CubiScan® 110

Operations and Technical Manual

Version 1.0

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Cubing and Weighing Systems

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CubiScan 110 Operations and Technical Manual

Manual updated August 11, 2011.

The CubiScan 110 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.

CAUTION

The CubiScan 110 should only be serviced by qualified personnel.
Observe precautions for handling electrostatic sensitive devices when setting up or operating the CubiScan 110.

WARNING

Disconnect all power to the CubiScan 110 before servicing or making any connections.

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B. Not been operated under normal use and service according to that for which it was intended.
C. Not been operated or maintained in accordance with Quantronix' printed instructions.

D. Been subject to misuse, negligent handling, improper installation, accident, damage by fire, submersion, or act of God.
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Chapter 1
Product Description

The CubiScan® 110 is a precision volume measuring and weighing instrument for use in applications in which precise weighing and measuring is required.

The CubiScan 110 design is unique because it combines parcel dimensional measuring and weighing into one operation. The collected data are formatted and transmitted to a PC computer or multiplexor via the CubiScan 110 RS-232-C serial port. The CubiScan 110 may also be interfaced with other host systems via a standard 10-BaseT Ethernet TCP/IP port (contact Quantronix for details). The collected data are also displayed on the control panel.

The CubiScan 110 has four sensors (ultrasonic transducers) that determine the length, width, and height of an object placed on its measuring surface. The object is simultaneously weighed by a precision aluminum load cell. The load cell and sensors are controlled by a proprietary Quantronix controller. The controller, load cell, and support circuitry are located in the base of the CubiScan 110.

The CubiScan 110 has been designed for use in industrial environments. The load cell, frame, and sensor housings are made of forged and machined aluminum.

The CubiScan 110 is easy to set up, operate, and maintain. Its simple design and extreme accuracy coupled with intelligent, self-contained circuitry make the CubiScan 110 a valuable weighing/measuring tool.

The CubiScan 110 was calibrated at the factory, but *may* require recalibration due to handling during shipping. Complete calibration instructions for the CubiScan 110 are provided in Chapter 4 “Calibration.”

Figure 1
CubiScan 110

Specifications

Electrical

Voltage:	100 – 240 VAC, 47 – 63 Hz, 1.2 A
Current:	1.5 A maximum current draw, 1.0 A typical
Power Supply:	External switching +12 V @ 3.66 A

Measuring Capacities

Minimum Package Dimensions:	0.5 x 0.5 x 0.5 in (1.3 x 1.3 x 1.3 cm)
Maximum Package Dimensions:	30 x 24 x 36 in (76 x 60 x 91 cm)
Dimension Increment:	0.1 in (0.2 cm)
Maximum Package Weight:	100 lb (45 kg)
Weight Increment:	0.1 lb (.05 kg)

Environmental

Operating Temperature:	40° to 104° F (5° to 40° C)
Humidity:	0 to 90% non-condensing

Physical

Measuring Surface:	32 x 24 in (81 x 60 cm)
Total Footprint Required:	43 x 34 in (109 x 86 cm)
Height:	47 in (119 cm)
Shipping Weight:	256 lb (116 kg)
Net Weight:	78 lb (35 kg)
Shipping Dimensions:	52 x 50 x 18 in

Outputs

One (1) EIA RS-232-C serial communications port
See Appendix A for communications protocol.

10-BaseT Ethernet TCP/IP port
See Appendix A for communications protocol and setup parameters. Qbit™, QbitTCP software can be used to configure (through the RS-232-C port) the CubiScan 110 for TCP/IP communication. Contact Quantronix for information.

Load Cell

The load cell is made of forged, machined and anodized aluminum, environmentally sealed up to IP65 levels Dual bridge 350 Ohm strain gage. The standard net capacity is 100 lb (45 kg)

Chapter 2
Setup

This chapter provides instructions for setting up the CubiScan 110. Please read these instructions completely before attempting to set up the CubiScan. Perform the steps to set up the CubiScan in the following order:

- Unpack the CubiScan (page 5)
- Set up the back panel (page 8)
- Adjust the shipping bolts (page 11)
- Place the CubiScan where you will be using it and level the CubiScan (page 13)
- Connect the CubiScan to a computer or network (page 14)
- Connect power to the CubiScan (page 17)
- Install the Qbit PC control software (optional) (page 18)
- Calibrate the CubiScan (Chapter 4 “Calibration” on page 27)

Unpacking

To unpack the CubiScan, take the following steps.

1. Remove the top of the crate.

Figure 2
CubiScan 110 in Packing Crate

2. From the side of the crate, remove the screws holding the wood packing bar, and remove the wood bar from the crate.

Figure 3
Removing Wood Packing Bar

3. Remove the packing material from around the CubiScan.

4. Gently lift the CubiScan from the crate (this may require two people).

If, after unpacking, you discover any damage to the CubiScan 110, contact the carrier immediately.

Remove any tape or ties used to fasten cables to the scale platter for shipment.

The CubiScan is shipped in a single container with the following items.

- Fully assembled CubiScan 110
- AC power cord
- RS-232 communications cable
- Qbit software CD (optional)
- Operations and Technical Manual (this manual)

Accessories and tools packed with the CubiScan 110 include the following:

- 2.5 mm allen wrench
- 4.0 mm Allen wrench
- 5.0 mm Allen wrench
- 6.0 mm Allen wrench
- 12" x 5" x 3.6" calibration block
- Bubble level

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

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

Setting Up the Back Panel

Take the following steps to attach the back panel and connect the sensor cables.

1. Using the 5 mm hex wrench provided, remove the four socket head cap screws from the back of the CubiScan.

Figure 4
Removing the Back Cap Screws

2. Using the same wrench, loosen, but do not remove, the socket head cap screws on the hinges (one on each side of the scale platter) as shown in Figure 5.

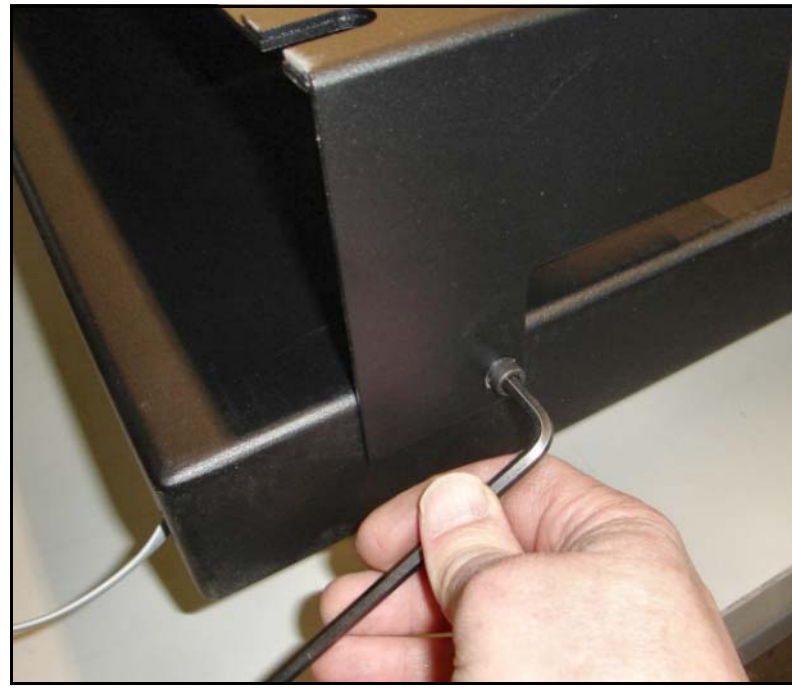

Figure 5
Loosening the Hinge Cap Screws

3. Rotate the back panel into its upright position, taking care not to constrict the three sensor cables protruding from the back of the scale platter.

4. Reinsert the four cap screws that you removed in step 1 through the holes in the back panel into the holes in the back of the scale platter, and tighten the screws.

5. Tighten the two hinge socket head cap screws that you loosened in step 2.

6. Insert the plug on each length sensor cable into its socket on the back (at each end) of the CubiScan (see Figure 6).

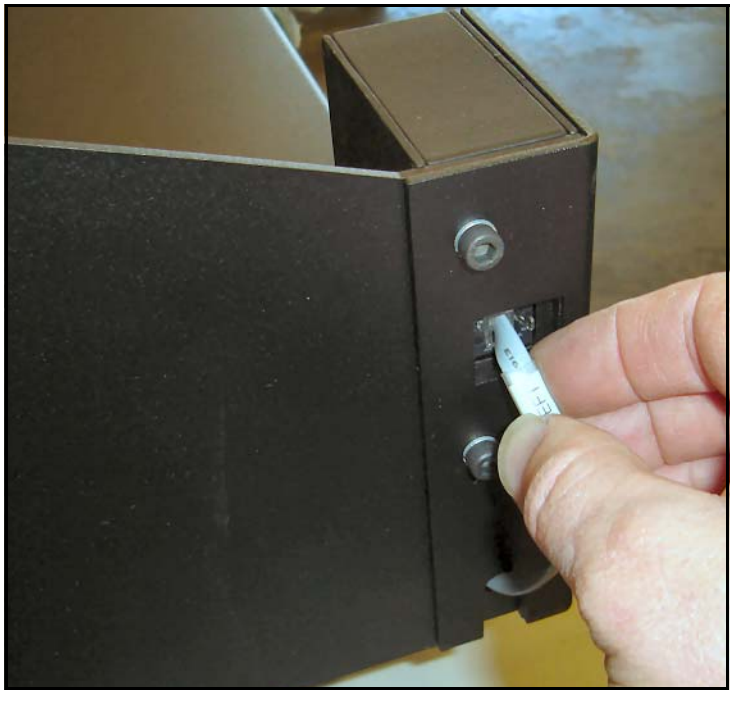

Figure 6
Plugging in the Length Sensor Cable

7. Route the height sensor cable up the channel on the back panel, and insert the plug into the socket on the height sensor (see Figure 7).

Figure 7
Plugging in the Height Sensor Cable

Adjusting the Shipping Bolts

Five shipping bolts are located on the CubiScan base to anchor the scale to the base. The bolts must be tightened after shipping for proper operation of the scale.

1. Gently tip the CubiScan onto the back panel to expose the bottom of the scale.

2. Using a 13mm open end wrench, turn each of the five shipping bolts clockwise until the head is tight against the top of the surface into which it screws.

IMPORTANT ☞ *This step is critical for proper scale function.*

Figure 8
Adjusting the Shipping Bolts

3. Gently tip the CubiScan back to its upright position.

Placement and Leveling

Place the CubiScan on a flat, hard surface. Be sure that nothing touches the back wall or top platter of the CubiScan, as this may cause weighing errors.

Take the following steps to level the CubiScan.

1. Place the bubble level provided in the center of the scale platter.

Figure 9
Bubble Level

2. Adjust the five leveling feet under the CubiScan to level the scale. Make sure all feet are touching the supporting surface.

NOTE ☞ *The CubiScan does not have to be perfectly level to weigh accurately.*

Connecting to a Computer or Network

To operate the CubiScan 110, you can connect it to a computer or a network, or you can use the control panel, as follows:

- Connect it to a PC or compatible computer through the RS-232-C serial port on the back of the control panel. Use the Qbit software on the computer to run the CubiScan 110.
- Connect it to a host system via a standard 10-BaseT Ethernet TCP/IP port. You can use Qbit software to configure the CubiScan through the RS-232-C port for TCP/IP communication (QbitTCP) and to run the CubiScan from a workstation. Contact Quantronix for information on available software. Or, refer to Appendix A “Communications Protocol” on page 49 for command protocol and setup parameters.
- Operate the CubiScan without a computer using the control panel. Refer to “Cubing and Weighing Using the Control Panel” on page 22 for information.

NOTE ☞ *If you are not going to connect the CubiScan to a computer or network, proceed to page 17 for information on connecting power.*

Connecting to a Computer (Optional)

To connect the CubiScan 110 to a computer, do the following.

CAUTION

Disconnect power from the CubiScan 110 and the computer before connecting them.

1. Place the computer close to the CubiScan.
2. Locate a free serial (communications) port on the back of your computer. Determine whether the port is 9-pin or 25-pin. Refer

to your computer's documentation, if necessary, to identify the ports.

3. Connect the serial cable (attached to the CubiScan controller) to your computer's serial port. If the port is 9-pin, connect the serial cable directly to the serial port. If it is 25-pin, use a 25-pin to 9-pin adapter (not supplied).

4. 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 “Serial (RS-232-C) Cable Pin Assignments” on page 49.

Connecting to a Network (Optional)

You can connect the CubiScan 110 to a network through a standard 10-BaseT Ethernet TCP/IP port. You will need a standard Ethernet cable with RJ-45 connectors (see “Ethernet (TCP/IP) Cable Pin Assignments” on page 50). The network host device determines whether a straight-through or crossover cable is required. Consult your network administrator, if necessary, to determine your local cabling requirements.

Do the following to connect the CubiScan 110 to a network:

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

2. The CubiScan controller is located just behind the control panel at the front of the base. Connect 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 latches. There should be an audible snap when the connector latches.

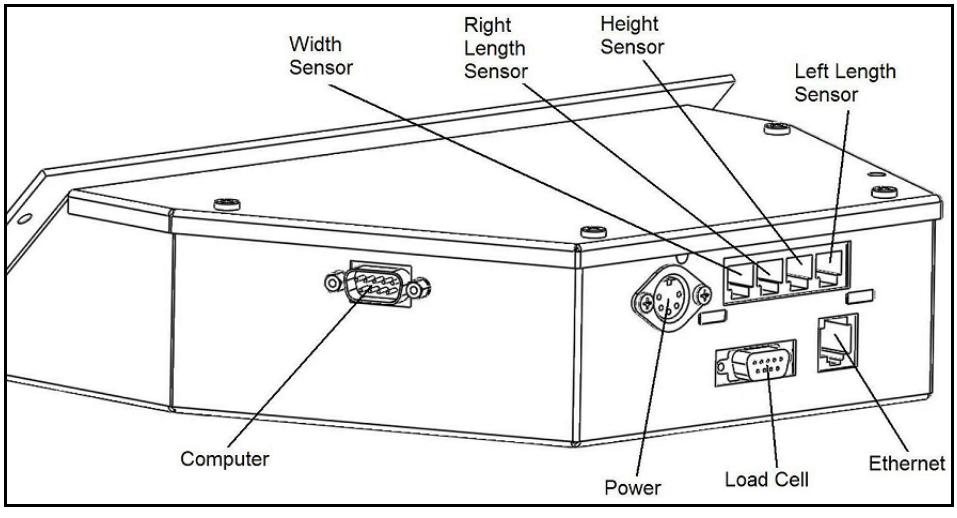

Figure 10
Ethernet Cable Connector

3. Insert the RJ-45 connector on the other end of the cable into the network socket and push until it latches.

   For information on the Ethernet cable pin-outs, refer to "Ethernet (TCP/IP) Cable Pin Assignments" on page 50.

4. Use Quantronix' QbitTCP software to configure the Cubiscan 110 (through the RS-232-C port) for TCP/IP communication, or refer to Appendix A "Communications Protocol" on page 49 for information on the TCP/IP command protocol and setup parameters. Contact Quantronix if you need additional assistance.

When it is turned on, the CubiScan 110 will recognize the cable connection and, if configured correctly, will respond to a connection request from the host.

NOTE ☞ *You can also connect the CubiScan 110 directly to a computer through a 10-BaseT Ethernet TCP/IP port via a standard Ethernet cable. A crossover cable is required.*

Connecting Power

Take the following steps to connect power to the CubiScan.

1. Connect the power cord to the CubiScan's power supply, and plug the other end into a 110VAC outlet or a standard power strip equipped with an ON/OFF switch (recommended).

2. If connected to a power strip, use the power strip switch to turn the CubiScan on and off (see "Turning On the CubiScan" on the next page).

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

If you are using a computer, you can plug the computer into the same power strip so that they will both be powered on at the same time. The CubiScan should be powered on before running the Qbit program to cube and weigh packages.

Turning On the CubiScan

Specific procedures must be followed each time you turn on the CubiScan 110, as follows:

1. Make sure there are no packages or other objects on the Cubi-Scan platform.

2. Turn on the CubiScan 110 via the power strip (see "Connecting Power" above).

   The CubiScan performs self-calibration and diagnostic procedures that take about 15 seconds. Do not touch the CubiScan platform during these 15 seconds.

3. Allow the CubiScan to completely boot. After the boot process, the scale reading on the control panel should be **0.0** and the dimensions should be blank. The **zero** indicator should be lit. If not, press the **<zero>** button on the control panel display to zero the scale and sensors (refer to “zero” on page 24).

4. Place a box or calibration block on the CubiScan in the center against the back panel, and press **msr** on the control panel.

5. Verify that the weight and dimension readings are correct.

6. Remove the box or calibration block from the platform.

The CubiScan is now ready for use.

Installing Qbit (Optional)

A CD-ROM is provided containing the applicable version(s) of the Qbit software program, which can be used to operate the CubiScan 110.

QbitTCP is a Qbit application for configuring the Cubiscan 110 (through the RS-232-C port) for TCP/IP communication.

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 Web site at *www.cubiscan.com*.

Setup Checklist

Before using the CubiScan 110 for the first time, verify the following:

- ❒ Has the CubiScan been completely set up? (page 8)
- ❒ Have all screws, bolts, and nuts been tightened?
- ❒ Have the shipping bolts been adjusted? (page 11)
- ❒ Has the base of the CubiScan been leveled? (page 13)
- ❒ Is the CubiScan free moving? The CubiScan should not be pushed up against a wall and no object, cable, etc., should be resting on it or against it.
- ❒ Has the serial communications or RJ-45 cable been attached to the computer or network (if applicable)? (page 14)
- ❒ Is the CubiScan connected to power? (page 17)
- ❒ If you are using Qbit to operate the CubiScan 110, 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 110 was calibrated at the factory, but *may* require recalibration due to handling during shipping. Refer to Chapter 4 “Calibration” on page 27 for information on calibrating the CubiScan 110. 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.

Notes

Chapter 3
Operation

This chapter provides instructions for operating the CubiScan 110.

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

Before You Begin

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

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

2. Turn on the CubiScan 110 via the power strip. The CubiScan performs self-calibration and diagnostic procedures that take about 15 seconds. **Do not touch the CubiScan platform during these 15 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 either zero or the tare value*

(if the tare option is enabled). The CubiScan's empty weight and measurements can be reset to zero (zeroed) at any time (refer to the Qbit User Guide or to "zero" on page 24).

CAUTION

While the CubiScan has overload protection, objects heavier than 100 pounds (45 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.

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 Web site at *www.cubiscan.com*.

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

Cubing and Weighing Using the Control Panel

All controls and displays for the CubiScan 110 are located on the control panel at the front of the base. If a computer is not connected, you can use the control panel to cube and weigh packages. Measurements and weight cannot be recorded; they are displayed on the control panel.

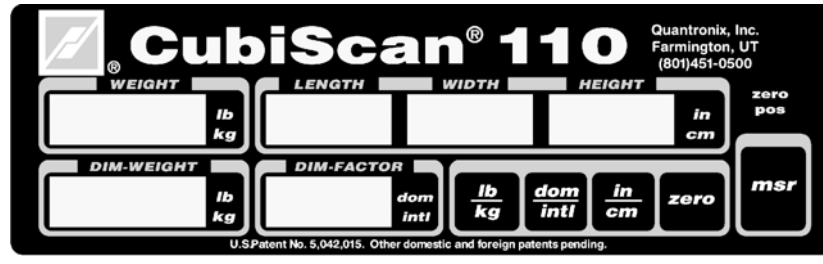

Figure 11
CubiScan 110 Control Panel

NOTE ☞ *If you have not already done so, remove the thin protective film that covers the CubiScan control panel. Peel it back from one of the corners using your fingernail, and then pull it off.*

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

LENGTH
WIDTH
HEIGHT — These display the measured dimensions in inches (in) or centimeters (cm) as selected.

DIM-WEIGHT — This displays the dimensional weight in pounds (lb) or kilograms (kg) as selected.

DIM-FACTOR — This displays the dimensional factor currently being used to calculate the dimensional weight.

zero (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.

$\frac{lb}{kg}$ — Press this key before you place a package on the platform to change the weight and dimensional weight from pounds to kilograms and vice versa.

dom / intl — Press this key before you place a package on the platform to change the dimensional weight factor from domestic to international standard values and vice versa.

Following are the dimensional weight factors used by the CubiScan.

Dimensional Factor	Domestic	International
Cubic inches per pound	194	166
Cubic inches per kilogram	428	366
Cubic centimeters per pound	3179	2720
Cubic centimeters per kilogram	7009	5997

in / cm — Press this key before you place a package on the platform to change the length, width, and height from inches to centimeters and vice versa.

zero — Press this key to reset the scale to "zero" (make sure the scale is empty).

msr — Press this key to display the weight and dimensions of the object on platform.

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

1. Verify that the CubiScan platform is empty. The **zero** indicator should be lit, and **0.00** should be displayed in the WEIGHT window. The rest of the display should be clear.

2. Place the package or object to be cubed and weighed on the platform and slide it against the center of the back panel. The **zero** indicator light goes out.

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

3. Press **<msr>**. The weight, length, width, height, and dim-weight of the package are displayed.

4. Remove the package from the platform. Wait for the **zero** indicator to light before placing the next package on the platform.

If the **zero** indicator 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 110 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 110; 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).*

Notes

Chapter 4
Calibration

This chapter provides instructions for calibrating the CubiScan 110. The CubiScan 110 is calibrated at the factory; however, some circumstances in which recalibration may be required include the following:

- Calibrate the CubiScan 110 if you have problems cubing and weighing after assembly and setup.
- Calibrate the CubiScan if it is subjected to any type of mechanical shock or collision with a heavy object.
- Calibrate the CubiScan as part of a regular maintenance schedule. If the CubiScan is used heavily, scale calibration should be performed monthly and sensor calibration yearly.

NOTE ☞ *If an error message appears during calibration, power the CubiScan off and back on and start calibration over (refer to "Computer Error Messages" on page 45 or "Control Panel Error Messages" on page 46 for more information).*

Before You Begin

Before calibrating the CubiScan 110, remove all packages or other material from the platform, and blow any dust off the sensor screens. Refer to page 39 for information on cleaning the sensors.

To perform the calibration, you will need the following:

- Official test weight in the range of 50–100 pounds (25–45 kg) (it is recommended that you calibrate with the maximum weight)
- 12" x 5" x 3.6" calibration block, supplied with the CubiScan (remove the wrapping from the calibration block before use)

NOTE ☞ *The calibration block should be kept clean and undamaged—you will need it each time you calibrate the CubiScan 110.*

The sensors and the scale (load cell) are calibrated separately.

Calibrating Using the Control Panel

NOTE ☞ *The following sections provide instructions for sensor and scale calibration using the CubiScan's control panel. For instructions on calibrating the CubiScan using Qbit, refer to the Qbit User Guide.*

All controls and displays for the CubiScan 110 are located on the control panel at the front of the base. For information on the controls and indicators, refer to “Cubing and Weighing Using the Control Panel” on page 22.

If a computer is not connected, you can use the control panel to calibrate the sensors and the scale.

NOTE ☞ *In calibration mode, the weight/dimension units (lb/kg, in/cm) are automatically set to those last used to weigh and measure a package. If the units are in question, you may want to turn on the CubiScan before calibrating it to determine the settings, and change them if necessary.*

Preparing the CubiScan for Calibration

To prepare the CubiScan 110 for calibration, proceed as follows.

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

2. Tip the front of the CubiScan up enough to reach under and loosen the thumb screws, and remove the RS-232 serial cable from the right side of the controller box.

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

4. 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 cover.

5. Remove the cover of the controller box by removing the four screws (one at each edge) and sliding it back.

6. Locate the DIP switch inside the controller box, as shown below, and locate switch number 6 on the DIP switch.

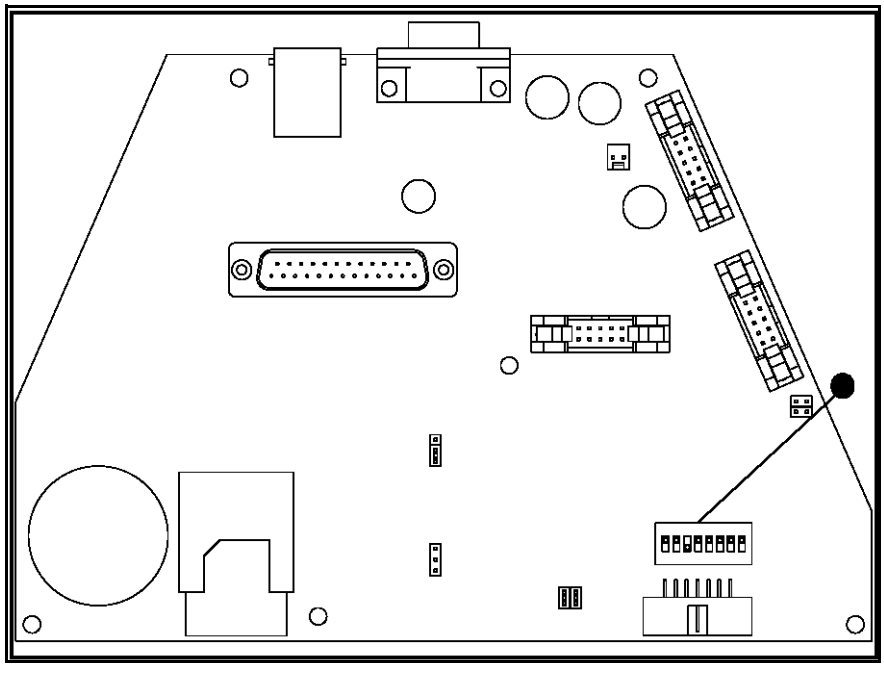

Figure 12
Controller DIP Switch

7. Use the tip of a pen or pencil or similar device to move switch 6 to the “closed” position. (One side of the DIP switch is labeled OPEN.)

8. Slide the cover back into place over the controller box, and place the controller box back into the base, but do not attach the screws yet.

9. Plug the power cord back into the power strip, and turn it on.

After running self-diagnostics (about fifteen seconds), the CubiScan 110 is in calibration mode.

In calibration mode, the weight/dimension units (lb/kg, in/cm) are automatically set to those last used to weigh and measure a package. Indicators on the control panel show the current settings.

A zero is displayed in the DIM-FACTOR window to indicate that the CubiScan is in calibration mode.

Calibrating the Sensors

You will need the 12" x 5" x 3.6" calibration block, supplied with the CubiScan, to calibrate the sensors. Remove the wrapping from the calibration block before using it.

To calibrate the sensors using the control panel, proceed as follows.

1. If you calibrated the scale first, turn the power to the CubiScan off and on, then wait about fifteen seconds for self-diagnostics to finish before calibrating the sensors.

2. Make certain that the CubiScan platform is free of all objects.

3. Press $\frac{\text{in}}{\text{cm}}$ on the control panel. The LENGTH, WIDTH, and HEIGHT windows display **0.0**, and the DIM-FACTOR window displays a command code of **1**.

4. Make sure there is nothing on the CubiScan platform, and press **<msr>**.

   Do not disturb the CubiScan until the LENGTH window displays **12.0**, and the DIM-FACTOR window displays a command code of **2**.

5. Place the calibration block on the platform and slide the 12" side against the back panel with the end against the left length sensor (when looking from the front) as shown below.

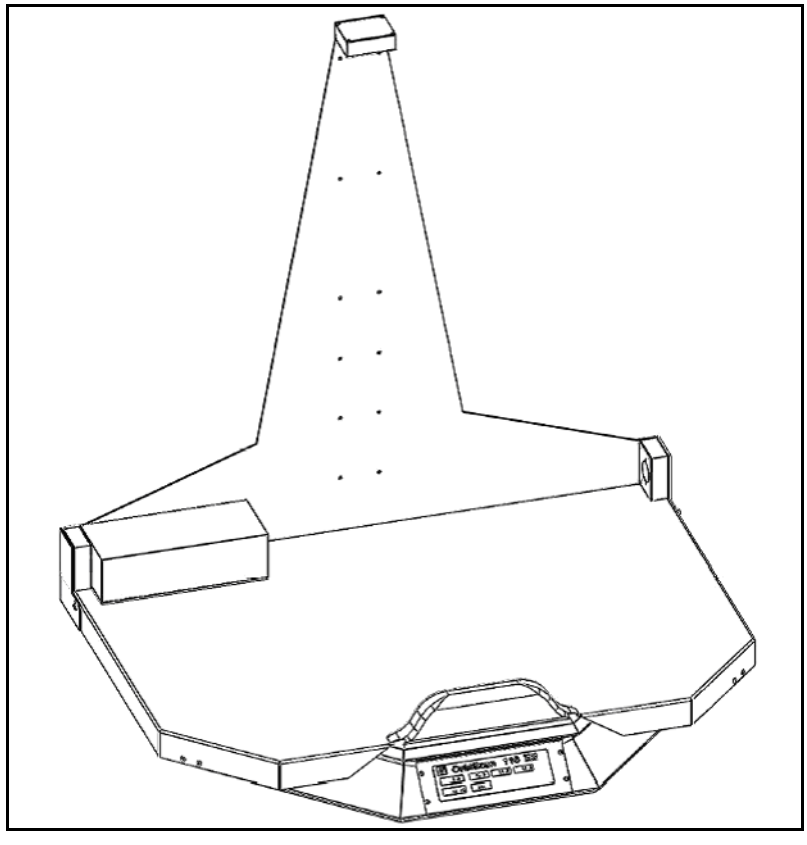

Figure 13
Calibration Block Placement for Right Length Sensor

6. Press **<msr>**. The LENGTH window displays **12.0**.

7. Slide the calibration block to the other side so that the end is against the right length sensor, as shown below.

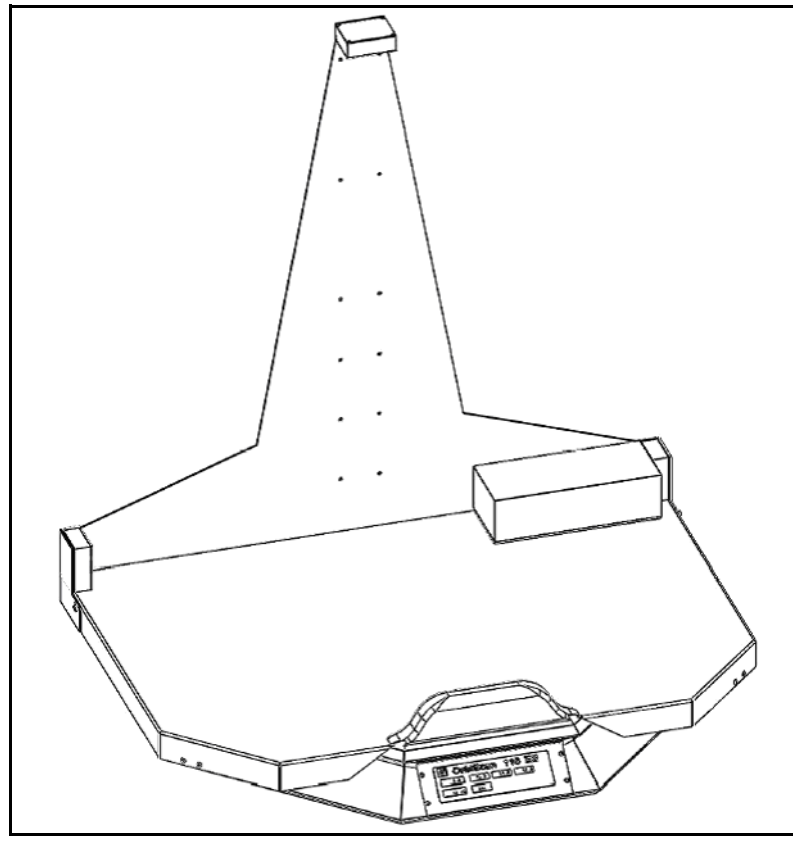

Figure 14
Calibration Block Placement for Left Length Sensor

8. Press **<msr>**. The WIDTH window displays **12.0**.

9. Turn the calibration block so that it is pointing toward the front with the end against the back panel, and place it in the center of the platform, as shown below.

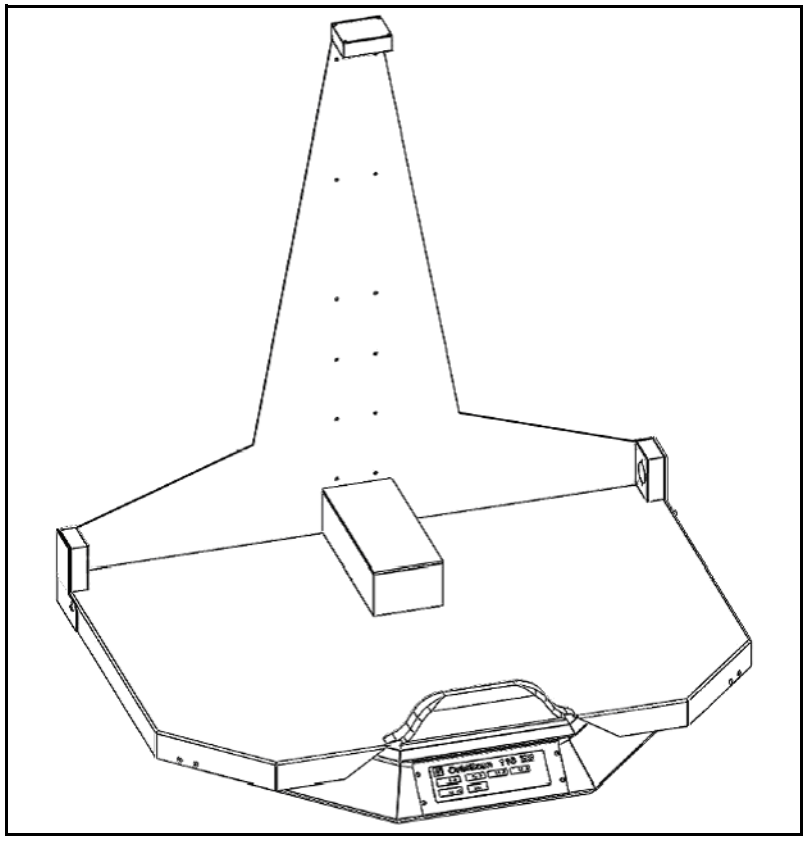

Figure 15
Calibration Block Placement for Width Sensor

10. Press **<msr>**. The HEIGHT window displays **12.0**.

11. Turn the calibration block up so that it is standing on its end in the center with the 12" side against the back panel, as shown below.

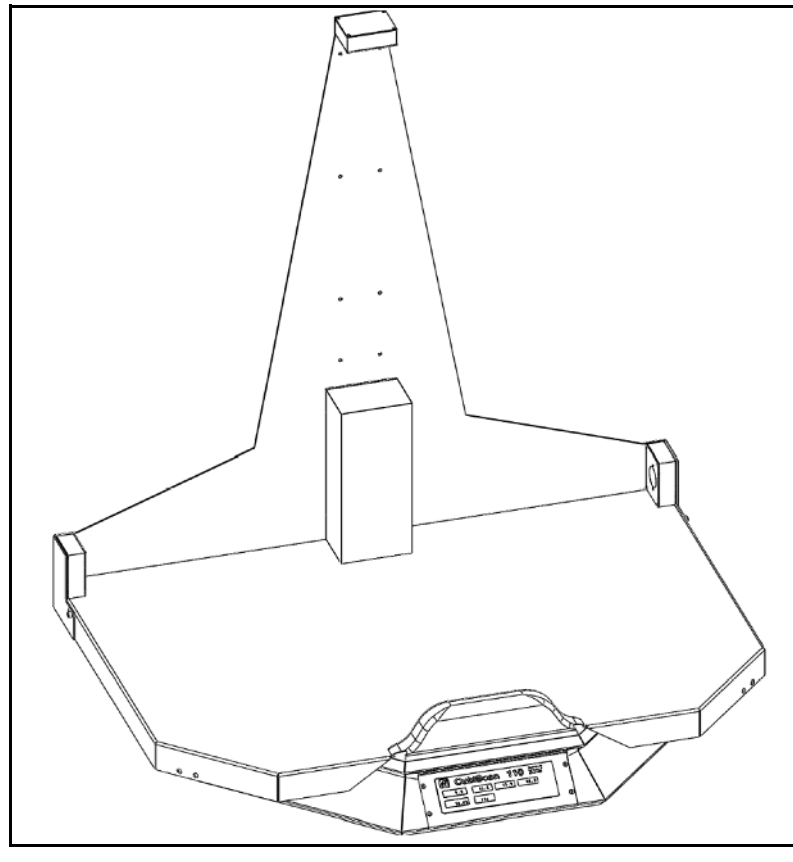

Figure 16
Calibration Block Placement for Height Sensor

12. Press **<msr>**. The LENGTH, WIDTH, and HEIGHT windows will display the calibration block dimensions. This completes sensor calibration.

If you need to calibrate the scale, refer to the next section for instructions. To prepare the CubiScan for operation, refer to page 37 for instructions.

Calibrating the Scale

To calibrate the CubiScan scale, you need an official test weight in the range of 50–100 pounds (25–45 kg) (it is recommended that you calibrate with the maximum weight).

IMPORTANT ☞ *Do not begin scale calibration until you have the test weight. Calibrating without an accurate known weight (within .01 of a lb/kg) can make all future weight readings inaccurate.*

Take the following steps to calibrate the CubiScan scale.

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

1. If you calibrated the sensors first, turn the CubiScan off and on, then wait about fifteen seconds for self-diagnostics to finish before calibrating the scale.

2. Make certain that the CubiScan platform is free of all objects.

3. Press $\frac{\text{lb}}{\text{kg}}$ on the control panel. After a short processing delay, the WEIGHT window displays **0.00,** and the DIM-FACTOR window displays a command code of **11**.

4. Make sure there is nothing on the CubiScan platform, and press **<msr>**.

   Do not disturb the CubiScan until the WEIGHT window displays the calibration weight (the weight of the last test weight used to calibrate the scale).

5. If the calibration weight displayed matches the test weight you are using, proceed to the next step.

If not, change the displayed weight as follows:

First, locate the cursor (_) in the DIM-WEIGHT window (under one of the calibration weight digits). The cursor position determines which digit can be changed. If necessary, move the cursor to a different digit by pressing $\frac{\text{lb}}{\text{kg}}$ to move to the left or $\frac{\text{dom}}{\text{intl}}$ to move to the right. To increase the amount of the digit at the cursor, press $\frac{\text{in}}{\text{cm}}$; to decrease the digit, press **<zero>**.

6. Place the test weight in the center of the CubiScan platform (exact positioning is not required). Allow the scale to completely stabilize.

7. Press **<msr>**. The test weight value is displayed in the WEIGHT window, and the CubiScan calibrates the scale based on the test weight. This completes scale calibration.

If you need to calibrate the sensors, refer to page 31 for instructions. To prepare the scale for operation, refer to the section below for instructions.

Preparing for Operation

To return the CubiScan to operation mode after calibration, proceed as follows.

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

2. Carefully pull the controller box forward out of the base until you can remove the cover.

3. Slide the controller box cover off to expose the DIP switch.

4. Use the tip of a pen or pencil or similar device to move switch 6 on the DIP switch back to the “open” position.

5. Slide the cover back into place over the controller box, and reattach the screws.

6. Place the controller box back in the base, and reattach the four Allen head screws on the corners of the controller box mounting plate using the 2.5 mm Allen wrench.

7. Tip the front of the CubiScan up enough to reach under and plug the RS-232 serial cable back into the connector on the right side of the controller box, and tighten the thumb screws.

8. Plug the power cord back into the power strip, and turn it on.

Chapter 5
Maintenance

This chapter provides information on the care and maintenance of the CubiScan 110. Routine maintenance and careful handling will help keep the CubiScan 110 in good operating condition and prevent service calls or repairs.

Precautions

Do not put packages on the platform that are known to be over 100 pounds (45 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 damage to the load cell. 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 pre-

vent 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 110 controller, first review the Troubleshooting chapter and take any recommended action. If the problem persists, contact Quantronix Technical Assistance at (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. Tip the front of the CubiScan up enough to reach under and loosen the thumb screws, and remove the RS-232 serial cable from the right side of the controller box.

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

4. 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 cover.

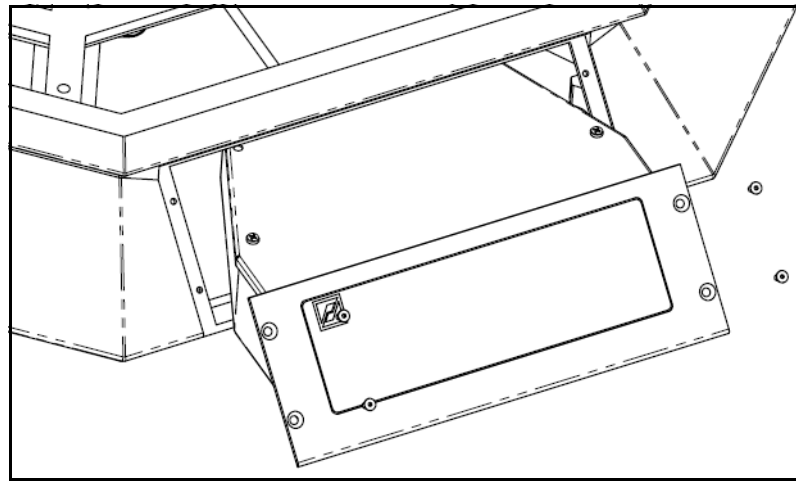

Figure 17
Removing the Controller Box

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

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

Notes

Chapter 6
Troubleshooting

This chapter provides assistance in identifying and solving common problems with the CubiScan 110. If you encounter problems not covered in this chapter, or if a defect is suspected, contact your system integrator or call Quantronix Technical Assistance at (801) 451-7000 for assistance.

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 110, 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. For information on Setup, refer to the "Configuring Qbit" chapter in the *Qbit User Guide*.

Problems with your computer may affect operation of the CubiScan 110 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 110, 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 strip.

2. Verify that the 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 110 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 control panel.)

   If the CubiScan does not return to zero or is slow to return to zero, level the CubiScan and make certain that all five leveling legs are resting on the supporting surface. Refer to “Placement and Leveling” on page 13 for more information.

2. Recalibrate the CubiScan. Refer to Chapter 4 “Calibration” on page 27 for instructions.

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 110.

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

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

1. Is the CubiScan turned on and securely connected to power?
2. Is the serial cable or Ethernet cable connected to both the CubiScan and the computer or network, and are both connections secure?
3. (Computer connection) Is the serial cable connected to the computer at either the COM1 or COM2 port?
4. (Computer connection) Is the Com Port in the Options dialog box (Tools menu) configured for the correct port?
5. (Network connection) Is the Cubiscan 110 properly configured for TCP/IP communication? (QbitTCP software is used to configure the CubiScan through the RS-232-C port.)
6. Is there a problem with the CubiScan 110? Perform the Status function in Qbit to check the status of the CubiScan.
7. 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.

Control Panel Error Messages

Several predefined error codes are programmed into the CubiScan 110 and, if a computer is not connected, may be displayed to identify specific errors. All errors are identified by a 2-digit code, which is displayed on the control panel in the display window appropriate for the message.

Error codes may appear occasionally during operation. This does not necessarily indicate a problem with the CubiScan. The first time an error code occurs, ignore it and redo the measurement. If the error code is displayed again immediately or frequently, review the sections below for information on specific codes.

NOTE ☞ *If an error message appears during calibration, power the CubiScan off and back on and start calibration over.*

Timeout Error 01

If error code 01 is displayed in any window on the control panel, it may imply a problem that can be easily corrected. If, after following the suggestions below, the error code continues to be displayed, contact Quantronix for assistance.

Length, Width, Height

If timeout error 01 appears in the LENGTH, WIDTH, or HEIGHT window, it indicates that no communication is taking place between the sensor and the controller. The error code will appear in the display window (length, width, height) of the sensor that is at fault. Consider the following.

1. Verify that the sensor connector has not been disconnected.

2. Inspect the sensor cable for damage. Replace the sensor cable if it is damaged.

3. The sensor may be defective. Replace the sensor or contact Quantronix.

Weight If timeout error 01 appears in the WEIGHT window, it indicates that no communication is taking place between the load cell and the controller. Consider the following.

1. Verify that the load cell connector has not been disconnected.

2. The load cell or its cabling may be defective or damaged. Inspect and replace the load cell if suspect, or contact Quantronix.

Other Error Codes

If any of the following error codes appear in any display window on the control panel repeatedly, make note of the error code and contact Quantronix for assistance.

-02- Zero error
-03- Load cell dead weight
-04- Load cell weight total
-05- Load cell dead weight query
-06- Load cell weight total query
-07- Load cell dead weight set
-08- Load cell weight total set
-09- Tare
-10- Transmit device data
-11- Calibrate
-12- Measure signal value
-13- Configure output format
-14- Internal analog to digital rate
-15- Amplifier signal filter
-16- Amplifier signal selection
-17- Corrective function switch
-18- Automatic calibration switch
-19- Restart

-20- Set password
-21- Define Password
-22- External Interrupt

Appendix A
Communications Protocol

This appendix contains the cable pin assignments and command set description for the interface between the CubiScan 110 and a host computer via a serial RS-232 connection as well as for the interface between the CubiScan 110 and a network via an Ethernet TCP/IP connection.

"CubiScan 110 Command Set" on page 51 lists the commands in the CubiScan 110 command set used for cubing and weighing and to set up the CubiScan for cubing and weighing. "TCP/IP Communications Setup Command Set" on page 69 lists the commands used to set up the CubiScan for TCP/IP communications with a network.

Serial (RS-232-C) Cable Pin Assignments

The CubiScan 110 serial ports use the EIA RS-232-C communications protocol. The data are 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 controller unit to the host
Pin 5	SGND	Signal ground (DB-9 connector)

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

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

Ethernet (TCP/IP) Cable Pin Assignments

The CubiScan 110 Ethernet port uses the 10-BaseT 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

CubiScan 110 Command Set

This section describes the commands recognized by the CubiScan 110 to cube and weigh packages and to set up the CubiScan 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 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, the operation associated with that command is aborted due to the error.

The CubiScan 110 recognizes the following commands from the command set for both a serial and Ethernet connection.

Continuous Measure

This command toggles on or off a continuous measure mode. The readings transmitted are Length, Height, Width, and Weight. Both dimensions and counts are transmitted.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Continuous Msr. Com.	Alpha	(C)	43h
3	1	End of Text	Control	(ETX)	03h
4	1	Carriage Return	Control	(CR)	0Dh
5	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Measure Command	Alpha	(M)	4Dh
3	1	Acknowledge	Alpha	(A)	41h
4	1	CubiScan/Host Originated	Alpha	(C/H)	43h or 48h
5	6	City Code	Alpha	000000-ZZZZZZ	
11	1	Comma	Alpha	(,)	2Ch
12	1	Length Identifier	Alpha	(L)	4C
13	5	Length	Numeric	000.0-999.9*	
18	1	Comma	Alpha	(,)	2Ch
19	1	Width Identifier	Alpha	(W)	57h
20	5	Width	Numeric	000.0-999.9*	
25	1	Comma	Alpha	(,)	2Ch
26	1	Height Identifier	Alpha	(H)	48h
27	5	Height	Numeric	000.0-999.9*	
32	1	Comma	Alpha	(,)	2Ch
33	1	Dimension Unit	Alpha	(E/M)	45h or 4Dh

Pos	Len	Description	Type	Range	ASCII
34	1	Comma	Alpha	(,)	2Ch
35	1	Weight Identifier	Alpha	(K)	4Bh
36	6	Weight	Numeric	000.00-999.99*	
42	1	Comma	Alpha	(,)	2Ch
43	1	Dim. Wgt. Identifier	Alpha	(D)	44h
44	6	Dim. Weight	Numeric	000.00-999.99*	
50	1	Comma	Alpha	(,)	2Ch
51	1	Wgt./Dim.Wgt Unit	Alpha	(E/M)	45h or 4Dh
52	1	Comma	Alpha	(,)	2Ch
53	1	Factor Identifier	Alpha	(F)	46h
54	4	Factor	Numeric	0000-9999	
58	1	Comma	Alpha	(,)	2Ch
59	1	Domestic/Int'l. Unit	Alpha	(D/I)	44h or 49h
60	1	End of Text	Control	(ETX)	03h
61	1	Carriage Return	Control	(CR)	0Dh
62	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Measure Command	Alpha	(M)	4Dh
3	1	Neg. Acknowledge	Alpha	(N)	4Eh
4	1	CubiScan/Host Originated	Alpha	(C/H)	43h or 48h
5	1	Corner Sensor / Measure / Zero Error	Alpha	(C/M/Z)	43h or 4Dh or 5Ah
6	1	End of Text	Control	(ETX)	03h
7	1	Carriage Return	Control	(CR)	0Dh
8	1	Line Feed	Control	(LF)	0Ah

* This field may contain underscores, dashes, or overscores indicating an under, unstable, or over error condition, respectively.

Dimension Calibration

This function is required when one of the sensors is replaced or moved, when a new controller is installed, or for routine calibration. This command causes the CubiScan to reply with a dimension calibration code each time it is issued. This command must be issued SIX times to complete sensor calibration. Dimension calibration codes are defined below.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Dim.Calibration	Alpha	(D)	44h
3	1	End of Text	Control	(ETX)	03h
4	1	Carriage Return	Control	(CR)	0Dh
5	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Dim. Calibration	Alpha	(D)	44h
3	1	Acknowledge	Alpha	(A)	41h
4	2	Identifier	Numeric	(00-99)	
6	1	End of Text	Control	(ETX)	03h
7	1	Carriage Return	Control	(CR)	0Dh
8	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Dim. Calibration	Alpha	(D)	44h
3	1	Neg. Acknowledge	Alpha	(N)	4Eh
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah

Dimension Calibration Code Descriptions:

DA01 Clear the CubiScan
DA02 Place 12" target against left sensor facing RIGHT
DA03 Place 12" target against right sensor facing LEFT
DA04 Place 12" target against back panel facing FRONT
DA05 Place 12" target against back panel facing UP
DA06 Dimension calibration complete

Dimension Units

This command is used to set the dimension units to either English (inches) or metric (centimeters) mode.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Dim. Unit Command	Alpha	(")	22h
3	1	English or Metric	Alpha	(E/M)	45h or 4Dh
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Dim. Unit Command	Alpha	(")	22h
3	1	Acknowledge	Alpha	(A)	41h
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Dim. Unit Command	Alpha	(")	22h

Pos	Len	Description	Type	Range	ASCII
3	1	Neg. Acknowledge	Alpha	(N)	4Eh
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah

Factor Toggle

This command is used to set the dimensional factor to either domestic or international.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Fact. Toggle Command	Alpha	(F)	46h
3	1	Dom. / Int'l	Alpha	(D/I)	44h or 49h
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Fact. Toggle Command	Alpha	(F)	46h
3	1	Acknowledge	Alpha	(A)	41h
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Fact. Toggle Command	Alpha	(F)	46h
3	1	Neg. Acknowledge	Alpha	(N)	4Eh

Pos	Len	Description	Type	Range	ASCII
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah

Location Id/City Code

This command is used to set the CubiScan location identification. This data is stored in permanent memory and need only be set once for each CubiScan 110.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Location Id. Command	Alpha	(L)	4Ch
3	6	City Code	Alpha	000000-ZZZZZ	
9	1	End of Text	Control	(ETX)	03h
10	1	Carriage Return	Control	(CR)	0Dh
11	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Location Id. Command	Alpha	(L)	4Ch
3	1	Acknowledge	Alpha	(A)	41h
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Location Id. Command	Alpha	(L)	4Ch
3	1	Neg. Acknowledge	Alpha	(N)	4Eh

Pos	Len	Description	Type	Range	ASCII
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah

Measure

Receipt of this command causes the CubiScan to measure and weigh the package in the measuring field. The CubiScan immediately formats the data collected and transmits it to the host computer.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Measure Command	Alpha	(M)	4Dh
3	1	End of Text	Control	(ETX)	03h
4	1	Carriage Return	Control	(CR)	0Dh
5	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Measure Command	Alpha	(M)	4Dh
3	1	Acknowledge	Alpha	(A)	41h
4	1	CubiScan/Host Originated	Alpha	(C/H)	43h or 48h
5	6	City Code	Alpha	000000-ZZZZZZ	
11	1	Comma	Alpha	(,)	2Ch
12	1	Length Identifier	Alpha	(L)	4C
13	5	Length	Numeric	000.0-999.9*	
18	1	Comma	Alpha	(,)	2Ch
19	1	Width Identifier	Alpha	(W)	57h

Pos	Len	Description	Type	Range	ASCII
20	5	Width	Numeric	000.0-999.9*	
25	1	Comma	Alpha	(,)	2Ch
26	1	Height Identifier	Alpha	(H)	48h
27	5	Height	Numeric	000.0-999.9*	
32	1	Comma	Alpha	(,)	2Ch
33	1	Dimension Unit	Alpha	(E/M)	45h or 4Dh
34	1	Comma	Alpha	(,)	2Ch
35	1	Weight Identifier	Alpha	(K)	4Bh
36	6	Weight	Numeric	000.00-999.99*	
42	1	Comma	Alpha	(,)	2Ch
43	1	Dim. Wgt. Identifier	Alpha	(D)	44h
44	6	Dim. Weight	Numeric	000.00-999.99*	
50	1	Comma	Alpha	(,)	2Ch
51	1	Wgt./Dim.Wgt Unit	Alpha	(E/M)	45h or 4Dh
52	1	Comma	Alpha	(,)	2Ch
53	1	Factor Identifier	Alpha	(F)	46h
54	4	Factor	Numeric	0000-9999	
58	1	Comma	Alpha	(,)	2Ch
59	1	Domestic/Int'l. Unit	Alpha	(D/I)	44h or 49h
60	1	End of Text	Control	(ETX)	03h
61	1	Carriage Return	Control	(CR)	0Dh
62	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Measure Command	Alpha	(M)	4Dh
3	1	Neg. Acknowledge	Alpha	(N)	4Eh
4	1	CubiScan/Host Originated	Alpha	(C/H)	43h or 48h

Pos	Len	Description	Type	Range	ASCII
5	1	Corner Sensor / Measure / Zero Error	Alpha	(C/M/Z)	43h or 4Dh
6	1	End of Text	Control	(ETX)	03h
7	1	Carriage Return	Control	(CR)	0Dh
8	1	Line Feed	Control	(LF)	0Ah

* This field may contain underscores, dashes, or tildes indicating an under, unstable, or over error condition, respectively. Leading spaces (20h) will be used when the actual data does not fill the entire field.

Scale Calibration

This function is required when the load cell is replaced, when a new controller is installed, or for routine calibration. This command causes the CubiScan to reply with a scale calibration code. This command must be issued THREE times to complete scale calibration. Scale calibration codes are defined below.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Scale Calibration	Alpha	(S)	53h
3	6	Test Weight Value	Numeric	050.00-100.00	
9	1	End of Text	Control	(ETX)	03h
10	1	Carriage Return	Control	(CR)	0Dh
11	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Scale Calibration	Alpha	(S)	53h
3	1	Acknowledge	Alpha	(A)	41h

Pos	Len	Description	Type	Range	ASCII
4	2	Identifier	Numeric	(00-99)	
6	1	End of Text	Control	(ETX)	03h
7	1	Carriage Return	Control	(CR)	0Dh
8	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Scale Calibration	Alpha	(S)	53h
3	1	Neg. Acknowledge	Alpha	(N)	4Eh
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah

Scale Calibration Code Descriptions:

SA01 Clear the CubiScan
SA02 Place Test Weight in Corner
SA03 Scale Calibration Complete

Test

This command causes the CubiScan to reply with an error code. A response of TA00 means that the CubiScan is ready and responding to transmissions from the host. If the host receives no response from the control unit after sending this command, an error condition exists in the communications between the host and controller.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Self Test Command	Alpha	(T)	54h

Pos	Len	Description	Type	Range	ASCII
3	1	End of Text	Control	(ETX)	03h
4	1	Carriage Return	Control	(CR)	0Dh
5	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Self Test Command	Alpha	(T)	54h
3	1	Acknowledge	Alpha	(A)	41h
4	2	Identifier	Numeric	(00-99)	
6	1	End of Text	Control	(ETX)	03h
7	1	Carriage Return	Control	(CR)	0Dh
8	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Self Test Command	Alpha	(T)	54h
3	1	Neg. Acknowledge	Alpha	(N)	4Eh
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah

Units

This command causes the CubiScan to report its current modes of operation.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Values Command	Alpha	(U)	55h
3	1	End of Text	Control	(ETX)	03h

Pos	Len	Description	Type	Range	ASCII
4	1	Carriage Return	Control	(CR)	0Dh
5	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Units Command	Alpha	(U)	55h
3	1	Acknowledge	Alpha	(A)	41h
4	1	Dimension Units	Alpha	(E/M)	45h or 4Dh
5	1	Weight Units	Alpha	(E/M	45h or 4Dh
6	1	Factor Units	Alpha	(D/I)	44h or 49h
7	4	Dimensional Factor	Numeric	0000-9999	
11	6	Location Id./City Code	Alpha	000000-ZZZZZZ	
17	1	End of Text	Control	(ETX)	03h
18	1	Carriage Return	Control	(CR)	0Dh
19	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Units Command	Alpha	(U)	55h
3	1	Neg. Acknowledge	Alpha	(N)	4Eh
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah

Values

This command causes the CubiScan to report all of its internal parameters. This is useful for troubleshooting.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Values Command	Alpha	(V)	56h
3	1	End of Text	Control	(ETX)	03h
4	1	Carriage Return	Control	(CR)	0Dh
5	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Values Command	Alpha	(V)	56h
3	1	Acknowledge	Alpha	(A)	41h
4	4	Length 1 DBW	Numeric	00.0-99.9	
8	1	Comma	Alpha	(,)	2Ch
9	4	Length 2 DBW	Numeric	00.0-99.9	
13	1	Comma	Alpha	(,)	2Ch
14	4	Width DBW	Numeric	00.0-99.9	
18	1	Comma	Alpha	(,)	2Ch
19	4	Height DBW	Numeric	00.0-99.9	
23	1	Comma	Alpha	(,)	2Ch
24	4	Length 1 CPI	Numeric	0000-9999	
28	1	Comma	Alpha	(,)	2Ch
29	4	Length 2 CPI	Numeric	0000-9999	
33	1	Comma	Alpha	(,)	2Ch
34	4	Width CPI	Numeric	0000-9999	
38	1	Comma	Alpha	(,)	2Ch

Pos	Len	Description	Type	Range	ASCII
39	4	Height CPI	Numeric	0000-9999	
43	1	Comma	Alpha	(,)	2Ch
44	4	Length 1 Blanking	Numeric	0.00-9.99	
48	1	Comma	Alpha	(,)	2Ch
49	4	Length 2 Blanking	Numeric	0.00-9.99	
53	1	Comma	Alpha	(,)	2Ch
54	4	Width Blanking	Numeric	0.00-9.99	
58	1	Comma	Alpha	(,)	2Ch
59	4	Height Blanking	Numeric	0.00-9.99	
63	1	Comma	Alpha	(,)	2Ch
64	4	Length 1 Gain	Numeric	00.0-99.9	
68	1	Comma	Alpha	(,)	2Ch
69	4	Length 2 Gain	Numeric	00.0-99.9	
73	1	Comma	Alpha	(,)	2Ch
74	4	Width Gain	Numeric	00.0-99.9	
78	1	Comma	Alpha	(,)	2Ch
79	4	Height Gain	Numeric	00.0-99.9	
83	1	Comma	Alpha	(,)	2Ch
84	2	Length 1 Pulses	Numeric	00-99	
86	1	Comma	Alpha	(,)	2Ch
87	2	Length 2 Pulses	Numeric	00-99	
89	1	Comma	Alpha	(,)	2Ch
90	2	Width Pulses	Numeric	00-99	
92	1	Comma	Alpha	(,)	2Ch
93	2	Height Pulses	Numeric	00-99	
95	1	Comma	Alpha	(,)	2Ch
96	3	Length 1 Wait Time	Numeric	000-999	
99	1	Comma	Alpha	(,)	2Ch

Pos	Len	Description	Type	Range	ASCII
100	3	Length 2 Wait Time	Numeric	000-999	
103	1	Comma	Alpha	(,)	2Ch
104	3	Width Wait Time	Numeric	000-999	
107	1	Comma	Alpha	(,)	2Ch
108	3	Height Wait Time	Numeric	000-999	
111	1	Comma	Alpha	(,)	2Ch
112	4	Model Number	Alpha	“50” / “100L”	
116	1	Comma	Alpha	(,)	2Ch
117	3	Scale Capacity - English	Numeric	000-999	50=10,20,30 100=100,150,201
119	1	Comma	Alpha	(,)	2Ch
121	5	Firmware Version	Alpha	0.000-9.999	
126	28	Future Growth	Alpha	Space	0h
154	1	End of Text	Control	(ETX)	03h
155	1	Carriage Return	Control	(CR)	0Dh
156	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Values Command	Alpha	(V)	56h
3	1	Neg. Acknowledge	Alpha	(N)	4Eh
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah

Weight Units

This command is used to set the weight units to either English (pounds) or metric (kilograms) mode.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Wgt. Unit Command	Alpha	(#)	23h
3	1	English or Metric	Alpha	(E/M)	45h or 4Dh
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Wgt. Unit Command	Alpha	(#)	23h
3	1	Acknowledge	Alpha	(A)	41h
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Wgt. Unit Command	Alpha	(#)	23h
3	1	Neg. Acknowledge	Alpha	(N)	4Eh
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah

Zero

This command should be issued periodically to force the CubiScan to perform internal compensations to adjust to changes in temperature and humidity. This command should only be issued when the measuring field is free of packages! Never issue this command when a package is present in the measuring field.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Zero Command	Alpha	(Z)	5Ah
3	1	End of Text	Control	(ETX)	03h
4	1	Carriage Return	Control	(CR)	0Dh
5	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Zero Command	Alpha	(Z)	5Ah
3	1	Acknowledge	Alpha	(A)	41h
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Zero Command	Alpha	(Z)	5Ah
3	1	Neg. Acknowledge	Alpha	(N)	4Eh
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah

TCP/IP Communications Setup Command Set

This section describes the commands recognized by the CubiScan 110 to set up the CubiScan 110 for communications with a network using the TCP/IP protocol.

You can use the QbitTCP software to configure the CubiScan 110 for TCP/IP communications. Contact Quantronix for information.

Configuration of the CubiScan 110 for TCP/IP communication is performed through the RS-232-C serial communications port using the following commands.

Set Port

This command is used to set the CubiScan 110 TCP port number. In TCP/IP networks, port numbers are used to distinguish between different logical channels on the same network interface on the same computer. For example, port 80 is used for HTTP traffic on the Internet. Some ports have numbers assigned to them by the Internet Assigned Numbers Authority (IANA). These are known as "well-known ports" and are limited to numbers 0 through 1023. Ports 1024 through 49151 are "registered ports" listed by the IANA, and can be used by ordinary user processes on most systems. Ports 49152 through 65535 are called "dynamic and/or private ports" and are free for use. It is recommended that the CubiScan 110 TCP port be set to a number between 49152 and 65535 to avoid conflicts. Consult your network administrator to select the port number.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Port Command	Alpha	(P)	50h

Pos	Len	Description	Type	Range	ASCII
4	1-5 or n	Port	Alpha	(1) to (65535)	
4+n	1	End of Text	Control	(ETX)	03h
5+n	1	Carriage Return	Control	(CR)	0Dh
6+n	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Port Command	Alpha	(P)	50h
4	1	Acknowledge	Alpha	(A)	41h
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Port Command	Alpha	(P)	50h
4	1	Neg. Acknowledge	Alpha	(N)	4Eh
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah

Read Port

This command is used to read the current TCP Port number setting from the CubiScan 110.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h

Pos	Len	Description	Type	Range	ASCII
2	1	Read Command	Alpha	(~)	7Eh
3	1	Port Command	Alpha	(P)	50h
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	Port Command	Alpha	(P)	50h
4	1	Acknowledge	Alpha	(A)	41h
5	1-5 or n	Port	Alpha	(1) to (65535)	
5+n	1	End of Text	Control	(ETX)	03h
6+n	1	Carriage Return	Control	(CR)	0Dh
7+n	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	Port Command	Alpha	(P)	50h
4	1	Neg. Acknowledge	Alpha	(N)	4Eh
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah

Set IP Address

This command is used to set the CubiScan 110 IP address. The IP address, or Internet address, is usually expressed in “dot” notation; for example, “121.43.6.234.” The first three groups of numbers (e.g., 121.43.6) are usually specific to the network to which you are

connecting. The last number (e.g., 234) is specific to a particular CubiScan 110. Consult your network administrator to obtain an available IP address.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	IP Address Command	Alpha	(I)	49h
4	7-15 or n	IP Address	Alpha	(0.0.0.0) to (255.255.255.255)	
4+n	1	End of Text	Control	(ETX)	03h
5+n	1	Carriage Return	Control	(CR)	0Dh
6+n	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	IP Address Command	Alpha	(I)	49h
4	1	Acknowledge	Alpha	(A)	41h
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	IP Address Command	Alpha	(I)	49h
4	1	Neg. Acknowledge	Alpha	(N)	4Eh
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah

Read IP Address

This command is used to read the current IP address setting from the CubiScan 110.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	IP Address Command	Alpha	(I)	49h
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	IP Address Command	Alpha	(I)	49h
4	1	Acknowledge	Alpha	(A)	41h
5	7-15 or n	IP Address	Alpha	(0.0.0.0) to (255.255.255.255)	
5+n	1	End of Text	Control	(ETX)	03h
6+n	1	Carriage Return	Control	(CR)	0Dh
7+n	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	IP Address Command	Alpha	(I)	49h
4	1	Neg. Acknowledge	Alpha	(N)	4Eh
5	1	End of Text	Control	(ETX)	03h

Pos	Len	Description	Type	Range	ASCII
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah

Set Subnet Mask

This command is used to set the CubiScan 110 subnet mask. The subnet (sub-network) is a separate part of an organization's network. A subnet address tells the network's router where on the network to send incoming packets of information. Subnet masking allows the router to move packets more quickly. Like the IP address, the subnet mask is usually expressed in "dot" notation. Consult your network administrator to obtain a subnet mask.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Subnet Address Command	Alpha	(N)	4Eh
4	7-15 or n	Subnet Address	Alpha	(0.0.0.0) to (255.255.255.255)	
4+n	1	End of Text	Control	(ETX)	03h
5+n	1	Carriage Return	Control	(CR)	0Dh
6+n	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Subnet Address Command	Alpha	(N)	4Eh
4	1	Acknowledge	Alpha	(A)	41h
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh

Pos	Len	Description	Type	Range	ASCII
7	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Subnet Address Command	Alpha	(N)	4Eh
4	1	Neg. Acknowledge	Alpha	(N)	4Eh
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah

Read Subnet Address

This command is used to read the current subnet mask setting from the CubiScan 110.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	Subnet Address Command	Alpha	(N)	4Eh
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	Subnet Address Command	Alpha	(N)	4Eh
4	1	Acknowledge	Alpha	(A)	41h

Pos	Len	Description	Type	Range	ASCII
5	7-15 or n	Subnet Address	Alpha	(0.0.0.0) to (255.255.255.255)	
5+n	1	End of Text	Control	(ETX)	03h
6+n	1	Carriage Return	Control	(CR)	0Dh
7+n	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	Subnet Address Command	Alpha	(N)	4Eh
4	1	Neg. Acknowledge	Alpha	(N)	4Eh
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah

Set Gateway Address

This command is used to set the network gateway address on the CubiScan 110. It can be the address of a network server or router and is expressed in “dot” notation. Consult your network administrator to obtain the network gateway address.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Gateway Address Command	Alpha	(G)	47h
4	7-15 or n	Gateway Address	Alpha	(0.0.0.0) to (255.255.255.255)	
4+n	1	End of Text	Control	(ETX)	03h
5+n	1	Carriage Return	Control	(CR)	0Dh

Pos	Len	Description	Type	Range	ASCII
6+n	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Gateway Address Command	Alpha	(G)	47h
4	1	Acknowledge	Alpha	(A)	41h
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Gateway Address Command	Alpha	(G)	47h
4	1	Neg. Acknowledge	Alpha	(N)	4Eh
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah

Read Gateway Address

This command is used to read the current gateway address setting from the CubiScan 110.

Pos	Len	Description	Type	Range	ASCII
Command Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	Gateway Address Command	Alpha	(G)	47h
4	1	End of Text	Control	(ETX)	03h

Pos	Len	Description	Type	Range	ASCII
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	Gateway Address Command	Alpha	(G)	47h
4	1	Acknowledge	Alpha	(A)	41h
5	7-15 or n	Gateway Address	Alpha	(0.0.0.0) to (255.255.255.255)	
5+n	1	End of Text	Control	(ETX)	03h
6+n	1	Carriage Return	Control	(CR)	0Dh
7+n	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	Gateway Address Command	Alpha	(G)	47h
4	1	Neg. Acknowledge	Alpha	(N)	4Eh
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah

Set Inactivity Timeout

This command is used to set the CubiScan 110 Ethernet inactivity timeout. When a network connection has been established, if the network cable is disconnected or the user leaves the CubiScan for a period of time, the network connection is dropped by the CubiScan. This is necessary for someone else to connect to the CubiScan, possibly from a different network node, without cycling the power on the CubiScan. This value is programmable from 1 to 255 minutes.

Pos	Len	Description	Type	Range	ASCII
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Timeout Command	Alpha	(T)	54h
4	3	Value in Minutes	Alpha	(001-255)	
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Timeout Command	Alpha	(T)	54h
4	1	Acknowledge	Alpha	(A)	41h
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Set Command	Alpha	(@)	40h
3	1	Timeout Command	Alpha	(T)	54h
4	1	Neg. Acknowledge	Alpha	(N)	4Eh
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah

Read Inactivity Timeout

This command is used to read the current inactivity timeout setting from the CubiScan 100L.

Pos	Len	Description	Type	Range	ASCII
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	Timeout Command	Alpha	(T)	54h
4	1	End of Text	Control	(ETX)	03h
5	1	Carriage Return	Control	(CR)	0Dh
6	1	Line Feed	Control	(LF)	0Ah
Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	Timeout Command	Alpha	(T)	54h
4	1	Acknowledge	Alpha	(A)	41h
5	3	Value in Minutes	Alpha	(001-255)	
6	1	End of Text	Control	(ETX)	03h
7	1	Carriage Return	Control	(CR)	0Dh
8	1	Line Feed	Control	(LF)	0Ah
Negative Acknowledge Format					
1	1	Start of Text	Control	(STX)	02h
2	1	Read Command	Alpha	(~)	7Eh
3	1	Timeout Command	Alpha	(T)	54h
4	1	Neg. Acknowledge	Alpha	(N)	4Eh
5	1	End of Text	Control	(ETX)	03h
6	1	Carriage Return	Control	(CR)	0Dh
7	1	Line Feed	Control	(LF)	0Ah

Appendix B
Parts List

Following is a list of parts that can be purchased for the CubiScan 110 as spare parts or if replacement is necessary.

Part No.	Description	Quantity/Unit
12970	Main Controller Assembly	1
12780	Sensor Assembly *	4
11493	Serial Communications Cable, 10 ft. *	1
11555	Power Supply, 12 VDC, 44 Watt *	1
10083	Cord, AC Power *	1
10273	Calibration Block, 12" x 5" x 3.6", Black	1
Q0131700	Sensor Cable Assembly, 2 ft.	2
Q0132300	Sensor Cable Assembly, 5.5 ft.	1

* recommended spares

Notes