CubiScan® 150-T Manifesting Table

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 150-T Operations and Technical Manual

CAUTION

The CubiScan 150-T should only be serviced by qualified personnel.
Observe precautions for handling electrostatic sensitive devices when setting up or operating the CubiScan 150-T.

WARNING

Disconnect all power to the CubiScan 150-T before servicing or making any connections.

The CubiScan 150-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

Statement of Warranty. Quantronix, Inc.'s, warranty obligations are limited to the terms set forth below: Quantronix (hereinafter referred to as the "Seller") warrants that its new product is in accordance with Seller's published specifications (or those agreed upon with Buyer in writing) at the time of sale or lease and that it is free from defects in materials and workmanship under normal use for a period of one (1) year from the date of sale or the commencement date under a written equipment lease or rental agreement (the "Warranty Period"). If a hardware defect arises and a valid claim is received within the Warranty Period, at its option, Seller will either (i) repair the hardware defect at no charge, using new or refurbished replacement parts, or (ii) exchange the product with a product that is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product, or (iii) refund the purchase price of the product. For purposes of this warranty agreement, "Buyer" shall mean and refer to (i) the party which originally – whether from Seller directly, or from a distributor, agent or reseller authorized by Seller – purchases, or leases under a written equipment lease or rental agreement, the Seller's product which is the subject of this warranty, or (ii) any subsequent purchaser or transferee that acquires valid title to the equipment within the Warranty Period.

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 150-T Manifesting Table is designed for today's dimension and weight-based freight manifesting applications. Designed for use in distribution, direct fulfillment, and logistics environments, the CubiScan 150-T combines flexibility, accuracy, and durability into an attractive and functional package.

The CubiScan 150-T is robust, with a maximum measurement range of 48 x 39 x 40 inches (120 x 100 x 100 cm) and a net weight capacity of 150 pounds (70 kg).

The CubiScan 150-T is mounted on locking casters so it can be operated in a fixed position or quickly moved and redeployed when necessary. Accessories include label printers, laptop interface workstations, storage shelves, and several barcode scanning solution options.

Each unit has five ports. It uses 110 VAC, 60 Hz power (auto-switchable to 220-240 VAC, 50 Hz). Optional on-board data storage and real-time clock allow the CubiScan 150-T to be used as a stand-alone dimensioning and manifesting station.

With a touchscreen interface and Quantronix's proprietary software (Qbit™), the CubiScan 150-T is capable of buffering thousands of data records, can interface to barcode scanning and label printing devices, and can communicate directly (in batch or real-time mode) with mainframe or PC hosts.

The CubiScan 150-T utilizes advanced sensing technology that is safe for both operators and freight. A one-year factory warranty on parts and labor is included; post-warranty maintenance agreements and extended warranty contracts are also available.

The CubiScan 150-T was calibrated at the factory, but may require recalibration due to handling during shipping. Calibration instructions for the CubiScan 150-T are provided in Chapter 5 "Calibration."

Figure 1
CubiScan 150-T

Specifications

Electrical

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

Measuring Capacities

Minimum Package Dimensions:	3 x 2.4 x 2.4 in (8 x 6 x 6 cm)
Maximum Package Dimensions:	48 x 39 x 40 in (120 x 100 x 100 cm)
Dimension Increment:	0.1 in (0.2 cm)

Maximum Package Weight: 150 lb (70 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: 64 x 42 in (163 x 107 cm)

Total Footprint Required: 65 x 52 in (165 x 132 cm)

Height: Adjustable
87 inches maximum to the top of the overhead arm

Table Height: Adjustable
28 to 38 inches including caster adjustment

Shipping Weight: 780 lbs (354 kg)

Net Weight: 430 lbs (195 kg)

Shipping Dimensions: 75 x 59 x 42 in (190 x 150 x 105 cm)

User Interface

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

Quantronix' QBIT™ software can be used to interface with the CubiScan 150-T.

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

Outputs:
Serial (2), Ethernet (1), USB-A (1), USB-B (1)

Chapter 2
Setup

This chapter provides instructions for assembling and setting up the CubiScan 150-T. Perform the steps to set up the CubiScan 150-T in the following order:

Unpacking

While unpacking, examine the container and the CubiScan 150-T carefully for any damage. If, after unpacking, you discover any damage to the CubiScan 150-T, contact the carrier immediately.

The CubiScan is shipped in a single container with all components packed in the crate. If you ordered optional accessories, verify that you received them.

There is a box inside the crate that contains the power cable, USB cable, tools, software disc, and calibration cube.

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

CubiScan 150-T
Overhead arm assembly
AC power cord
USB cable
Calibration cube
Qbit software CD (optional)
Operations and Technical Manual (in PDF form on the CD)

Tools Included

Tools packed with the CubiScan 150-T include the following:

1/8" Allen wrench
5/64" Allen wrench
7/64" Allen wrench
9/16" Open-end wrench

Tools You Will Need

Other tools you may need to set up the CubiScan 150-T include the following:

- Pallet jack and/or forklift
- Official test weight in the range of 50-150 pounds (25-70 kg)

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

Placement

The CubiScan 150-T is equipped with casters, which allow it to be moved short distances or repositioned. However, because the CubiScan needs to be level for proper operation, you should place it in or near its permanent location prior to assembly and leveling.

The CubiScan 150-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, as this will cause interference with the scale.
- Protect the CubiScan from static electricity, especially the touchscreen.

- Place the CubiScan on a flat, sturdy surface as free from vibration as possible. Excess vibration can reduce the accuracy of the CubiScan 150-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 being 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 150-T. The CubiScan 150-T's optional laptop tray arm offers an optimum location for a laptop ("Installing the Laptop Tray Arm" on page 17).

Adjusting the Platform Height

The CubiScan 150-T platform is initially set at the lowest possible height. Slotted adjustment holes in the frame legs provide virtually infinite adjustment within the height range. Because the main CubiScan assembly is heavy (430 lb), you need to use a forklift (recommended) or pallet jack to support and lift the main assembly to adjust the height of the platform. If help is available, one or two people can lift one end of the CubiScan by its handle while you adjust the legs. Then repeat this operation on the other end.

CAUTION

Disconnect all power to the CubiScan 150-T before servicing or making any connections.

Figure 2
Lift the CubiScan Only by the Handle

NOTE ☞ *Before you start, determine the height at which you want the CubiScan 150-T platform so that you can position it properly with the forklift or pallet jack.*

Using a Forklift

Take the following steps when using a forklift to support and lift the main assembly of the CubiScan 150-T to adjust the platform height.

You may want to place plywood or cardboard on the forks of the forklift so the forks do not come into direct contact with the painted surface of the frame.

1. Adjust the forks so they can be inserted under the main horizontal frame without touching any other CubiScan components (see Figure 3).

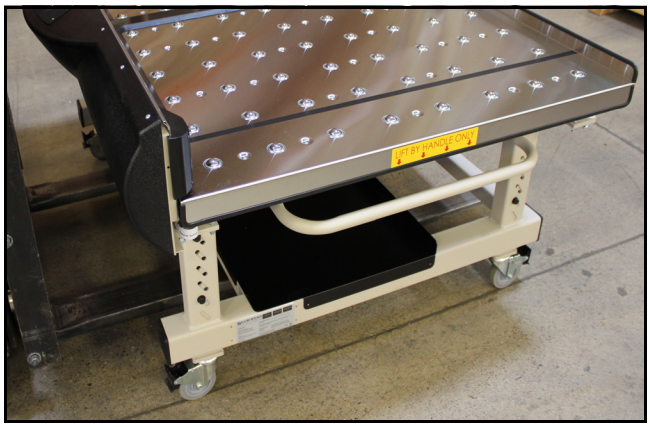

Figure 3
Position of Forklift Forks Under Frame

2. Approach the CubiScan 150-T with the forklift until the forks are in position to lift the frame.

3. Locate the retaining bolts and slotted adjustment holes in the frame legs (see Figure 4).

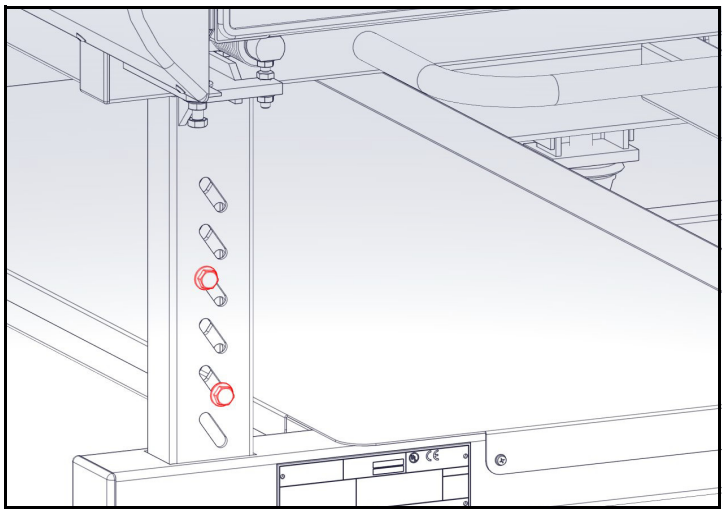

Figure 4
Platform Retaining Bolts and Adjustment Holes

4. Apply gentle lift with the forklift until enough pressure is removed from the retaining bolts so that they can be removed.

WARNING

Do not climb under the CubiScan 150-T during height adjustment or while the forklift is supporting the CubiScan.

5. Remove the retaining bolts on both sides of the frame with a 9/16" open-end wrench or socket.

NOTE ☞ *It is recommended that you have one person positioned on each side of the CubiScan platform to remove and replace the retaining bolts and help align the adjustment holes.*

6. With the retaining bolts removed, raise or lower the frame slowly until the adjustment holes in the leg and the frame are aligned at the desired height.

7. When the desired height is achieved, push the retaining bolts through the slotted holes in the frame and leg. There should always be at least two openings that the bolts will pass through. If possible, place the bolts with at least one slot between them as shown in Figure 4.

8. Thread the nuts on the bolts and tighten them.

9. Lower the frame, and back the forklift away from the CubiScan.

Using a Pallet Jack

Take the following steps when using a pallet jack to support and lift the main assembly of the CubiScan to adjust the platform height.

1. Using pallets and/or dimensional lumber, construct a flat and stable platform with which to lift the CubiScan frame. The platform must be nearly as high as the bottom of the CubiScan main frame.

2. With the pallets and lumber in place, approach the CubiScan from the front with the pallet jack, and position the jack so it is under the CubiScan's main horizontal frame.

3. Make certain that the wooden platform is even and stable.

4. Move the pallet jack into place and lift it until the wooden platform comes into contact with the bottom of the CubiScan frame, but do not lift the CubiScan.

5. Locate the retaining bolts and slotted adjustment holes in the frame legs (see Figure 5).

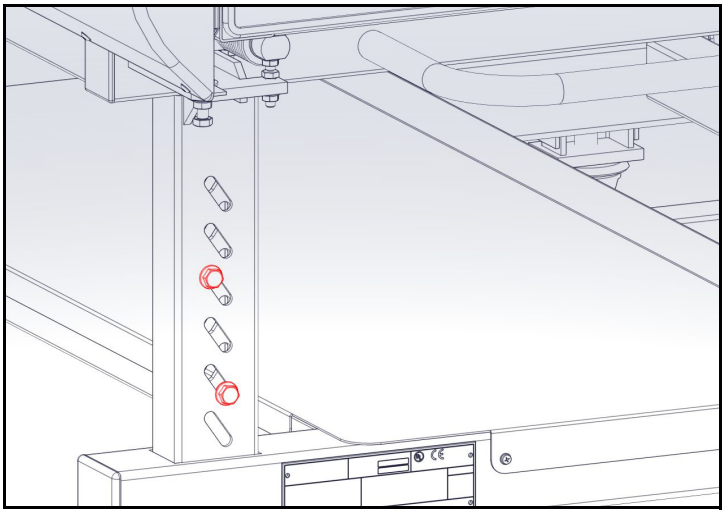

Figure 5
Platform Retaining Bolts and Adjustment Holes

6. Apply gentle lift with the pallet jack until enough pressure is removed from the eight retaining bolts so that they can be removed.

CAUTION

Do not climb under the CubiScan 150-T during height adjustment or while the forklift is supporting the CubiScan.

7. Remove the retaining bolts on both sides of the frame with a 9/16" open-end wrench or socket.

NOTE ☞ *It is recommended that you have one person positioned on each side of the CubiScan platform to remove the retaining bolts and help align the adjustment holes.*

8. With the retaining bolts removed, raise or lower the frame slowly until the adjustment holes in the leg and the frame are aligned at the desired height.

9. When the desired height is achieved, push the retaining bolts through the slotted holes in the frame and leg. There should always be at least two openings that the bolts will pass through. If possible, place the bolts with at least one slot between them as shown in Figure 5.

10. Thread the nuts on the bolts and tighten them.

11. Lower the pallet jack, and move it away from the CubiScan 150-T.

Installing the Overhead Arm

One person can attach the overhead arm assembly to the CubiScan 150-T base; however, you may want another person to help lift the arm into place.

The height sensor cable with a coupler on the end is routed from the height sensor and out a hole in the overhead arm assembly. The retaining bolts you will use to secure the arm are attached to the mounting plates at the back of the frame.

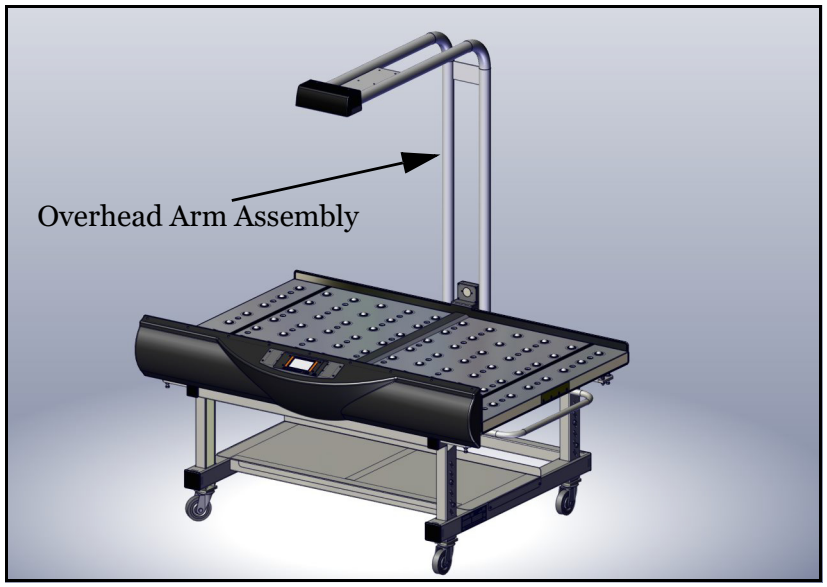

Figure 6
Overhead Arm Installed on the CubiScan 150-T

Do the following to attach the CubiScan 150-T's overhead arm.

1. Remove the retaining bolts from the mounting plates on the back of the base frame (finger tight only), and have them ready to insert into the appropriate holes when the arm is in place.

2. Lift the overhead arm into position at the back of the frame, and set the angled mounting plate on the bottom of the arm assembly on the frame,

aligning the holes in the arm mounting plates with the holes in the frame mounting plate, as shown in the following figures.

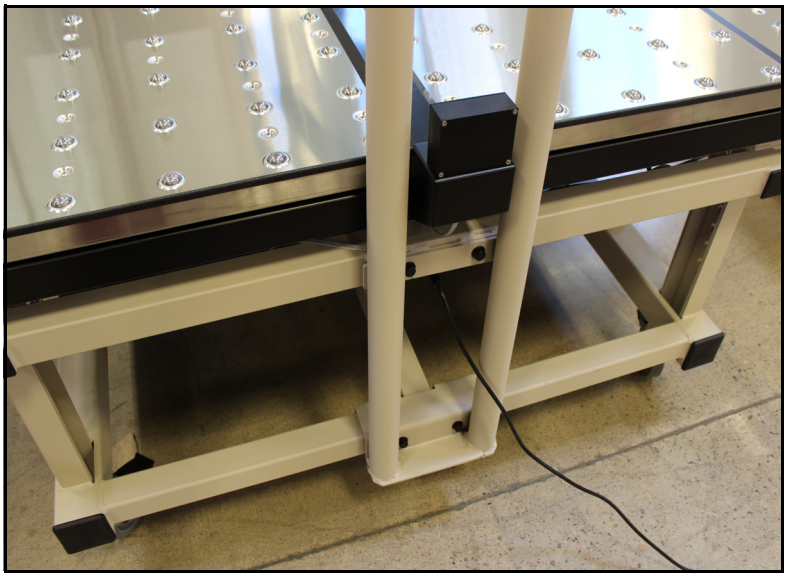

Figure 7
Attaching the Overhead Arm to the Base

3. Insert the retaining bolts through the mounting plate in the overhead arm assembly and into the matching holes in the plate on the base frame and tighten them. Make sure no cables are being pinched by the overhead arm when you are finished.

Connecting the Height Sensor Cables

After installing the overhead arm, connect the height sensor cables as explained in the following steps.

CAUTION

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

1. Locate the two height sensor cables on the CubiScan. A cable labeled "Height" with a coupler is routed from the height sensor down through

one of the tubes of the overhead arm assembly, and extends from a hole (see Figure 8). Make sure this cable is not pinched or constricted.

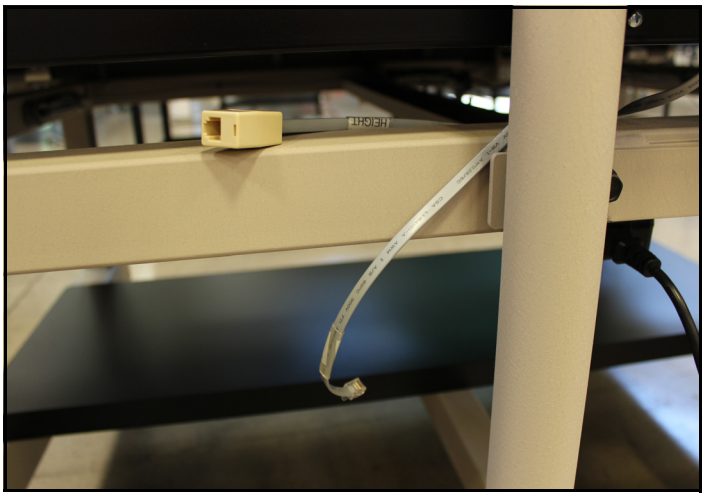

Figure 8
Height Sensor Cables

The other cable labeled “Height” has a phone-style jack on one end and is located under the CubiScan scale platform.

2. Plug the phone-style jack into the coupler on the height sensor cable, and verify that the connection is secure.

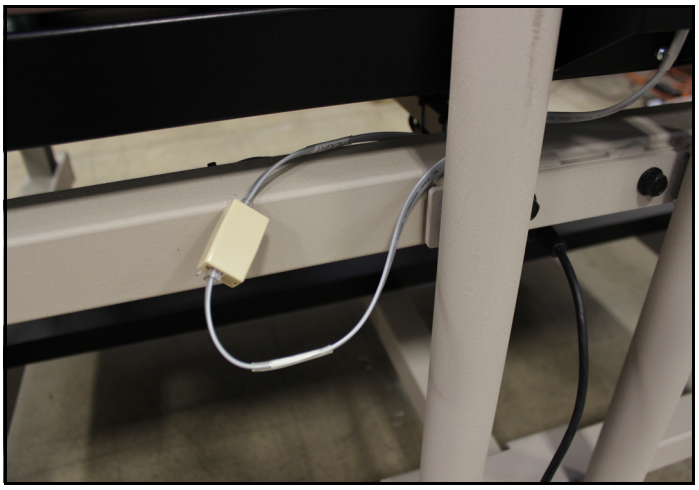

Figure 9
Height Sensor Cable Connection

Leveling the CubiScan 150-T

The CubiScan 150-T has casters that permit it to be moved.

NOTE ☞ *You can use the CubiScan 150-T as a mobile manifesting table by keeping the casters unlocked and movable. However; if the CubiScan 150-T is not level, accuracy may be diminished.*

Do the following to lock the casters and level the CubiScan 150-T.

1. To lock the casters in place so they will not roll, push down on the black toe lock on the back of each caster. You can use the toe of your shoe to push the lock down.

2. If the CubiScan is not level, adjust the height of each caster as necessary. Locate the bolt under the caster housing accessible from the front of the caster.

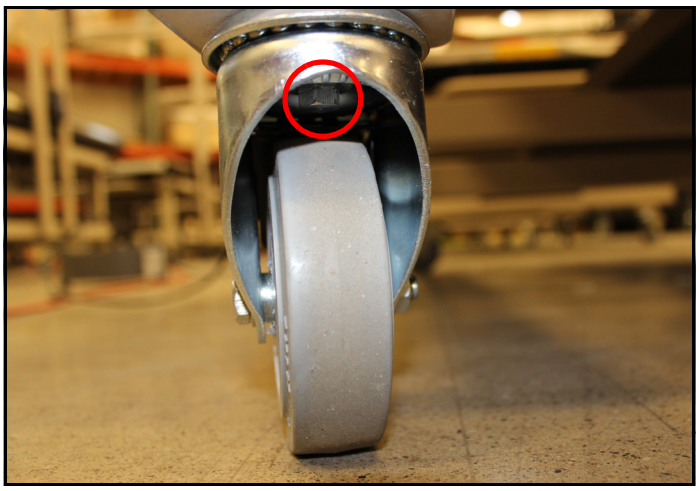

Figure 10
Caster Height Adjustment Bolt

You can use a 7/16" wrench to turn the adjustment bolts with the CubiScan on the floor, or you can take the weight off the casters using a pallet jack under the frame or by having someone lift the CubiScan by its handle, and turn the bolts by hand.

3. Turn a bolt clockwise to raise the CubiScan frame or counterclockwise to lower it.

4. After adjusting a caster, check the leveling bubble. The leveling bubble, shown below, is located on the CubiScan platform just to the left of the center (facing the front of the CubiScan).

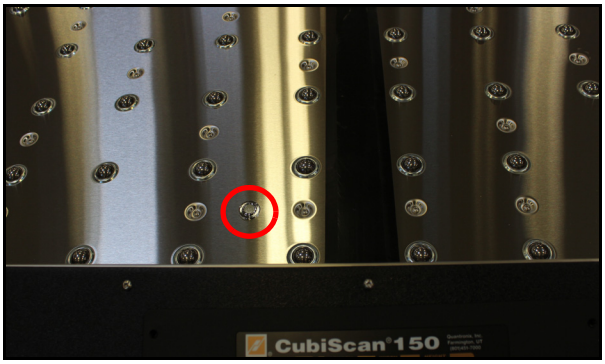

Figure 11
Leveling Bubble

5. The CubiScan is level when the bubble is centered in the middle circle of the level. You may need to raise or lower each caster a number of times to level the CubiScan.

6. When you are finished leveling the CubiScan, make certain that all four casters make solid contact with the floor. If the CubiScan does not sit flat, it may wobble or vibrate during measurement, which can cause errors.

Loosening/Tightening the Shipping Bolts

The shipping bolts protect the platform and load cells from being damaged during shipment. A shipping bolt is located on each corner of the platform

between the top and the frame and can be accessed from under the platform (see Figure 12).

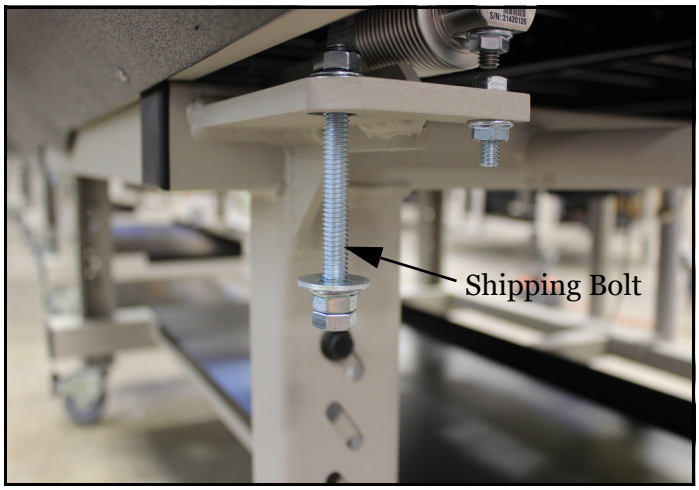

Figure 12
Shipping Bolts

Use a 9/16" open-end wrench (supplied) to loosen the top and bottom nut from each bolt, until it will not interfere with scale movement.

The nuts and bolts prevent the platform from moving and protect the load cells from damage during shipment. If you ship the CubiScan to another location, move it by forklift, or move it any distance in which rough handling may occur, tighten the shipping bolts before moving it.

WARNING

Do not overtighten the bottom nut, or allow the shipping bolt to put pressure on or lift the load cell. Pressure on the load cell while moving the CubiScan will damage the load cell.

Installing the Laptop Tray Arm

You can install the optional laptop tray arm to support a laptop. The laptop tray arm can be attached to the front or back of the CubiScan 150-T on either side.

Figure 13
CubiScan 150-T with Laptop Tray Arm Attached

The laptop tray arm attaches to the side of the CubiScan frame using the same slotted holes that are used to adjust the platform height (see "Adjusting the Platform Height" on page 6). Retaining bolts and nuts are provided with the laptop tray assembly.

Take the following steps to install the laptop tray.

1. Position the laptop arm frame against the side of the CubiScan frame to which you want it attached, and align the holes in the frame with the slotted holes in the CubiScan frame at the desired height.

2. Push the retaining bolts through the aligned holes in the laptop arm and CubiScan frame.

NOTE ☞ *If you want to position the laptop arm frame over holes in which retaining bolts have already been inserted, you need to lift the CubiScan by the handles or using a pallet jack (as described in adjusting the platform height on page 6) to remove the bolts, and then insert the new bolts through the laptop arm holes.*

3. Thread the nuts on the bolts and tighten them using a 9/16" open-end wrench or socket.

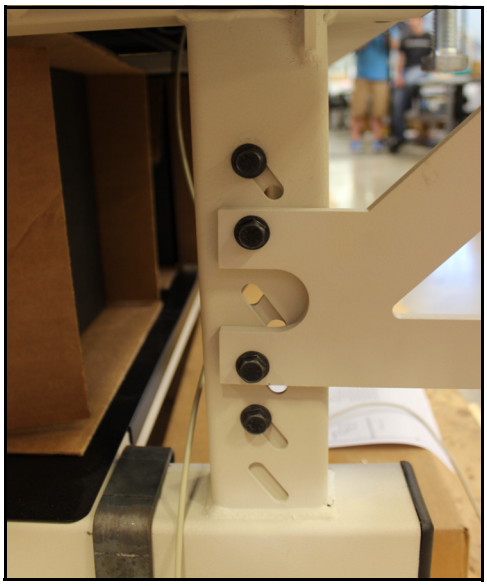

Figure 14
Attaching Laptop Arm Frame to CubiScan Frame

4. Secure the mount arm to the frame arm using the hardware provided and shown in the figure below.

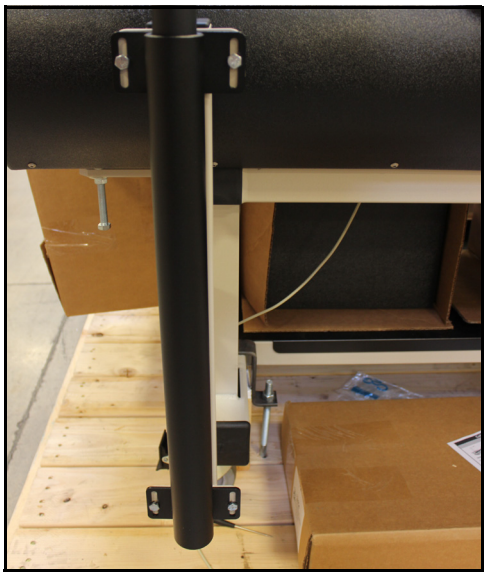

Figure 15
Attaching Mount Arm to Frame

5. Loosen the indicated handle until the swivel arm fits into the mount arm. Tighten the handle to secure the swivel arm in place.

Figure 16
Attaching Swivel Arm to Mount Arm

6. Attach the laptop tray to the swivel arm by loosening the indicated T-handle. Insert the tray and adjust it to the desired position. Make sure that this handle is tight before placing a laptop in the laptop tray.

Connecting Power

Take the following steps to connect power to the CubiScan. The connection box is located under the front left corner of the scale (see page 20). Note that the connectors point toward the back of the CubiScan 150-T. Take the following steps to connect power to the CubiScan.

1. Locate the connector box, which is located underneath the scale platform on the left side.

2. Locate the AC power cord (supplied), and connect it to the power connector on the connector box.

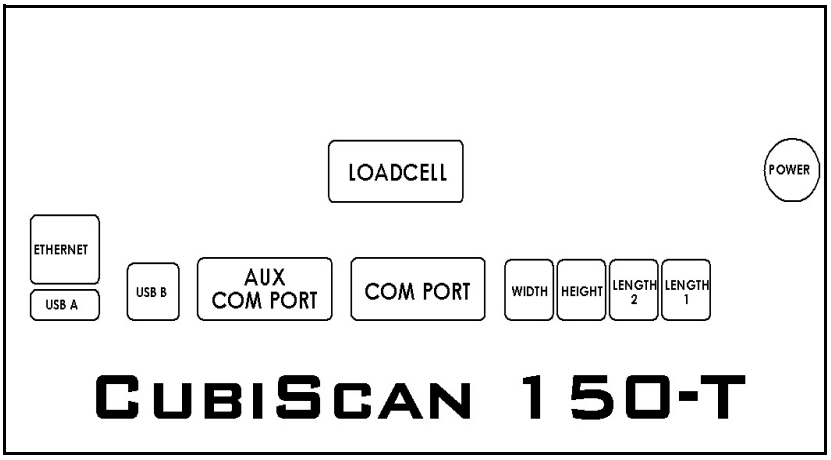

Figure 17
Connection Box

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

NOTE ☞ *A power strip with surge protection is recommended.*

Turning on the CubiScan

Specific procedures must be followed each time you turn on the CubiScan 150-T, as follows:

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

2. Turn on the CubiScan 150-T via the power strip (see "Connecting Power" on page 19).

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

3. Make sure the **->0<-** (zero) indicator on the touchscreen is lit. If not, the scale needs to be zeroed. To zero the scale, make sure that the platform is free of all objects, then press **[Zero]**.

Connecting to a Computer or Network

To operate the CubiScan 150-T, you can connect it to a computer or a network; the following connection options are listed below. All cables should be routed and tied to the frame so they will be out of the operator's way. Cables should not be attached to nor touch the black scale frame (platform), as this will cause errors in weight measurement.

- Connect it via a USB cable. Use Qbit software on the computer to run the CubiScan 150-T (recommended). See "USB Connection" below.
- Connect it to a host system via a standard 10-BaseT Ethernet TCP/IP port. See "Ethernet Connection" on page 22.
- Connect it to a PC using a serial RS-232 cable. See "Serial Connection" on page 23.

USB Connection

Complete the following steps to connect the CubiScan 150-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 via a USB connection are supplied.

1. Place the computer in its permanent location, generally close to the CubiScan. (Refer to "Placement" on page 5 for more information.)

2. Route the USB cable under the base so it cannot be crushed, bent, or pulled loose. Tie the cable up so it is out of the way, but does not interfere with the scale.

3. The CubiScan connection box is located to the left of the touchscreen, underneath the scale platform. Connect one end of the USB cable to the

USB-B connector on the back of the CubiScan controller, as shown below.

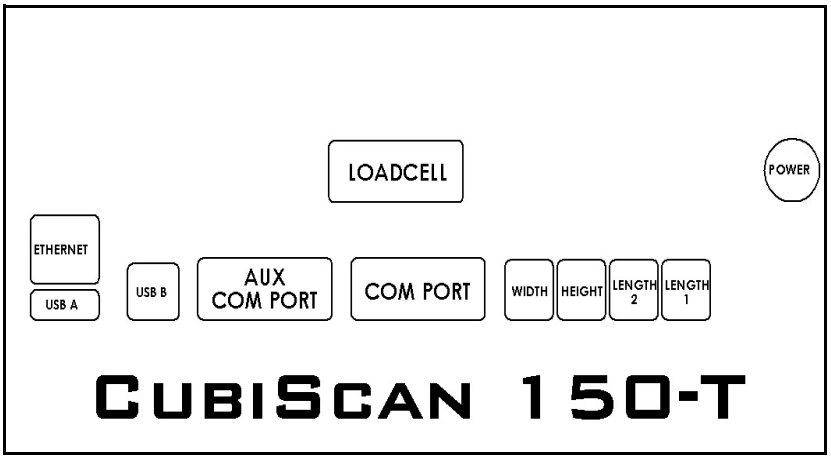

Figure 18
Connection Box

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 150-T should communicate with a computer.

Ethernet Connection

Complete the following steps to connect the CubiScan 150-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 5 for more information.)

2. Route the Ethernet cable under the base so it cannot be crushed, bent, or pulled loose. Tie the cable up so it is out of the way, but does not interfere with the scale.

3. The CubiScan controller is located to the left of the touchscreen, underneath the scale platform. 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.

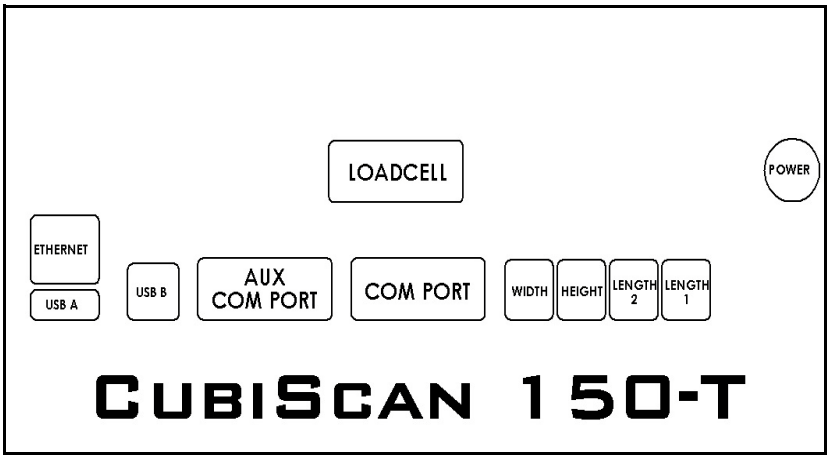

Figure 19
Connection Box

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 68.

Serial Connection

Complete the following steps to connect the CubiScan 150-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 5 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. Tie the cable up so it is out of the way, but does not interfere with the scale.

3. The CubiScan controller is located to the left of the touchscreen underneath the scale platform. Connect one end of the serial cable to

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

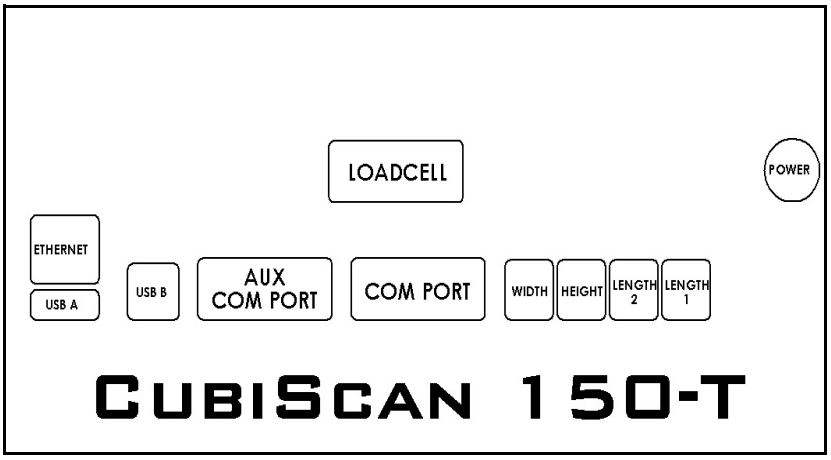

Figure 20
Back of Controller

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 67.

Connecting to a Barcode Scanner (Optional)

The CubiScan 150-T has an additional USB or serial 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 cable under the CubiScan base so it cannot be crushed, bent, or pulled loose.

2. The CubiSan connector box is located to the left of the touchscreen, underneath the scale platform. Connect the free end of the cable to the

preferred barcode scanner connector (USB or serial) on the back of the CubiScan connector box, as shown below.

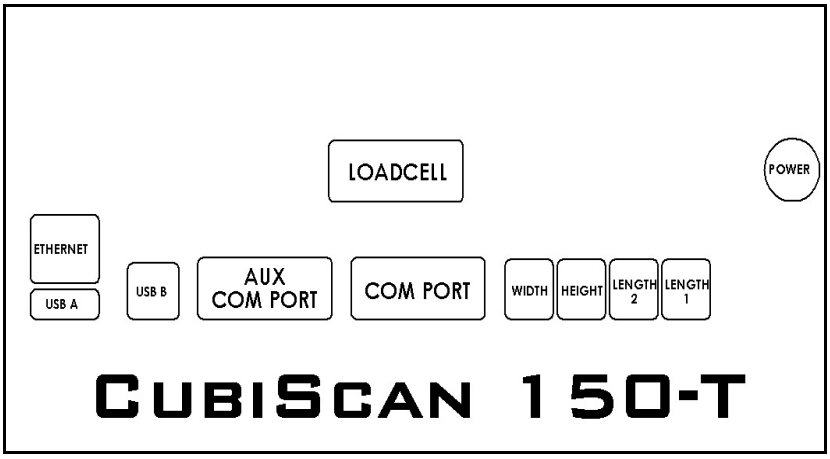

Figure 21
Back of Controller

3. Once the barcode scanner is connected to the CubiScan 150-T, you need to turn the barcode feature on. On the CubiScan 150-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 option to work properly.

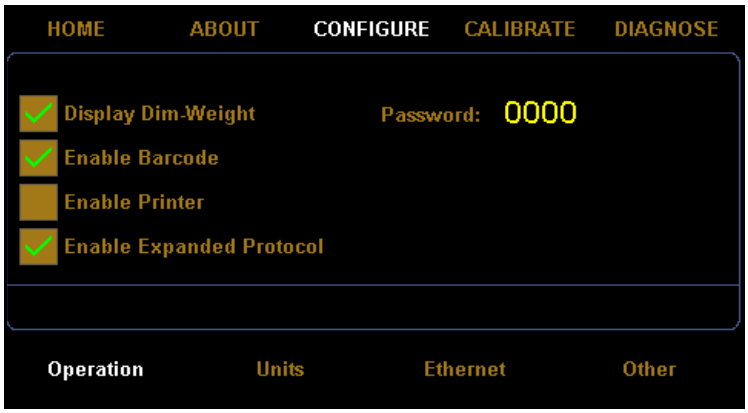

Figure 22
Barcode Enabled

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

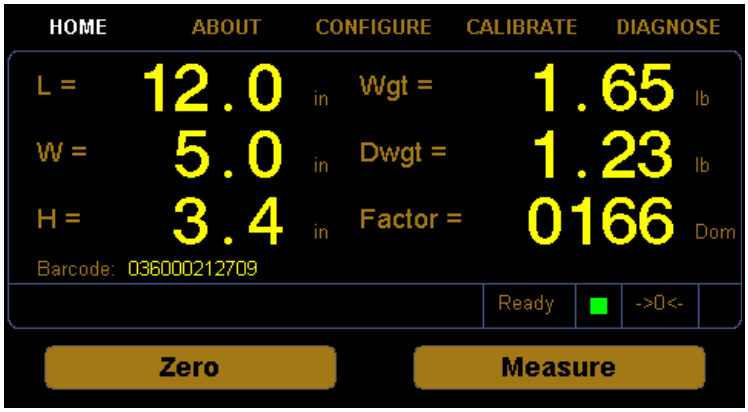

Figure 23
Home Screen Barcode Enabled

Installing Qbit (Optional)

A CD-ROM is available containing the Qbit software program, which can be used to operate the CubiScan 150-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 150-T for the first time, verify the following:

- Have the CubiScan 150-T and the computer (if applicable) been placed in the proper operating environment? (page 5)
- Has the platform height been adjusted? (page 6)
- Has the overhead arm been installed? (page 11)
- Have you connected the height sensor cables? (page 12)
- Has the CubiScan been leveled? (page 13)
- Have the shipping bolts been adjusted? (page 5)
- Has the base of the CubiScan been leveled? (page 5)

- Have you connected all necessary cables and devices you will be using with the CubiScan 150-T (e.g., computer, printer, barcode scanner, etc.)?
- Has the CubiScan 150-T been set up to communicate with a computer (if applicable)? (page 21)
- (Optional) Have you installed the laptop arm and tray assembly? (page 17)
- Have you connected power to the CubiScan 150-T? (page 19)
- (Optional) Has the barcode scanner been connected properly? (page 24)
- If you are using Qbit to operate the CubiScan 150-T, has the software been copied onto your computer's hard-disk drive? (Refer to the *Qbit User Guide* for information.)
- Does the CubiScan require recalibration? The CubiScan 150-T was calibrated at the factory, but *may* require recalibration due to handling during shipping. Refer to page 40 for information on calibrating the CubiScan 150-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 150-T.

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

You should verify that the CubiScan 150-T is weighing correctly at the start of each session. To perform a simple check of weight accuracy, measure something with a known weight (i.e., 25 or 50 lb test weight). If the weight shown is off by an unacceptable amount, recalibrate the scale (see Chapter 5 “Calibration” on page 40 for details).

CAUTION

While the CubiScan has overload protection, objects heavier than 150 lb (70 kg) should not be placed on the platform. Overloading the scale or shock loading (dropping a heavy object on the scale) can cause permanent zero shift, making the scale inoperable.

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 150-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 150-T" on page 31*).*

WARNING

Disconnect all power to the CubiScan 150-T before servicing or making any connections.

Cubing and Weighing Using Qbit

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 31*.

Cubing and Weighing Using the Touchscreen

All controls and displays for the CubiScan 150-T are located on the touchscreen at the front of the scale platform. If a computer is not connected, you can use the touchscreen to cube and weigh packages. Measurements and weight are displayed on the touchscreen. See Chapter 4 "Configuration" on page 33 for information on selecting units and other preferences.

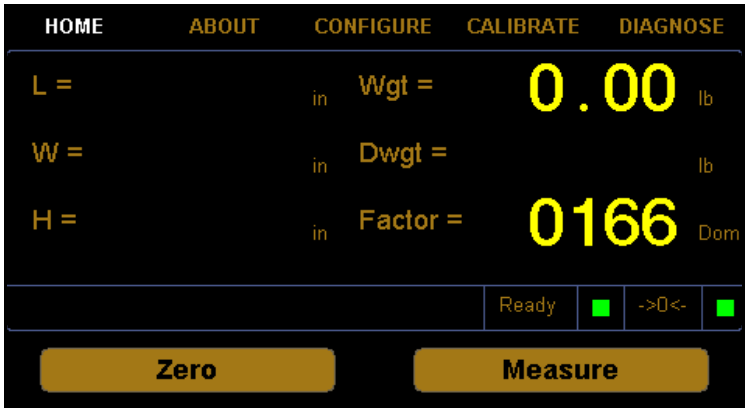

Figure 24
CubiScan 150-T Touchscreen

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. This option can be turned on or off. See "Operation" on page 33 for more information.

Factor= This displays the dimensional factor currently being used to calculate the dimensional weight.

Ready (indicator) This indicates that the CubiScan 150-T is ready for cubing and weighing.

->0<- (indicator) 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 150-T" on page 31.

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 against the front edge of the platform. The **->0<-** indicator light should go out.

   The package must be within the black lines on either side of the CubiScan 150-T, and it must extend at least one inch on each side from the center of the measuring side of the front panel (minimum package dimensions of 3 x 2.4 x 2.4 in (8 x 6 x 6 cm) for the sensors to properly register the dimensions.

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 150-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 150-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 150-T

Tap the **[Zero]** button on the touchscreen to "zero" the CubiScan 150-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 150-T to operate properly.The CubiScan 150-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 150-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 150-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 150-T. The options available on the configuration 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**.

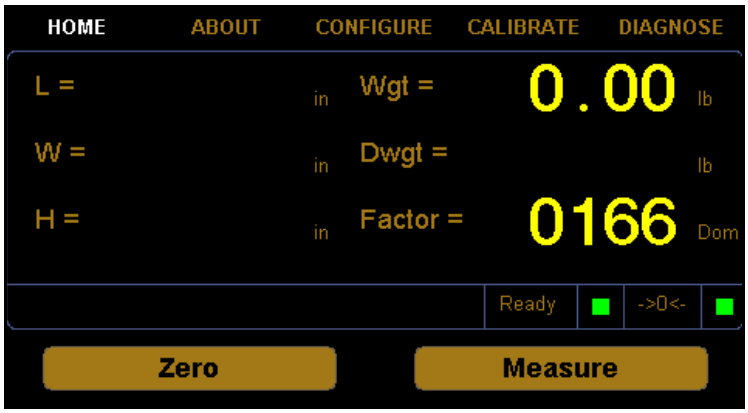

Figure 25
Home Screen

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

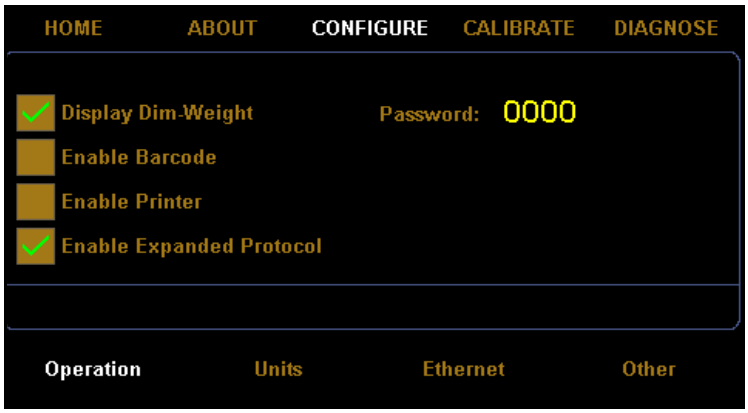

Figure 26
Configure Operation

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 150-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 150-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 150-T is backwards

compatible with the CubiScan 100. 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 150-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 150-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**.

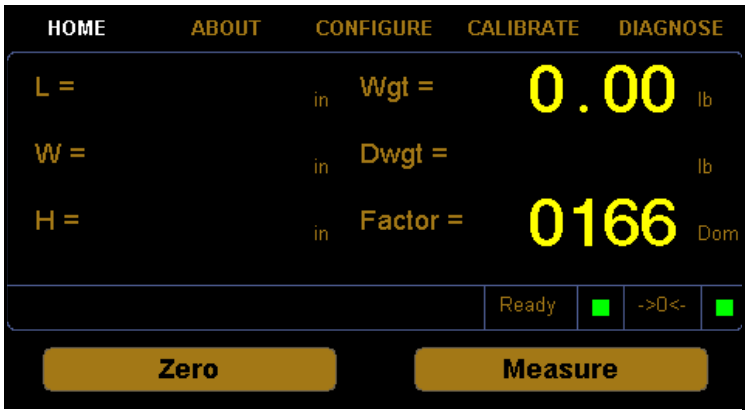

Figure 27
Home Screen

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

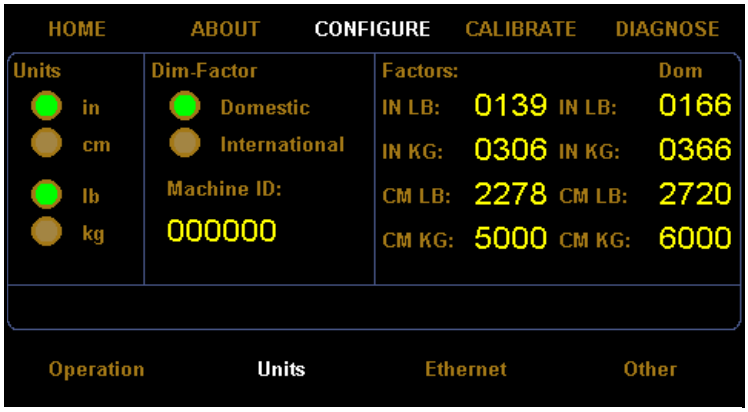

Figure 28
Configure Units

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 150-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**.

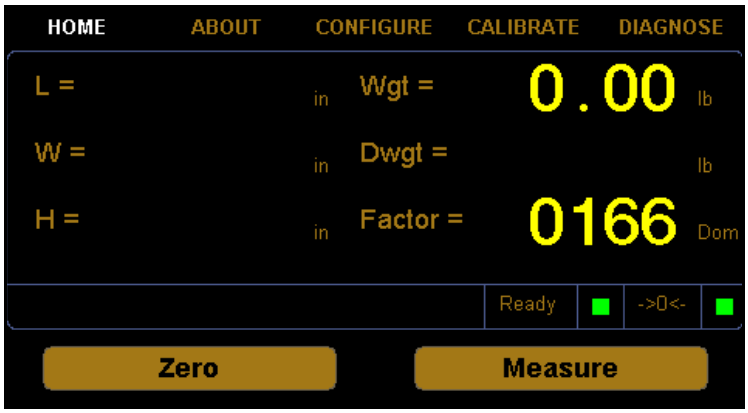

Figure 29
Home Screen

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

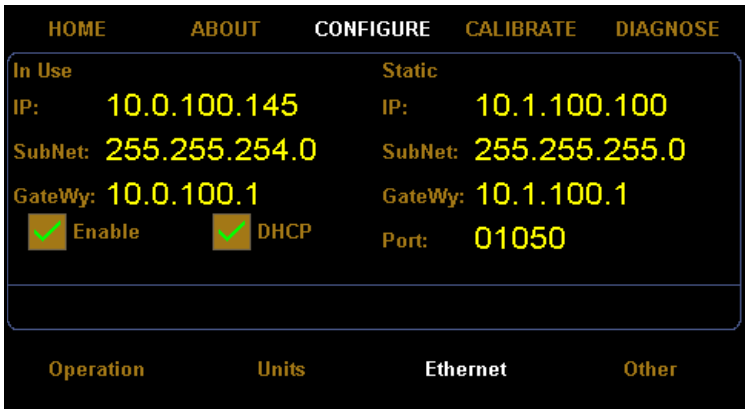

Figure 30
Configure Ethernet

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**.

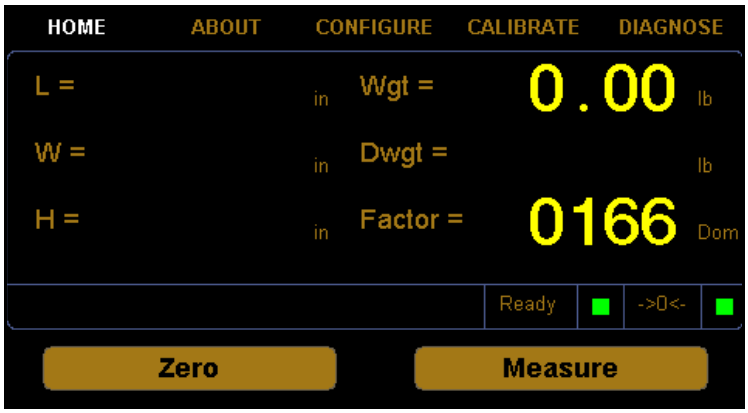

Figure 31
Home Screen

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

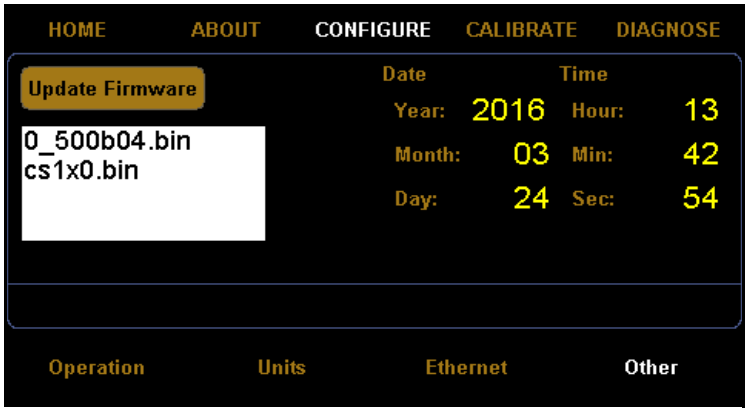

Figure 32
Configure Other

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 150-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 These fields display the current date and time.

Chapter 5
Calibration

This chapter provides instructions for calibrating the CubiScan 150-T. The CubiScan 150-T is calibrated at the factory; however, some circumstances in which recalibration may be required include the following:

- Calibrate the CubiScan 150-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. It should not be necessary to calibrate daily or even weekly. It is suggested that you implement a regular audit (daily or weekly) of weight and dimensions using a test weight, or something of known weight near 25 pounds, and the calibration cube.
- Calibrate the CubiScan if it is zeroed and the weight or dimensions are outside the specified limits.

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 150-T, remove all packages or other material from the platform, and blow any dust off the sensor screens. Refer to page 49 for information on cleaning the sensors.

All controls and displays for the CubiScan 150-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 29.

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 150-T.*

Calibrating the Scale

To perform the calibration, you will need the following:

- Official test weight in the range of 50-150 pounds (25-70 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 150-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**.

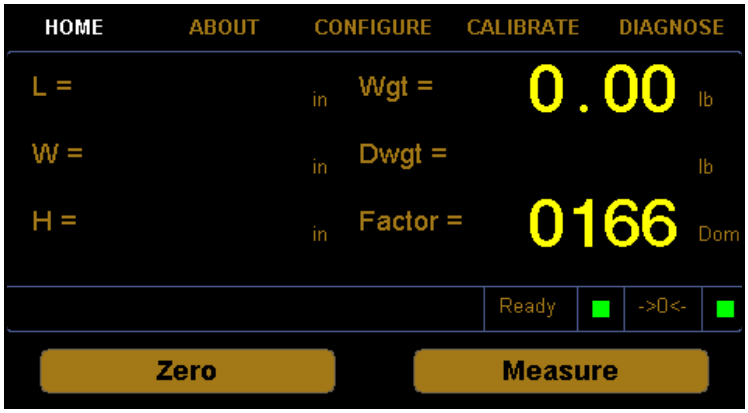

Figure 33
Home Screen

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.

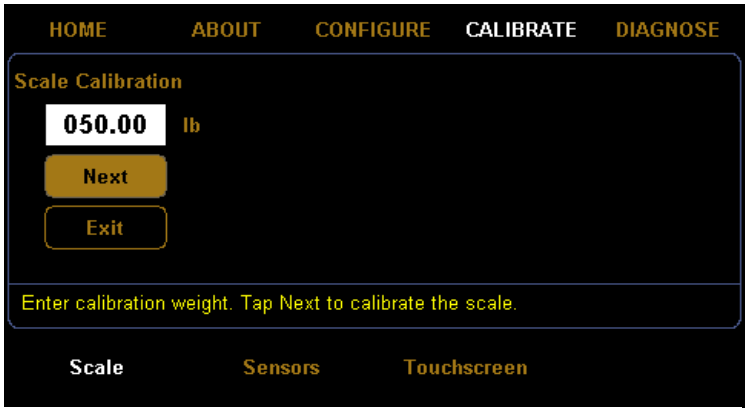

Figure 34
Scale Calibration Menu

3. Make sure there is nothing on the CubiScan 150-T platform, then tap **[Next]**.

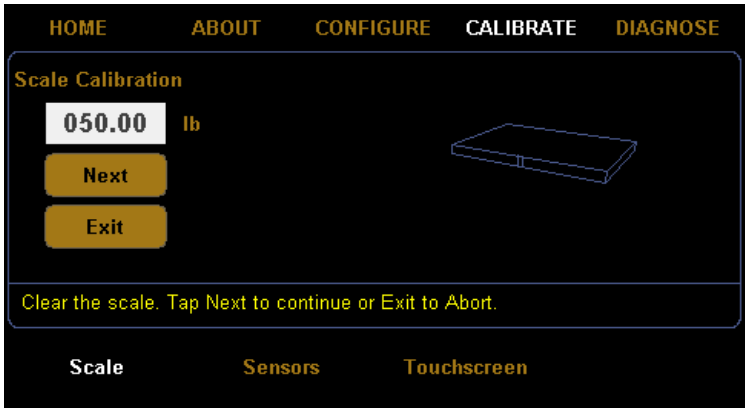

Figure 35
First Scale Calibration Screen

4. The following screen is displayed. Place the calibration weight(s) on the CubiScan 150-T platform.

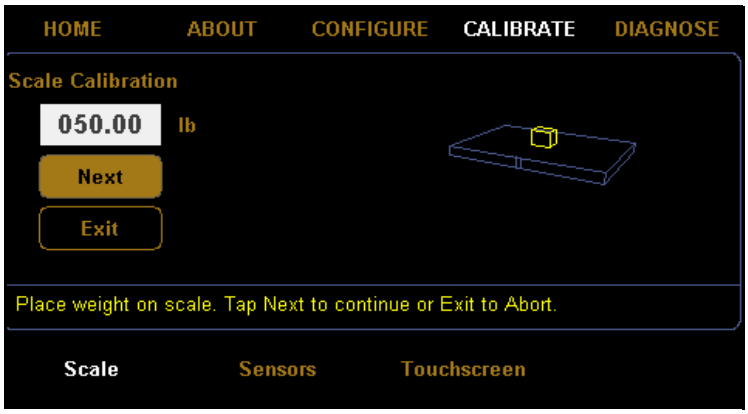

Figure 36
Second Scale Calibration Screen

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

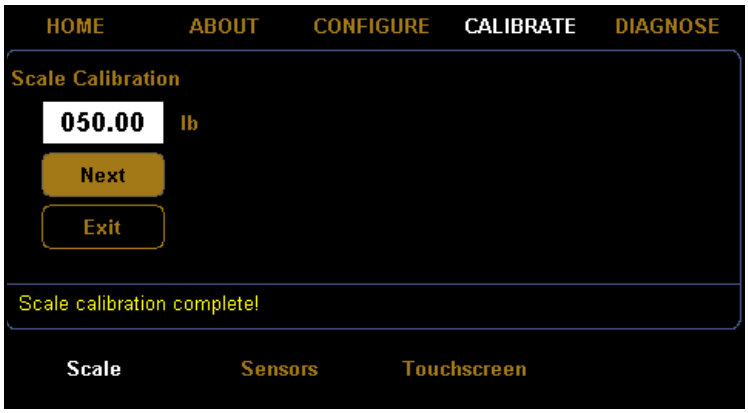

Figure 37
Scale Calibration Complete

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 12" x 12" calibration cube, supplied with the CubiScan

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

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

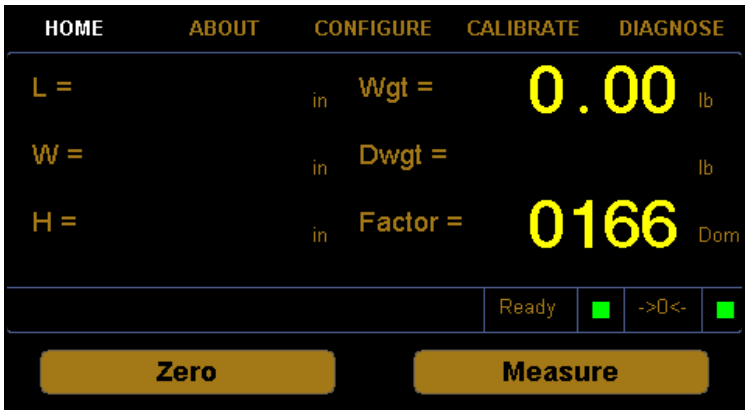

Figure 38
Home Screen

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

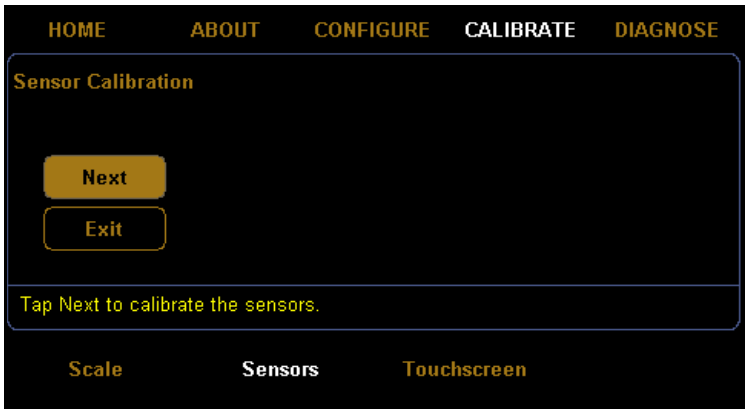

Figure 39
Sensor Calibration Menu

3. Make sure there is nothing on the CubiScan 150-T platform, and tap **[Next]** to continue.

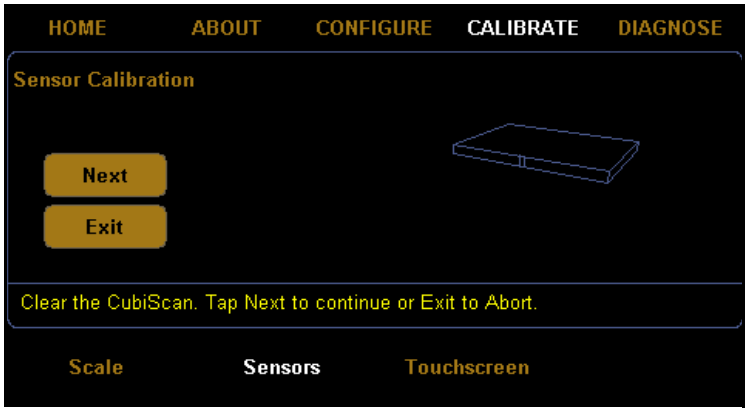

Figure 40
First Sensor Calibration Screen

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

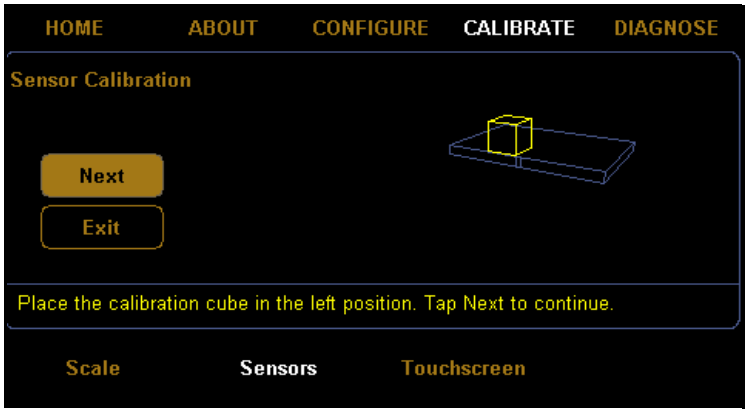

Figure 41
Second Sensor Calibration Screen

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

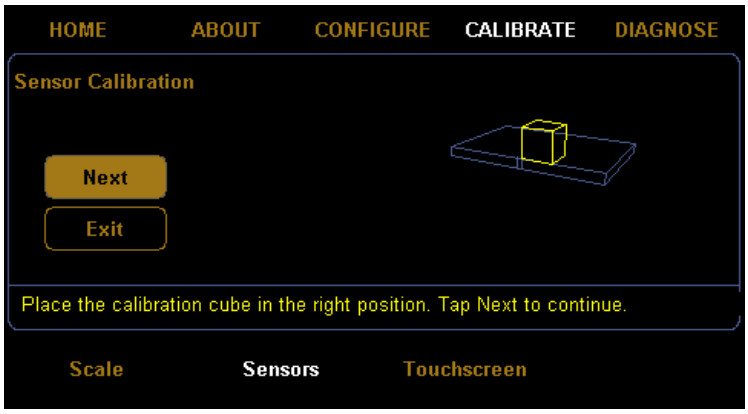

Figure 42
Third Sensor Calibration Screen

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.

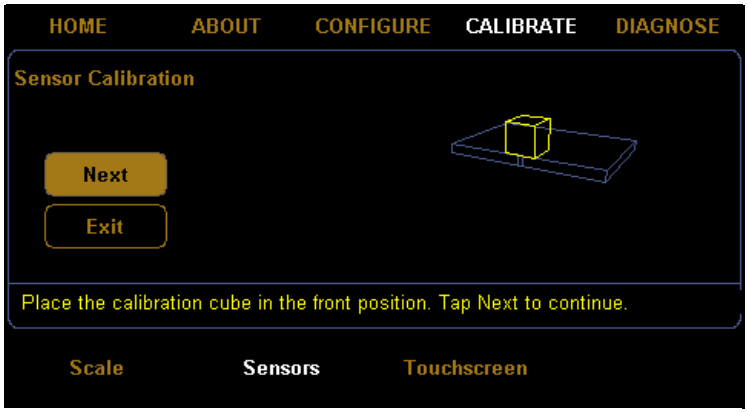

Figure 43
Fourth Sensor Calibration Screen

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

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

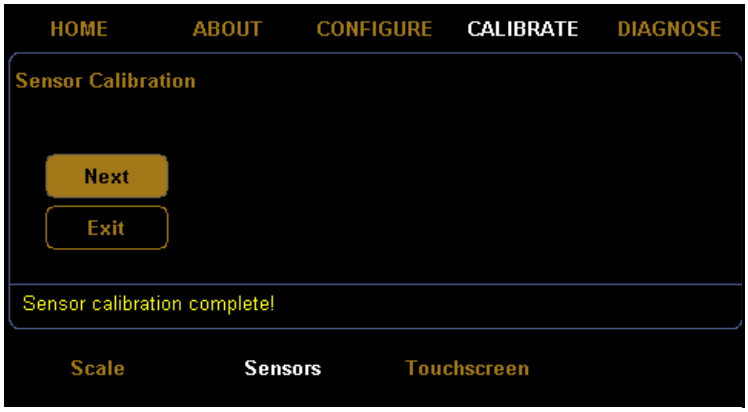

Figure 44
Sensor Calibration Complete

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**.

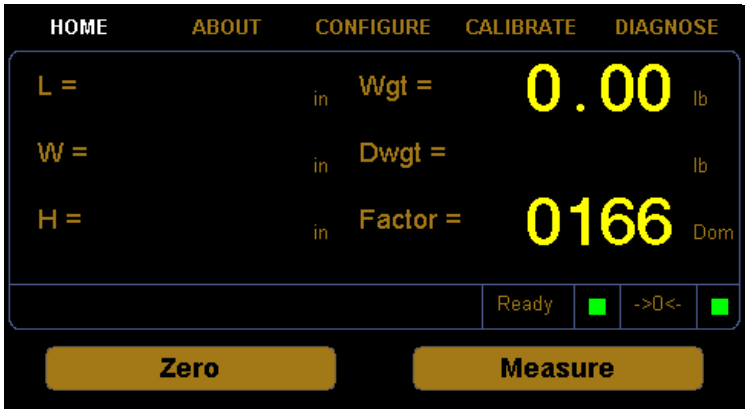

Figure 45
Home Screen

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

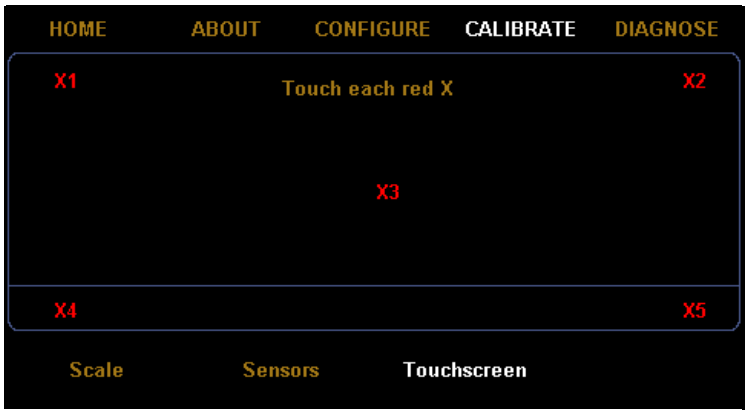

Figure 46
Touchscreen Calibration

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

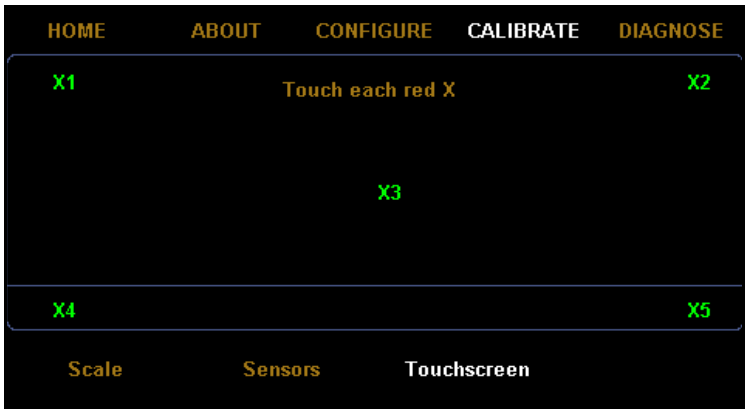

Figure 47
Touchscreen Calibration Complete

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 150-T. Routine maintenance and careful handling will help keep the CubiScan 150-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 5.

Do not put packages on the platform that are known to be over 150 pounds (70 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 150-T controller, first review Chapter 7 “Troubleshooting” on page 54 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. To access the controller box, remove the four Allen head screws on the corners of the controller box mounting plate. The touchscreen is in the center of the mounting plate, and the mounting plate is attached to the front of the CubiScan.

3. Slide the controller box forward out of the base. Be careful not to pull on the attached cables. The cables should be long enough to allow the controller box to slide out far enough to remove the cables.

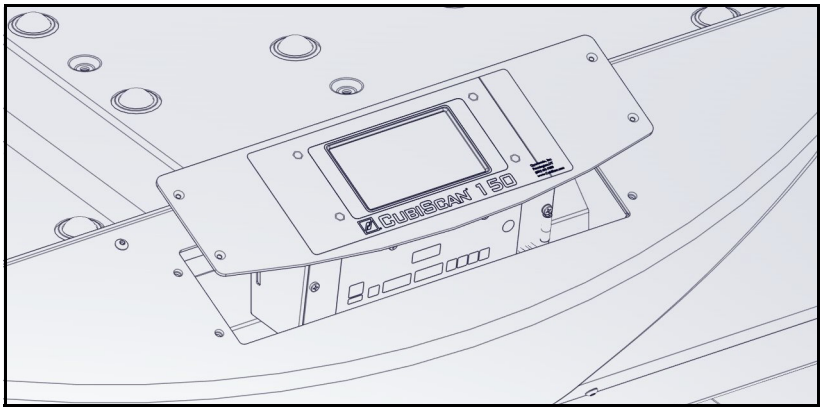

Figure 48
Removing the Controller Box

4. 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 a USB connector, pull the connector straight out using even pressure.
- 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.

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

Replacing the Platform Rollers

It may be necessary after heavy use to replace one or more of the rollers in the platform top. If new rollers are required, order the replacements from Quantronix so they will be the correct size.

NOTE ☞ *Three people are required to change the rollers, two to lift the stainless steel top and one to replace the worn rollers.*

Do the following to replace one or more rollers in the platform.

1. Remove all of the screws from the platform top using an Allen wrench.

2. Remove the protective bumpers from the front of the two length sensors on each side of the front panel. The bumpers are each secured by four Allen head screws.

3. Have one person stand on each side of the CubiScan (left and right sides of the platform), and lift the back edge of the stainless steel top to tip it forward. Do not lift the front edge of the stainless steel top. Tip the panel as high as necessary to insert the new rollers.

WARNING

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.

4. Remove the worn rollers, and replace them with the new rollers.

5. When all worn rollers are replaced, carefully lower the top until it rests on the platform again.

6. Adjust the position of the top to first align with the rollers and then with the screw holes.

7. Reattach all of the screws in the platform top.

8. Reattach the protective bumpers on the front of the two length sensors.

Replacing the Lithium Battery

Your CubiScan controller may be equipped with a Lithium button cell battery as shown on the next page. **The Lithium battery must be replaced with either an Eveready/Energizer or Panasonic CR1632 *only*.**

CAUTION

There is a risk of explosion if the battery is replaced by an incorrect type. Always dispose of used batteries according to the instructions provided with the batteries.

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

2. Remove the four screws that secure the touchscreen, two on each side.

3. Carefully lift the controller box from the front panel, and rest it on the edge of the opening. Leave the cables connected. Do not attempt to remove the controller box.

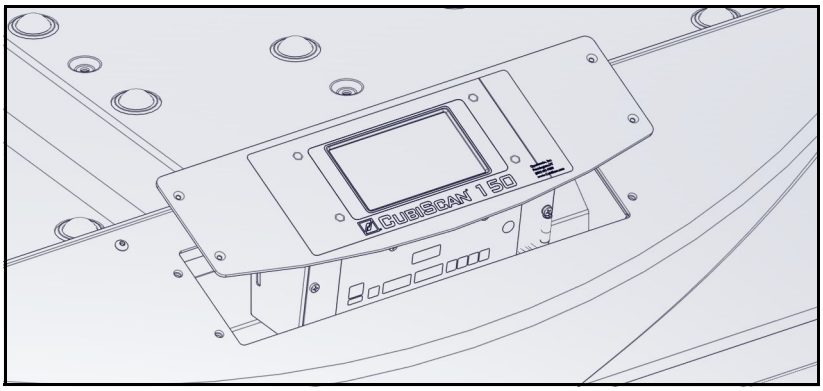

Figure 49
Removing the Controller Box

4. Remove the screws that secure the top cover of the controller box, remove the cover, and set the cover and screws aside.

5. Locate the Lithium battery inside the controller box (see Figure 50).

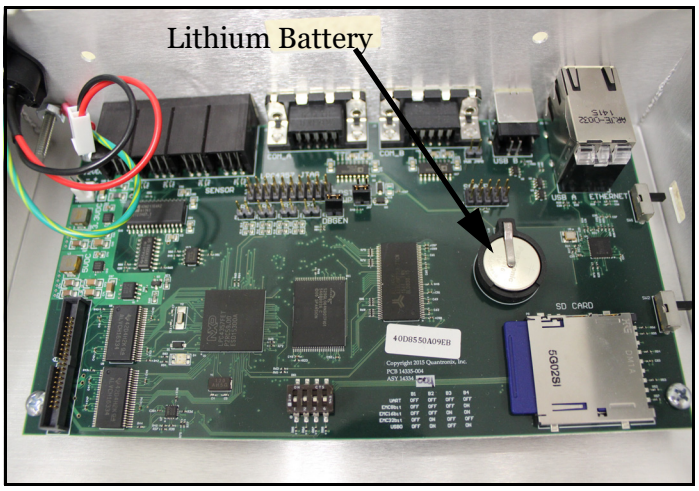

Figure 50
Lithium Battery on Controller

6. Slide the battery out of the holder with a small flat screwdriver.

7. Push the new battery into position in the holder with the positive side up. Make sure it is secure.

8. Place the top cover back on the controller box, and reattach the screws.

9. Insert the controller box back into its compartment in the front panel, and insert and tighten the four screws that hold it in place.

Chapter 7
Troubleshooting

This chapter provides assistance in identifying and solving common problems with the CubiScan 150-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 150-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 150-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 150-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 150-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 four leveling legs are resting on the supporting surface. Refer to "Leveling the CubiScan 150-T" on page 13.

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 150-T. Refer to "Placement" on page 5.

3. Recalibrate the CubiScan. Refer to "Calibration" on page 40.

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 150-T.

Transmission Error

This message indicates that erroneous 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 150-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 150-T. The About menu contains useful information and records of the CubiScan 150-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.

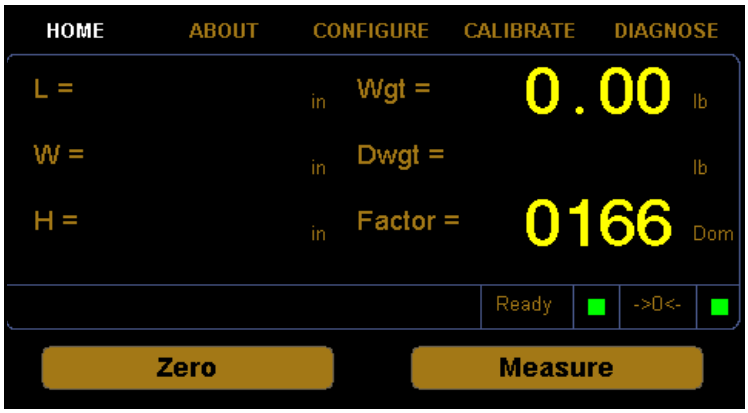

Figure 51
Home Screen

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

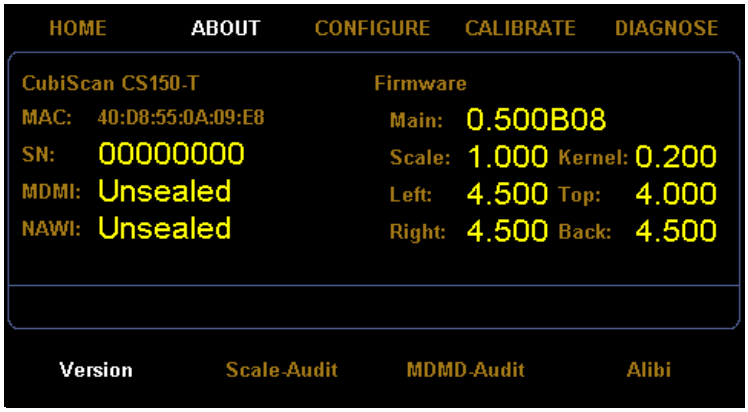

Figure 52
About Version

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

SN This field displays the Serial Number (SN) of the CubiScan.

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.

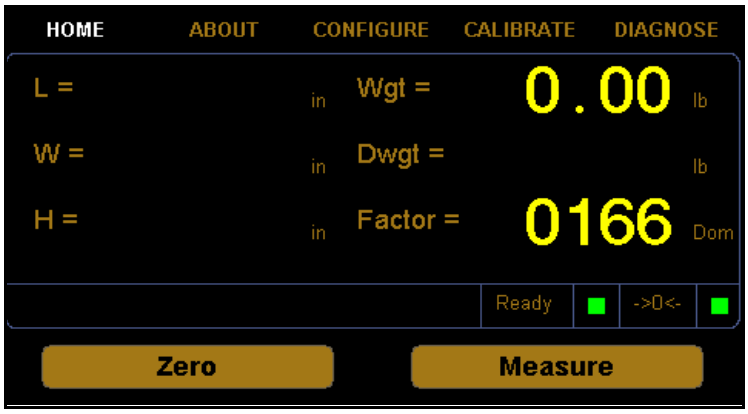

Figure 53
Home Screen

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

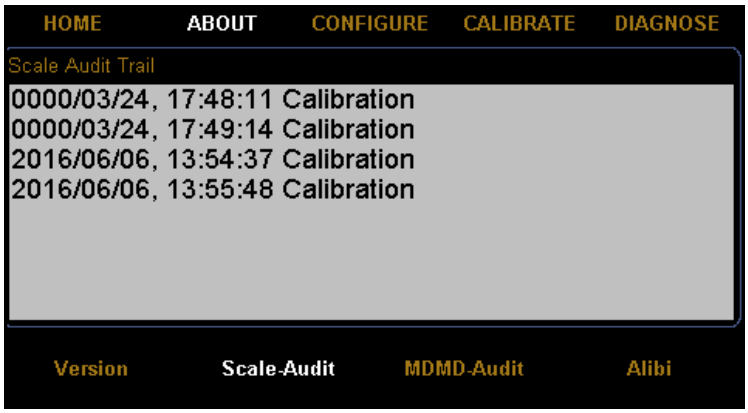

Figure 54
About Scale-Audit

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.

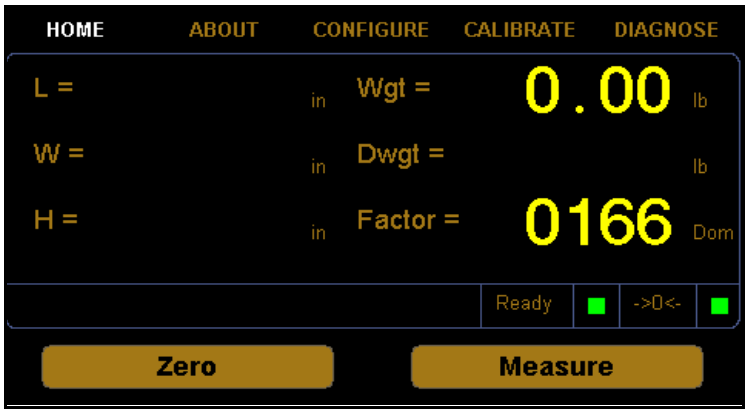

Figure 55
Home Screen

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

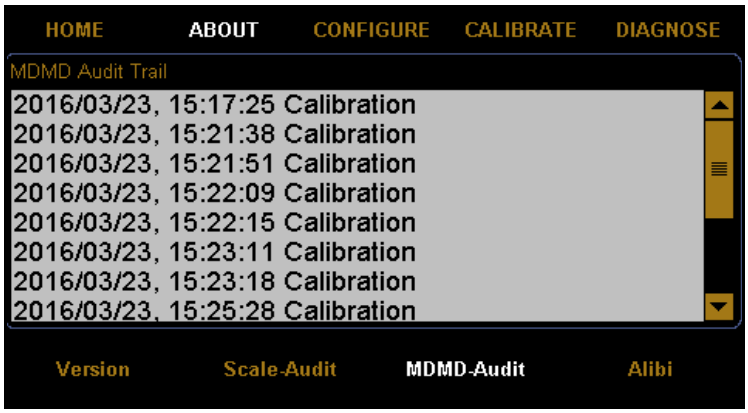

Figure 56
About MDMD-Audit

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.

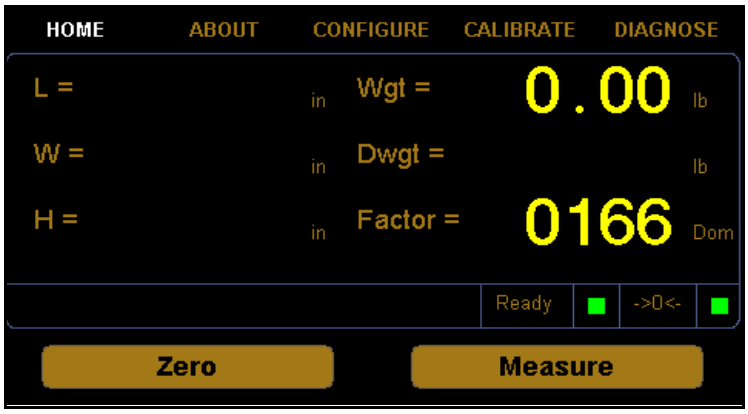

Figure 57
Home Screen

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

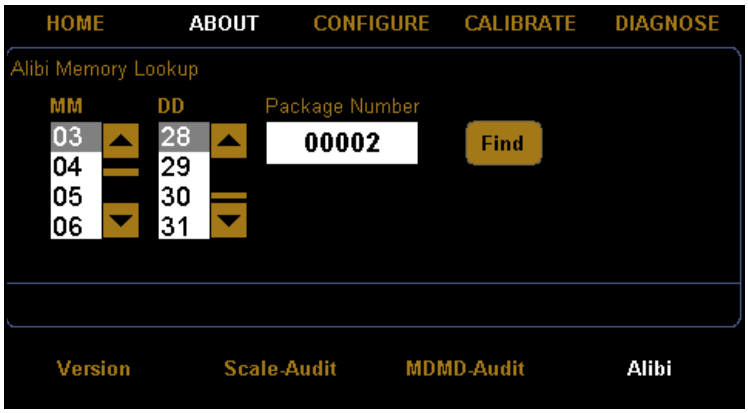

Figure 58
About Alibi

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.

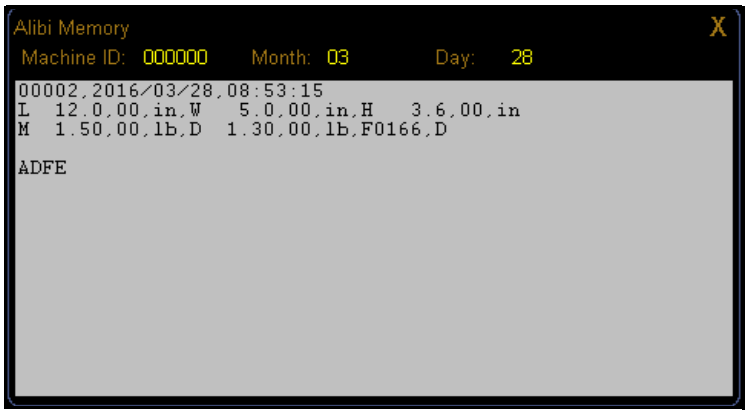

Figure 59
Alibi Memory

Diagnostics

This section describes the diagnostic capabilities of the CubiScan 150-T.

Scale Diagnostics

Complete the following steps to view the scale diagnostics.

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

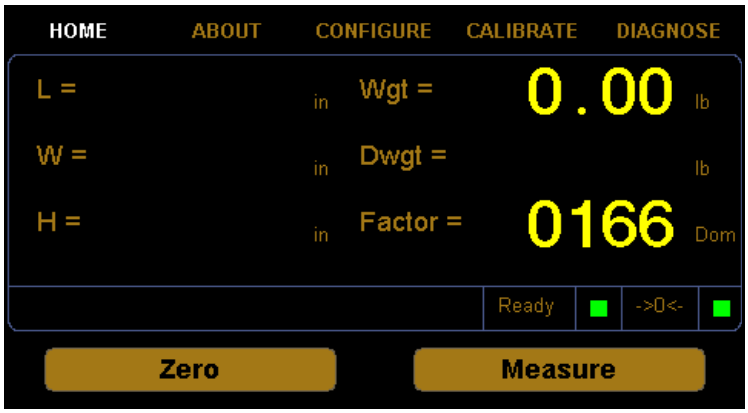

Figure 60
Home Screen

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

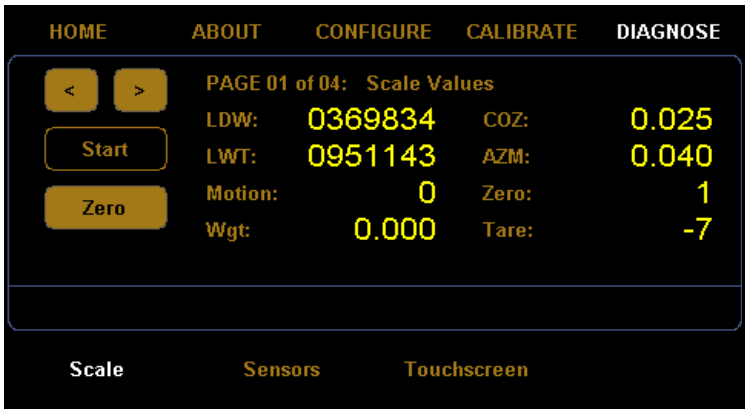

Figure 61
First Scale Diagnostic Screen

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.

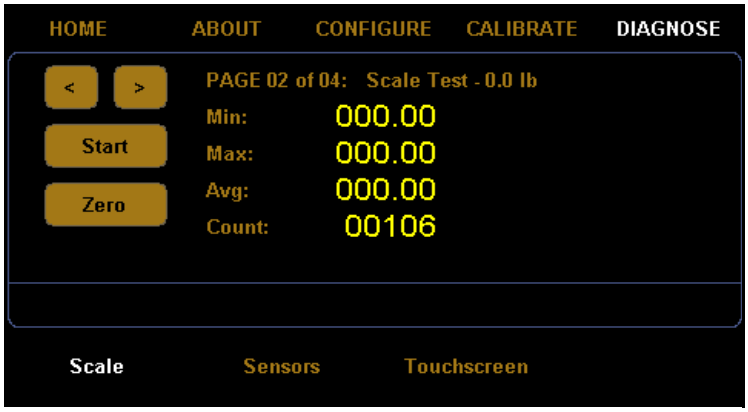

Figure 62
Second Scale Diagnostic Screen

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**.

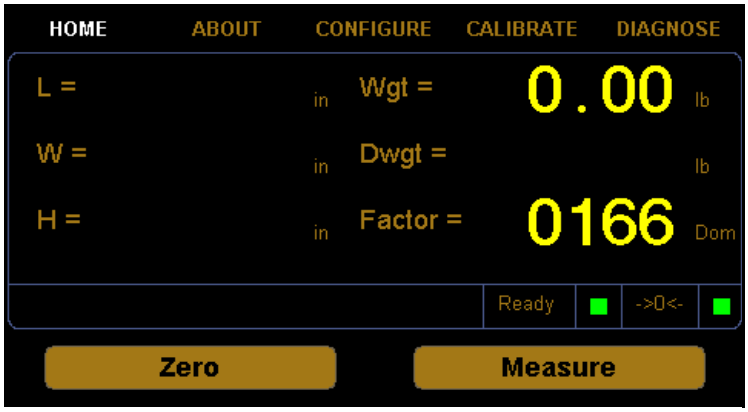

Figure 63
Home Screen

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

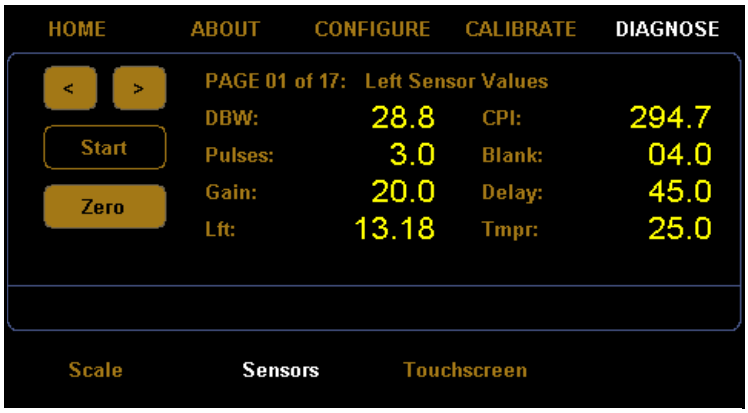

Figure 64
First Sensor Diagnostic Screen

Sensor diagnostic screens one through three display information for the left, right, top, and back 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.

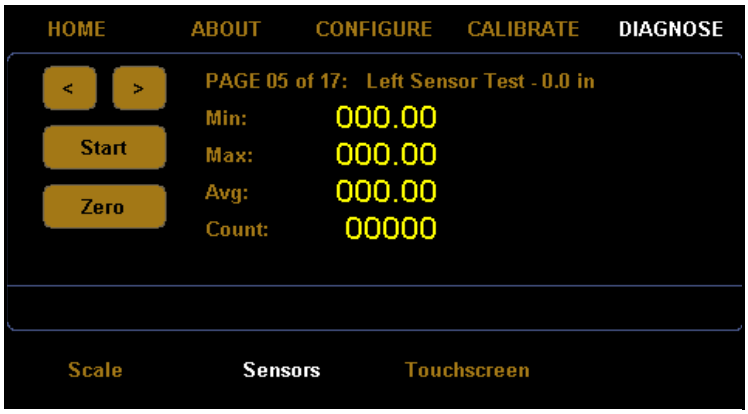

Figure 65
Fourth Sensor Diagnostic Screen

Sensor diagnostic screens five through seventeen 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 and tap **[Start]**.

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**.

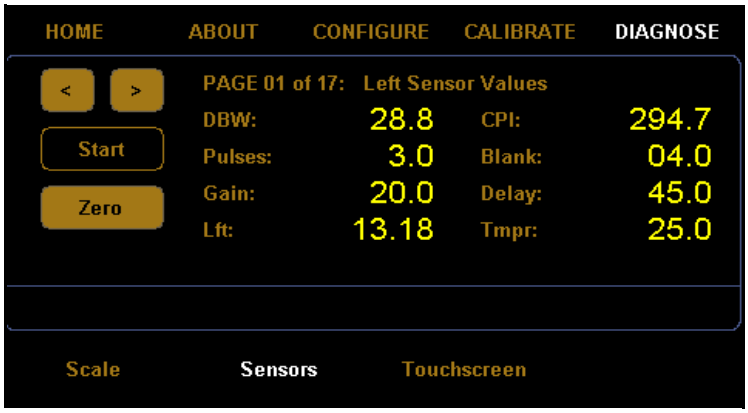

Figure 66
First Sensor Diagnostic Screen

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

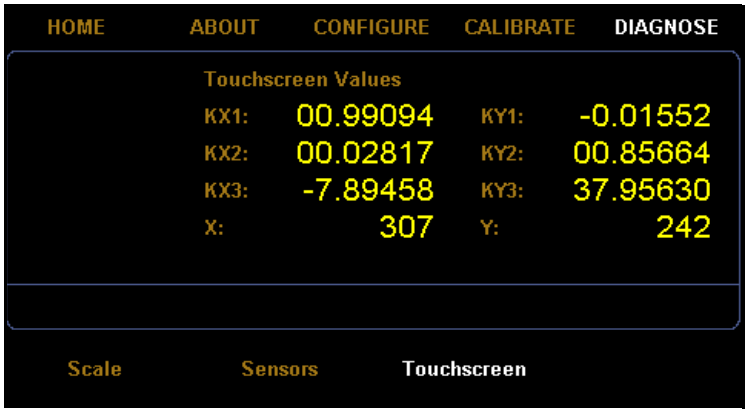

Figure 67
Touchscreen Diagnostics

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 150-T and a host computer via a serial RS-232 or USB connection as well as for the interface between the CubiScan 150-T and a network via an Ethernet TCP/IP connection.

"CubiScan 150-T Command Set" on page 70 lists the commands in the CubiScan 150-T command set used for cubing and weighing and to set up the CubiScan 150-T for cubing and weighing. "CubiScan 150-T Command Set" on page 70 lists the commands used to set up the CubiScan 150-T for TCP/IP communications with a network.

Serial (RS-232-C) Cable Pin Assignments

The CubiScan 150-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

Asynchronous Communication Parameters	
Data Bits	8
Start Bits	1
Stop Bits	1

Ethernet (TCP/IP) Cable Pin Assignments

The CubiScan 150-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

USB Port Cable Pin Assignments

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

The CubiScan 150-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 an 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 one 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 150-T Command Set

This section describes the commands recognized by the CubiScan 150-T to cube and weigh packages and to set up the CubiScan 150-T for cubing and weighing (dimension units, factor toggle, calibration, zero, and so on).

All command packets begin with an 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 an “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 150-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 150-T, the operation associated with that command is aborted due to the error.

The CubiScan 150-T recognizes the following commands from the command set for both a serial, USB, and Ethernet connection.

Command Set Summary

The CubiScan 150-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 CS110-T and CS150-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 touchscreen 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 110T, 150T:			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)
		Len1 DBW	(00.0)-(99.9)		

		Comma	(,)		
		Len2 DBW	(00.0)-(99.9)		
		Comma	(,)		
		Width DBW	(00.0)-(99.9)		
		Comma	(,)		
		Height DBW	(00.0)-(99.9)		
		Comma	(,)		
		Len1 CPI	(0000)-(9999)		
		Comma	(,)		
		Len2 CPI	(0000)-(9999)		
		Comma	(,)		
		Width CPI	(0000)-(9999)		
		Comma	(,)		
		Height CPI	(0000)-(9999)		
		Comma	(,)		
		Len1 Blank	(00.0)–(99.9)		
		Comma	(,)		
		Len2 Blank	(00.0)–(99.9)		
		Comma	(,)		
		Width Blank	(00.0)–(99.9)		
		Comma	(,)		
		Height Blank	(00.0)–(99.9)		
		Comma	(,)		
		Len1 Gain	(00.0)–(99.9)		
		Comma	(,)		
		Len2 Gain	(00.0)–(99.9)		
		Comma	(,)		
		Width Gain	(00.0)–(99.9)		
		Comma	(,)		
		Height Gain	(00.0)–(99.9)		
		Comma	(,)		
		Len1 Pulses	(00)-(99)		
		Comma	(,)		
		Len2 Pulses	(00)-(99)		
		Comma	(,)		
		Width Pulses	(00)-(99)		
		Comma	(,)		
		Height Pulses	(00)-(99)		
		Comma	(,)		
		Len1 Wait	(000)-(999)		
		Comma	(,)		
		Len2 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**	156	**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	Touchscreen Calibration X1	Float	9	6	x	x	x
0013	Touchscreen Calibration X2	Float	9	6	x	x	x
0014	Touchscreen Calibration X3	Float	9	6	x	x	x
0015	Touchscreen Calibration Y1	Float	9	6	x	x	x
0016	Touchscreen Calibration Y2	Float	9	6	x	x	x
0017	Touchscreen 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 150-T as spare parts or if replacement is necessary.

Part No.	Description	Quantity/Unit
10083	Cord, AC Power	1
10275	Calibration Cube, 12 x 12 x 12, Black	1
11687	Ball Transfer Unit (platform rollers)	1
12391	Sensor Cable, Height (Upper)	1
12392	Sensor Cable, Length	1
12393	Sensor Cable, Width, Height (Lower)	1
14012	Main Controller Assembly	1
14062	Power Supply, 12 VDC 3.75A	1