Command**	(R)
Value Number	(0000)-(9999)	**Ack**	(A)	**Nack**	(N)
		Value Number	(0000)-(9999)		
		Comma	(,)		
		Value Data	See Value Table		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	9	**Length**	11+	**Length**	6

Scale Data:	Causes the instrument to transmit scale only data.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(s)	**Command**	(s)	**Command**	(s)
		Ack	(A)	**Nack**	(N)
		Weight	(K000.00) – (K999.99)		
		Comma	(,)		
		Weight Units	(lb) or (kg)		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	5	**Length**	16	**Length**	6

Test:	Causes the instrument to respond back through the interface. This is used to determine if communication is active.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(T)	**Command**	(T)	**Command**	(T)
		Ack	(A)	**Nack**	(N)
		Identifier	(00) – (99)		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	5	**Length**	8	**Length**	6
Identifiers 00 CubiScan OK					

Units:	Causes the instrument to communicate the current unit settings, dimensional factor and location ID.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(U)	**Command**	(U)	**Command**	(U)
		Ack	(A)	**Nack**	(N)
		Dimension Unit	(E) or (M)		
		Weight Unit	(E) or (M)		
		Factor Type	(D) or (I)		
		Dimensional Factor	(0001) – (9999)		
		City Code	(000000) – (ZZZZZZ)		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	5	**Length**	19	**Length**	6

Values – CubiScan 100T:	Causes the instrument to communicate various internal values.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(V)	**Command**	(V)	**Command**	(V)
		Ack	(A)	**Nack**	(N)
		Length DBW	(00.0)-(99.9)		
		Comma	(,)		

		Width DBW	(00.0)-(99.9)		
		Comma	(,)		
		Height DBW	(00.0)-(99.9)		
		Comma	(,)		
		Length CPI	(0000)-(9999)		
		Comma	(,)		
		Width CPI	(0000)-(9999)		
		Comma	(,)		
		Height CPI	(0000)-(9999)		
		Comma	(,)		
		Length Blank	(00.0)–(99.9)		
		Comma	(,)		
		Width Blank	(00.0)–(99.9)		
		Comma	(,)		
		Height Blank	(00.0)–(99.9)		
		Comma	(,)		
		Length Gain	(00.0)–(99.9)		
		Comma	(,)		
		Width Gain	(00.0)–(99.9)		
		Comma	(,)		
		Height Gain	(00.0)–(99.9)		
		Comma	(,)		
		Length Pulses	(00)-(99)		
		Comma	(,)		
		Width Pulses	(00)-(99)		
		Comma	(,)		
		Height Pulses	(00)-(99)		
		Comma	(,)		
		Length Wait	(000)-(999)		
		Comma	(,)		
		Width Wait	(000)-(999)		
		Comma	(,)		
		Height Wait	(000)-(999)		
		Comma	(,)		
		Model Num	(100T)		
		Comma	(,)		
		Scale Cap Eng	(050) or (100		
		Comma	(,)		
		Firmware	(0.000)-(9.999)		
		Growth	<SP> x 28		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	5	**Length**	129	**Length**	6

Weight Units:	Causes the instrument to change the current weight units to either pounds or kilograms.

Command Description	Command Packet	Acknowledge Description	Acknowledge Packet	Nack Description	Neg. Ack. Packet
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(#)	**Command**	(#)	**Command**	(#)
English or Metric	(E) or (M)	**Ack**	(A)	**Nack**	(N)
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	6	**Length**	6	**Length**	6

Write Value:	Write a specific parameter value to the instrument.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(W)	**Command**	(W)	**Command**	(W)
Value Number	(0000)-(9999)	**Ack**	(A)	**Nack**	(N)
Comma	(,)				
Value Data	See Value Table				
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	10+	**Length**	6	**Length**	6

Zero:	Causes the instrument to zero.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(Z)	**Command**	(Z)	**Command**	(Z)
		Ack	(A)	**Nack**	(N)
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	5	**Length**	6	**Length**	6

EXPANDED COMMUNICATION PROTOCOL

Measure Expanded:	Causes the instrument to initiate and communicate a measurement. This is a legal for trade mode.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>

Command	(M) or (C)	**Command**	(M)	**Command**	(M)
		Ack	(A)	**Nack**	(N)
		CubiScan OR Host	(C) or (H)	**CubiScan or Host**	(C) or (H)
		Location ID	(000000) – (ZZZZZZ)	**Measure or Zero**	(M) or (Z)
		Comma	(,)		
		Package Count	(0000)-(9999)		
		Comma	(,)		
		Year	(2000)-(9999)		
		Back Slash	(/)		
		Month	(01)-(12)		
		Back Slash	(/)		
		Day	(01)-(31)		
		Comma	(,)		
		Hour	(00)-(23)		
		Colon	(:)		
		Minute	(00)-(59)		
		Colon	(:)		
		Second	(00)-(59)		
		Comma	(,)		
		Length	(L000.00) – (L999.99)		
		Comma	(,)		
		Length Status	(00)-(99)		
		Comma	(,)		
		Length Units	(in) or (cm) or (mm)		
		Comma	(,)		
		Width	(W000.00) – (W999.99)		
		Comma	(,)		
		Width Status	(00)-(99)		
		Comma	(,)		
		Width Units	(in) or (cm) or (mm)		
		Comma	(,)		
		Height	(H000.00) – (H999.99)		
		Comma	(,)		
		Height Status	(00)-(99)		
		Comma	(,)		
		Height Units	(in) or (cm) or (mm)		
		Comma	(,)		
		Weight	(M000000.00) – (M999999.99)		
		Comma	(,)		

		Weight Status	(00)-(99)		
		Comma	(,)		
		Weight Units	(lb) or (kg)		
		Comma	(,)		
		Dim Weight	(D000000.00) – (D999999.99)		
		Comma	(,)		
		Dim Weight Status	(00)- (99)		
		Comma	(,)		
		Dim Weight Units	(lb) or (kg)		
		Comma	(,)		
		Factor	(F0000) – (F9999)		
		Comma	(,)		
		International OR Domestic	(D) or (I)		
		Comma	(,)		
		Barcode	50 Characters		
		Comma	(,)		
		Check Sum -Hex	(0000)-(FFFF)		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	5	**Length**	179	**Length**	8

Scale Data Expanded:	Causes the instrument to transmit scale only data.				
Command Description	**Command Packet**	**Acknowledge Description**	**Acknowledge Packet**	**Nack Description**	**Neg. Ack. Packet**
Start Byte	<STX>	**Start Byte**	<STX>	**Start Byte**	<STX>
Command	(s)	**Command**	(s)	**Command**	(s)
		Ack	(A)	**Nack**	(N)
		Weight	(M000000.00) – (M999999.99)		
		Comma	(,)		
		Weight Status	(00)-(99)		
		Comma	(,)		
		Weight Units	(lb) or (kg)		
		Comma	(,)		
		Check Sum -Hex	(0000)-(FFFF)		
End Bytes	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>	**End Bytes**	<ETX><CR><LF>
Length	5	**Length**	27	**Length**	6

Read/Write Value Table Definition							
Number	Variable Name	Type	Total Length	Mantissa Length	100-T	110-T	150-T
0000	Metric Dimensions	Boolean	1	0	x	x	x
0001	Metric Weight	Boolean	1	0	x	x	x
0002	International Factor	Boolean	1	0	x	x	x
0003	Ethernet DHCP	Boolean	1	0	x	x	x
0004	Use Ethernet	Boolean	1	0	x	x	x
0005	Use LCD	Boolean	1	0	x	x	x
0006	Use Ultrasonic Transducers	Boolean	1	0	x	x	x
0007	Use Scale	Boolean	1	0	x	x	x
0008	Use Language	Boolean	1	0	x	x	x
0009	Scale Calibration Weight - lb	Float	5	2	x	x	x
0010	Scale Calibration Weight - kg	Float	5	2	x	x	x
0011	Height Calibration offset	Float	4	2			
0012	Touch Screen Calibration X1	Float	9	6	x	x	x
0013	Touch Screen Calibration X2	Float	9	6	x	x	x
0014	Touch Screen Calibration X3	Float	9	6	x	x	x
0015	Touch Screen Calibration Y1	Float	9	6	x	x	x
0016	Touch Screen Calibration Y2	Float	9	6	x	x	x
0017	Touch Screen Calibration Y3	Float	9	6	x	x	x
0018	Firmware Version - Main Controller	Float	5	3	x	x	x
0019	FPGA Version	Float	4	2			
0020	Ring1 Version	Float	4	2			
0021	Ring2 Version	Float	4	2			
0022	Ring3 Version	Float	4	2			
0023	Sensor Length1 DBW	Float	4	1	x	x	x
0024	Sensor Width DBW	Float	4	1	x	x	x
0025	Sensor Height DBW	Float	4	1	x	x	x
0026	Sensor Length1 CPI	Float	4	0	x	x	x
0027	Sensor Width CPI	Float	4	0	x	x	x
0028	Sensor Height CPI	Float	4	0	x	x	x
0029	Sensor Length1 Blanking	Float	4	2	x	x	x
0030	Sensor Width Blanking	Float	4	2	x	x	x
0031	Sensor Height Blanking	Float	4	2	x	x	x
0032	Sensor Length1 Gain	Float	4	1	x	x	x
0033	Sensor Width Gain	Float	4	1	x	x	x
0034	Sensor Height Gain	Float	4	1	x	x	x
0035	Sensor Length1 Pulse	Float	2	0	x	x	x
0036	Sensor Width Pulse	Float	2	0	x	x	x
0037	Sensor Height Pulse	Float	2	0	x	x	x
0038	Sensor Length1 Delay	Float	3	0	x	x	x

0039	Sensor Width Delay	Float	3	0	x	x	x

Read/Write Value Table Definition

Number	Variable Name	Type	Total Length	Mantissa Length	100-T	110-T	150-T
0040	Sensor Height Delay	Float	3	0	x	x	x
0041	Scale LDW	Float	7	0	x	x	x
0042	Scale LWT	Float	7	0	x	x	x
0043	Scale Msr Test Minimum 0.00	Float	6	3	x	x	x
0044	Scale Msr Test Maximum 0.00	Float	6	3	x	x	x
0045	Scale Msr Test Average 0.00	Float	6	3	x	x	x
0046	Scale Msr Test Minimum 25.00 - Center	Float	6	3	x	x	x
0047	Scale Msr Test Maximum 25.00 - Center	Float	6	3	x	x	x
0048	Scale Msr Test Average 25.00 - Center	Float	6	3	x	x	x
0049	Scale Msr Test Minimum 50.00 - Center	Float	6	3	x	x	x
0050	Scale Msr Test Maximum 50.00 - Center	Float	6	3	x	x	x
0051	Scale Msr Test Average 50.00 - Center	Float	6	3	x	x	x
0052	Scale Msr Test Minimum 25.00 - Left	Float	6	3	x	x	x
0053	Scale Msr Test Maximum 25.00 - Left	Float	6	3	x	x	x
0054	Scale Msr Test Average 25.00 - Left	Float	6	3	x	x	x
0055	Scale Msr Test Minimum 25.00 - Back	Float	6	3	x	x	x
0056	Scale Msr Test Maximum 25.00 - Back	Float	6	3	x	x	x
0057	Scale Msr Test Average 25.00 - Back	Float	6	3	x	x	x
0058	Scale Msr Test Minimum 25.00 - Right	Float	6	3	x	x	x
0059	Scale Msr Test Maximum 25.00 - Right	Float	6	3	x	x	x
0060	Scale Msr Test Average 25.00 - Right	Float	6	3	x	x	x
0061	Scale Msr Test Minimum 25.00 - Front	Float	6	3	x	x	x

0062	Scale Msr Test Maximum 25.00 - Front	Float	6	3	x	x	x
0063	Scale Msr Test Average 25.00 - Front	Float	6	3	x	x	x
0064	Sensor Msr Test Minimum 0.00 - Length1	Float	5	2	x	x	x
0065	Sensor Msr Test Maximum 0.00 - Length1	Float	5	2	x	x	x
0066	Sensor Msr Test Average 0.00 - Length1	Float	5	2	x	x	x
0067	Sensor Msr Test Minimum 12.00 - Length1	Float	5	2	x	x	x
0068	Sensor Msr Test Maximum 12.00 - Length1	Float	5	2	x	x	x
0069	Sensor Msr Test Average 12.00 - Length1	Float	5	2	x	x	x
0070	Sensor Msr Test Minimum 24.00 - Length1	Float	5	2	x	x	x
0071	Sensor Msr Test Maximum 24.00 - Length1	Float	5	2	x	x	x
0072	Sensor Msr Test Average 24.00 - Length1	Float	5	2	x	x	x
0073	Sensor Msr Test Minimum 0.00 - Width1	Float	5	2	x	x	x
0074	Sensor Msr Test Maximum 0.00 - Width1	Float	5	2	x	x	x
0075	Sensor Msr Test Average 0.00 - Width1	Float	5	2	x	x	x
0076	Sensor Msr Test Minimum 12.00 - Width1	Float	5	2	x	x	x
0077	Sensor Msr Test Maximum 12.00 - Width1	Float	5	2	x	x	x
0078	Sensor Msr Test Average 12.00 - Width1	Float	5	2	x	x	x
0079	Sensor Msr Test Minimum 24.00 - Width1	Float	5	2	x	x	x

Read/Write Value Table Definition

Number	Variable Name	Type	Total Length	Mantissa Length	100-T	110-T	150-T
0080	Sensor Msr Test Maximum 24.00 - Width1	Float	5	2	x	x	x

0081	Sensor Msr Test Average 24.00 - Width1	Float	5	2	x	x	x
0082	Sensor Msr Test Minimum 0.00 - Height1	Float	5	2	x	x	x
0083	Sensor Msr Test Maximum 0.00 - Height1	Float	5	2	x	x	x
0084	Sensor Msr Test Average 0.00 - Height1	Float	5	2	x	x	x
0085	Sensor Msr Test Minimum 12.00 - Height1	Float	5	2	x	x	x
0086	Sensor Msr Test Maximum 12.00 - Height1	Float	5	2	x	x	x
0087	Sensor Msr Test Average 12.00 - Height1	Float	5	2	x	x	x
0088	Sensor Msr Test Minimum 24.00 - Height1	Float	5	2	x	x	x
0089	Sensor Msr Test Maximum 24.00 - Height1	Float	5	2	x	x	x
0090	Sensor Msr Test Average 24.00 - Height1	Float	5	2	x	x	x
0091	Sensor Msr Test Minimum 36.00 - Height1	Float	5	2	x	x	x
0092	Sensor Msr Test Maximum 36.00 - Height1	Float	5	2	x	x	x
0093	Sensor Msr Test Average 36.00 - Height1	Float	5	2	x	x	x
0094	Gate Msr Test Minimum Box1 - Length	Float	5	2			
0095	Gate Msr Test Maximum Box1 - Length	Float	5	2			
0096	Gate Msr Test Average Box1 - Length	Float	5	2			
0097	Gate Msr Test Minimum Box1 - Width	Float	5	2			
0098	Gate Msr Test Maximum Box1 - Width	Float	5	2			
0099	Gate Msr Test Average Box1 - Width	Float	5	2			
0100	Gate Msr Test Minimum Box1 - Height	Float	5	2			
0101	Gate Msr Test Maximum Box1 - Height	Float	5	2			
0102	Gate Msr Test Average Box1 - Height	Float	5	2			

0103	Gate Msr Test Minimum Box2 - Length	Float	5	2			
0104	Gate Msr Test Maximum Box2 - Length	Float	5	2			
0105	Gate Msr Test Average Box2 - Length	Float	5	2			
0106	Gate Msr Test Minimum Box2 - Width	Float	5	2			
0107	Gate Msr Test Maximum Box2 - Width	Float	5	2			
0108	Gate Msr Test Average Box2 - Width	Float	5	2			
0109	Gate Msr Test Minimum Box2 - Height	Float	5	2			
0110	Gate Msr Test Maximum Box2 - Height	Float	5	2			
0111	Gate Msr Test Average Box2 - Height	Float	5	2			
0112	Gate Msr Test Minimum Box3 - Length	Float	5	2			
0113	Gate Msr Test Maximum Box3 - Length	Float	5	2			
0114	Gate Msr Test Average Box3 - Length	Float	5	2			
0115	Gate Msr Test Minimum Box3 - Width	Float	5	2			
0116	Gate Msr Test Maximum Box3 - Width	Float	5	2			
0117	Gate Msr Test Average Box3 - Width	Float	5	2			
0118	Gate Msr Test Minimum Box3 - Height	Float	5	2			
0119	Gate Msr Test Maximum Box3 - Height	Float	5	2			

Read/Write Value Table Definition

Number	Variable Name	Type	Total Length	Mantissa Length	100-T	110-T	150-T
0120	Gate Msr Test Average Box3 - Height	Float	5	2			
0121	Gate Msr Test Minimum Box4 - Length	Float	5	2			

0122	Gate Msr Test Maximum Box4 - Length	Float	5	2			
0123	Gate Msr Test Average Box4 - Length	Float	5	2			
0124	Gate Msr Test Minimum Box4 - Width	Float	5	2			
0125	Gate Msr Test Maximum Box4 - Width	Float	5	2			
0126	Gate Msr Test Average Box4 - Width	Float	5	2			
0127	Gate Msr Test Minimum Box4 - Height	Float	5	2			
0128	Gate Msr Test Maximum Box4 - Height	Float	5	2			
0129	Gate Msr Test Average Box4 - Height	Float	5	2			
0130	Gate Msr Test Minimum Box5 - Length	Float	5	2			
0131	Gate Msr Test Maximum Box5 - Length	Float	5	2			
0132	Gate Msr Test Average Box5 - Length	Float	5	2			
0133	Gate Msr Test Minimum Box5 - Width	Float	5	2			
0134	Gate Msr Test Maximum Box5 - Width	Float	5	2			
0135	Gate Msr Test Average Box5 - Width	Float	5	2			
0136	Gate Msr Test Minimum Box5 - Height	Float	5	2			
0137	Gate Msr Test Maximum Box5 - Height	Float	5	2			
0138	Gate Msr Test Average Box5 - Height	Float	5	2			
0139	Firmware Version - Length1 sensor	Float	4	2	x	x	x
0140	Firmware Version - Width sensor	Float	4	2	x	x	x
0141	Firmware Version - Height sensor	Float	4	2	x	x	x
0142	Gate Filter Width 00	HEX	8	0			
0143	Gate Filter Width 01	HEX	8	0			
0144	Gate Filter Width 02	HEX	8	0			
0145	Gate Filter Width 03	HEX	8	0			

0146	Gate Filter Width 04	HEX	8	0			
0147	Gate Filter Width 05	HEX	8	0			
0148	Gate Filter Width 06	HEX	8	0			
0149	Gate Filter Width 07	HEX	8	0			
0150	Gate Filter Width 08	HEX	8	0			
0151	Gate Filter Width 09	HEX	8	0			
0152	Gate Filter Width 10	HEX	8	0			
0153	Gate Filter Width 11	HEX	8	0			
0154	Gate Filter Width 12	HEX	8	0			
0155	Gate Filter Width 13	HEX	8	0			
0156	Gate Filter Width 14	HEX	8	0			
0157	Gate Filter Width 15	HEX	8	0			
0158	Gate Filter Width 16	HEX	8	0			
0159	Gate Filter Width 17	HEX	8	0			

Read/Write Value Table Definition

Number	Variable Name	Type	Total Length	Mantissa Length	100-T	110-T	150-T
0160	Gate Filter Width 18	HEX	8	0			
0161	Gate Filter Width 19	HEX	8	0			
0162	Gate Filter Height 00	HEX	8	0			
0163	Gate Filter Height 01	HEX	8	0			
0164	Gate Filter Height 02	HEX	8	0			
0165	Gate Filter Height 03	HEX	8	0			
0166	Gate Filter Height 04	HEX	8	0			
0167	Gate Filter Height 05	HEX	8	0			
0168	Gate Filter Height 06	HEX	8	0			
0169	Gate Filter Height 07	HEX	8	0			
0170	Gate Filter Height 08	HEX	8	0			
0171	Gate Filter Height 09	HEX	8	0			
0172	MAC Address	HEX	12	0	x	x	x
0173	Location ID	String	6	0	x	x	x
0174	Ethernet IP Address	String	15	0	x	x	x
0175	Ethernet Subnet Address	String	15	0	x	x	x
0176	Ethernet Gateway Address	String	15	0	x	x	x
0177	Scale Increment - Metric	Unsigned Int	1	0	x	x	x
0178	Scale Increment - English	Unsigned Int	1	0	x	x	x
0179	Scale Decimal point - Metric	Unsigned Int	1	0	x	x	x

0180	Scale Decimal point - English	Unsigned Int	1	0	x	x	x
0181	Dimensional Factor - International - LB/IN	Unsigned Int	4	0	x	x	x
0182	Dimensional Factor - International - KG/IN	Unsigned Int	4	0	x	x	x
0183	Dimensional Factor - International - LB/CM	Unsigned Int	4	0	x	x	x
0184	Dimensional Factor - International - KG/CM	Unsigned Int	4	0	x	x	x
0185	Dimensional Factor - Domestic - LB/IN	Unsigned Int	4	0	x	x	x
0186	Dimensional Factor - Domestic - KG/IN	Unsigned Int	4	0	x	x	x
0187	Dimensional Factor - Domestic - LB/CM	Unsigned Int	4	0	x	x	x
0188	Dimensional Factor - Domestic - KG/CM	Unsigned Int	4	0	x	x	x
0189	Gate Width Sensitivity - Board 1A	Unsigned Int	3	0			
0190	Gate Width Sensitivity - Board 1B	Unsigned Int	3	0			
0191	Gate Width Sensitivity - Board 2A	Unsigned Int	3	0			
0192	Gate Width Sensitivity - Board 2B	Unsigned Int	3	0			
0193	Gate Height Sensitivity - Board 1A	Unsigned Int	3	0			
0194	Gate Height Sensitivity - Board 1A	Unsigned Int	3	0			
0195	Gate Width Threshold - Board 1A	Unsigned Int	3	0			
0196	Gate Width Threshold - Board 1B	Unsigned Int	3	0			
0197	Gate Width Threshold - Board 2A	Unsigned Int	3	0			
0198	Gate Width Threshold - Board 2B	Unsigned Int	3	0			
0199	Gate Height Threshold - Board 1A	Unsigned Int	3	0			

Read/Write Value Table Definition

Number	Variable Name	Type	Total Length	Mantissa Length	100-T	110-T	150-T
0200	Gate Height Threshold - Board 1A	Unsigned Int	3	0			
0201	Tachometer Divisor	Unsigned Int	1	0			
0202	Tachometer Range	Unsigned Int	4	0			
0203	Gate Crossover	Unsigned Int	4	0			
0204	Display Dimensional Weight	Unsigned Int	1	0	x	x	x
0205	Gate Cutoff	Unsigned Int	4	0			
0206	Password	Unsigned Int	4	0	x	x	x
0207	Com1 - Baud	Unsigned Int	6	0	x	x	x
0208	Com1 - Parity	Unsigned Int	1	0	x	x	x
0209	Com1- Data bits	Unsigned Int	1	0	x	x	x
0210	Com1-Stop bits	Unsigned Int	1	0	x	x	x
0211	Ethernet Socket Port	Unsigned Int	5	0	x	x	x
0212	Gate Width Calibration Offset	Unsigned Int	2	0			
0213	Serial Number	Unsigned Int	8	0	x	x	x
0214	Firmware Build Number - Main Controller	Unsigned Int	2	0	x	x	x
0215	Gate Width Actual Sensitivity - Board 1A	Unsigned Int	3	0			
0216	Gate Width Actual Sensitivity - Board 1B	Unsigned Int	3	0			
0217	Gate Width Actual Sensitivity - Board 2A	Unsigned Int	3	0			
0218	Gate Width Actual Sensitivity - Board 2B	Unsigned Int	3	0			
0219	Gate Height Actual Sensitivity - Board 1A	Unsigned Int	3	0			
0220	Gate Height Actual Sensitivity - Board 1A	Unsigned Int	3	0			

0221	Gate Width Actual Threshold - Board 1A	Unsigned Int	3	0			
0222	Gate Width Actual Threshold - Board 1B	Unsigned Int	3	0			
0223	Gate Width Actual Threshold - Board 2A	Unsigned Int	3	0			
0224	Gate Width Actual Threshold - Board 2B	Unsigned Int	3	0			
0225	Gate Height Actual Threshold - Board 1A	Unsigned Int	3	0			
0226	Gate Height Actual Threshold - Board 1A	Unsigned Int	3	0			
0227	Scale Msr Test Count 0.00	Unsigned Int	5	0	x	x	x
0228	Scale Msr Test Count 25.00 - Center	Unsigned Int	5	0	x	x	x
0229	Scale Msr Test Count 50.00 - Center	Unsigned Int	5	0	x	x	x
0230	Scale Msr Test Count 25.00 - Left	Unsigned Int	5	0	x	x	x
0231	Scale Msr Test Count 25.00 - Back	Unsigned Int	5	0	x	x	x
0232	Scale Msr Test Count 25.00 - Right	Unsigned Int	5	0	x	x	x
0233	Scale Msr Test Count 25.00 - Front	Unsigned Int	5	0	x	x	x
0234	Sensor Msr Test Count 0.00 - Length1	Unsigned Int	5	0	x	x	x
0235	Sensor Msr Test Count 12.00 - Length1	Unsigned Int	5	0	x	x	x
0236	Sensor Msr Test Count 24.00 - Length1	Unsigned Int	5	0	x	x	x
0237	Sensor Msr Test Count 0.00 - Width	Unsigned Int	5	0	x	x	x
0238	Sensor Msr Test Count 12.00 - Width	Unsigned Int	5	0	x	x	x
0239	Sensor Msr Test Count 24.00 - Width	Unsigned Int	5	0	x	x	x

Read/Write Value Table Definition

Number	Variable Name	Type	Total Length	Mantissa Length	100-T	110-T	150-T

0240	Sensor Msr Test Count 0.00 - Height	Unsigned Int	5	0	x	x	x
0241	Sensor Msr Test Count 12.00 - Height	Unsigned Int	5	0	x	x	x
0242	Sensor Msr Test Count 24.00 - Height	Unsigned Int	5	0	x	x	x
0243	Sensor Msr Test Count 36.00 - Height	Unsigned Int	5	0	x	x	x
0244	Gate Test ON Sample Total	Unsigned Int	7	0			
0245	Gate Test ON Flicker Total - W1	Unsigned Int	7	0			
0246	Gate Test ON Pixel ID - W1	Unsigned Int	3	0			
0247	Gate Test ON Flicker Total - W2	Unsigned Int	7	0			
0248	Gate Test ON Pixel ID - W2	Unsigned Int	3	0			
0249	Gate Test ON Flicker Total - H1	Unsigned Int	7	0			
0250	Gate Test ON Pixel ID - H1	Unsigned Int	3	0			
0251	Gate Test OFF Sample Total	Unsigned Int	7	0			
0252	Gate Test OFF Flicker Total - W1	Unsigned Int	7	0			
0253	Gate Test OFF Pixel ID - W1	Unsigned Int	3	0			
0254	Gate Test OFF Flicker Total - W2	Unsigned Int	7	0			
0255	Gate Test OFF Pixel ID - W2	Unsigned Int	3	0			
0256	Gate Test OFF Flicker Total - H1	Unsigned Int	7	0			
0257	Gate Test OFF Pixel ID - H1	Unsigned Int	3	0			
0258	Gate Msr Test Total Box1	Unsigned Int	3	0			
0259	Gate Msr Test Total Box2	Unsigned Int	3	0			
0260	Gate Msr Test Total Box3	Unsigned Int	3	0			
0261	Gate Msr Test Total Box4	Unsigned Int	3	0			

0262	Gate Msr Test Total Box5	Unsigned Int	3	0			
0263	Gate Emitter ON	Boolean	1	0			
0264	Smallest Box Mode	Boolean	1	0			
0265	CubiScan 100 Emulation	Boolean	1	0			
0266	Compression Application Enabled	Boolean	1	0			
0267	Compression Height Tare	Unsigned Int	3	0			
0268	Compression ON	Boolean	1	0			
0269	Gate Strobe Fast ON	Boolean	1	0			
0270	Image Type	Unsigned Int	1	0			
0271	Filter On	Unsigned Int	1	0			
0272	Sensor Msr Test Invalids 0.00 - Length1	Unsigned Int	5	0	x	x	x
0273	Sensor Msr Test Invalids 12.00 - Length1	Unsigned Int	5	0	x	x	x
0274	Sensor Msr Test Invalids 24.00 - Length1	Unsigned Int	5	0	x	x	x
0275	Sensor Msr Test Invalids 0.00 - Width	Unsigned Int	5	0	x	x	x
0276	Sensor Msr Test Invalids 12.00 - Width	Unsigned Int	5	0	x	x	x
0277	Sensor Msr Test Invalids 24.00 - Width	Unsigned Int	5	0	x	x	x
0278	Sensor Msr Test Invalids 0.00 - Height	Unsigned Int	5	0	x	x	x
0279	Sensor Msr Test Invalids 12.00 - Height	Unsigned Int	5	0	x	x	x

Read/Write Value Table Definition

Number	Variable Name	Type	Total Length	Mantissa Length	100-T	110-T	150-T
0280	Sensor Msr Test Invalids 24.00 - Height	Unsigned Int	5	0	x	x	x
0281	Sensor Msr Test Invalids 36.00 - Height	Unsigned Int	5	0	x	x	x
0282	Gate Limit Right - CubiScan 25	Unsigned Int	4	0			
0283	Gate Limt Left - CubiScan 25	Unsigned Int	4	0			

0284	Gate Filter Type - All, Etc.	Unsigned Int	1	0			
0285	Sensor Length1 Overall Gain	Unsigned Int	5	0	x	x	x
0286	Sensor Width Overall Gain	Unsigned Int	5	0	x	x	x
0287	Sensor Height Overall Gain	Unsigned Int	5	0	x	x	x
0288	Sensor Length2 DBW	Float	4	1		x	x
0289	Sensor Length2 CPI	Float	4	0		x	x
0290	Sensor Length2 Blank	Float	4	2		x	x
0291	Sensor Length2 Gain	Float	4	1		x	x
0292	Sensor Length2 Pulse	Float	2	0		x	x
0293	Sensor Length2 Delay	Float	3	0		x	x
0294	Sensor Length2 Overall Gain	Unsigned Int	5	0		x	x
0295	Barcode Enable	Unsigned Int	1	0	x	x	x
0296	Printer Enable	Unsigned Int	1	0	x	x	x
0297	Expanded Protocol Enable	Unsigned Int	1	0	x	x	x
0298	Date - year	Unsigned Int	4	0	x	x	x
0299	Date - month	Unsigned Int	2	0	x	x	x
0300	Date - day	Unsigned Int	2	0	x	x	x
0301	Time - hour	Unsigned Int	2	0	x	x	x
0302	Time - min	Unsigned Int	2	0	x	x	x
0303	Time - sec	Unsigned Int	2	0	x	x	x
0304	Firmware Version - Length2 sensor	Float	4	2		x	x
0305	Sensor Pulse Adjust Enable	Boolean	1	0	x	x	x
0306	Gate Filter Height 10	HEX	8	0			
0307	Gate Filter Height 11	HEX	8	0			
0308	Gate Filter Height 12	HEX	8	0			
0309	Gate Filter Height 13	HEX	8	0			
0310	Gate Filter Height 14	HEX	8	0			
0311	Gate Filter Height 15	HEX	8	0			
0312	Gate Filter Height 16	HEX	8	0			

0313	Gate Filter Height 17	HEX	8	0			
0314	Gate Filter Height 18	HEX	8	0			
0315	Gate Filter Height 19	HEX	8	0			

Appendix B
Parts List

Following is a list of parts that can be purchased for the CubiScan 100-T as spare parts or if replacement is necessary.

Part No.	Description	Quantity/Unit
10083	AC Power Cord	1
10273	Calibration Cube, 12" x 5" x 3.6", Black	1
11279	Plate, Scale Top (Base cover)	1
11280	Plate, Sound Deadening (White pad)	1
14005	Main Controller Assembly	1
14062	Power Supply 12VDC, 3.75A	1
14540	USB Cable	1