



*ExpressCube*TM SizeIt II User Guide

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Important

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General

1.1. Introduction

SizeIt II is a second generation of software that provides both control and data collection for ExpressCube dimensional and weighing devices. The SizeIt II runs on a computer that is running Window XP, Windows Vista or Windows 7 operating system.

Note: The remote lens calibration feature will only work with ExpressCube devices manufactured after January 2012.

1.2. Specifications / Features

Size It II	
Computer ¹ Requirements	
Operating System	Windows XP, Windows Vista, Windows 7
CPU	Pentium IV or better ~ 2.0 GHz Clock
Minimum Memory	1 GB Ram
USB Ports Required	2 x USB 2.0 (External hub acceptable)
.NET Framework Min. 2.0	Copy Included on USB Key

Hand Scanner (ExpressCube Port Only) ²	
Type	RS-232
Baud Rate	9600
Parity Type	None
Stop Bit	1 Stop Bit
Data Bits	8
Scan Complete	CR / LF

Feature Notes: ¹ Computer not included; ² Hand Scanner not included

Features
Up to 4 Simultaneous Displayed Dim Weights
10 Dim Factors with auto metric / imperial conversion
Automatic Acquire/ Recorder
Oversize Carton Manual Measurement (Selectable)
0 to 6 Tag Records with Labels With Optional/Mandatory Settings
Status Bar
Group Measurement for Thin Items
Multi-Pack for Package and Individual Item Measurements
Swap – Permits selection of package orientation for WMS software
Automatic Time File Closure for Billing Applications
Universal Output – Produces data format compatible with many existing WMS, shipping and logistics programs
Windows message integration
ExpressCube Control Functions

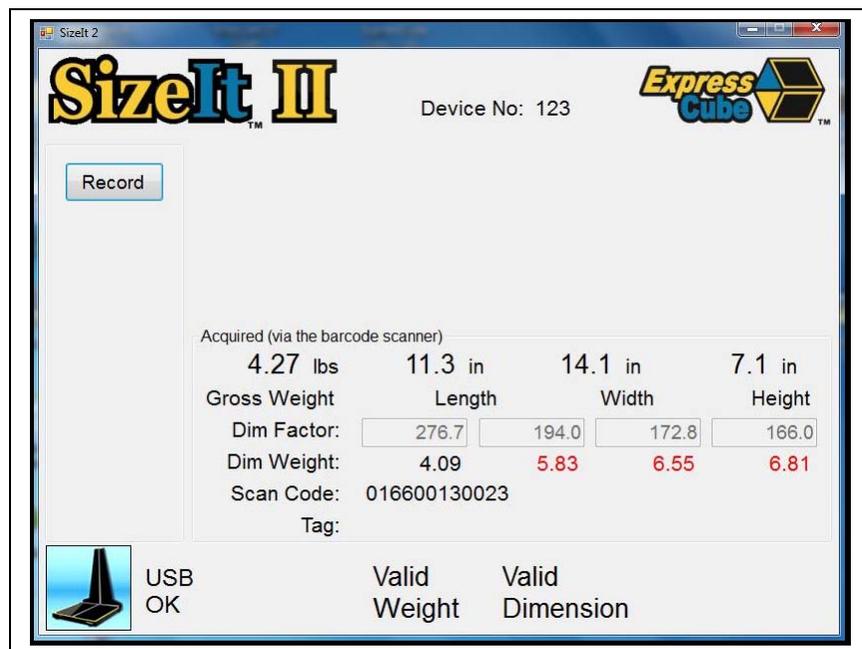
2. Operation – General

2.1. Screen Layout

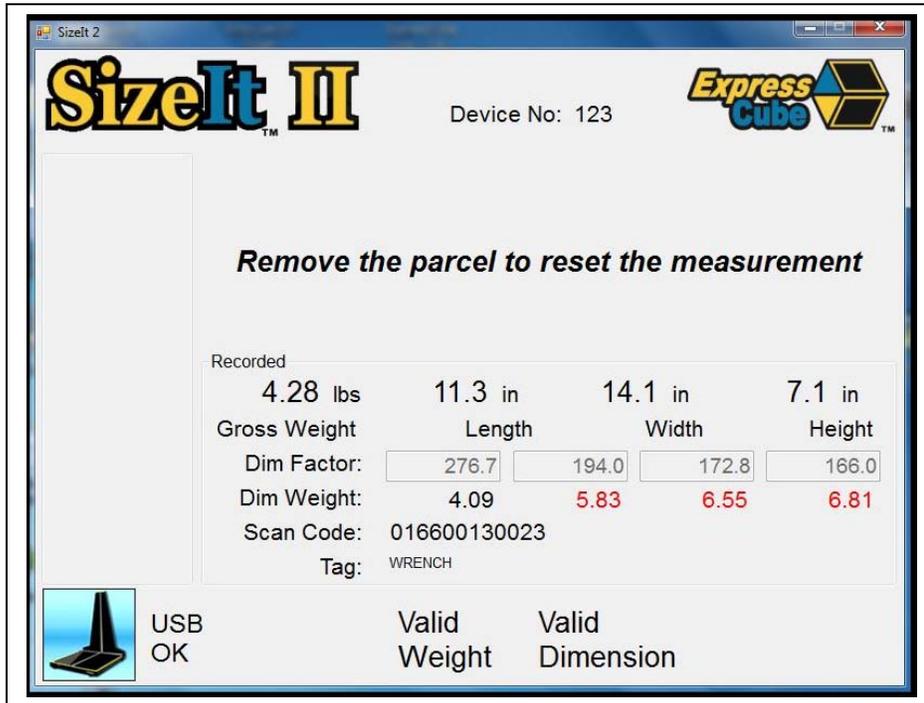
2.1.1. Screen Layout - Idle



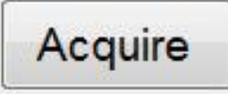
2.1.2. Screen Layout - Acquired



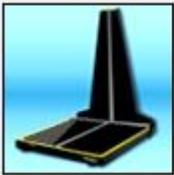
2.1.3. Screen Layout – Recorded



2.1.4. Screen Icon Table

Device No: 123	This is the ExpressCube system identification number which is used with the branch name to generate the data file name. This is set in the options menu.
	The Acquire button is used to capture (but not record) a measurement from the ExpressCube device. A valid weight & dimension must be present to capture the measurements. The function of the Acquire button can also be activated when the hand scanner reads a bar code.
	The Acquire & Record but is an automatic record feature that acquires the data and records it directly to file. The recorded data is displayed in the bottom window of the window as illustrated in the next section. The function of the Acquire & Record button can also be activated when the hand scanner reads a bar code.
	This button will record the displayed data that was acquired previously by either the Acquired button or hand scanner operation. The displayed weight and dimensions can be reset without recording data by moving the carton off the ExpressCube platform.

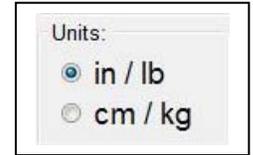
<p style="text-align: center;">Valid Weight</p>	<p>The Valid Weight appears when the ExpressCube platform is steady enough for the ExpressCube device to determine an accurate weight. The Valid Weight must be indicated before dimension measurements are displayed. Note: ExpressCube green status LED will light solid for Valid Weight</p>															
<p style="text-align: center;">Valid Dimension</p>	<p>The Valid Dimension appears when the ExpressCube device has determined all Length, Width and Height dimensions. In WMS operation, the ExpressCube will display each dimension as soon as it is determined but only all three resolved dimensions will result in a Valid Dimension indication. Note: ExpressCube yellow status LED will light solid for Valid Dimension</p>															
<table style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;">4.29 lbs</td> <td style="width: 25%;">11.3 in</td> <td style="width: 25%;">14.1 in</td> <td style="width: 25%;">7.1 in</td> </tr> <tr> <td>Gross Weight</td> <td>Length</td> <td>Width</td> <td>Height</td> </tr> </table>		4.29 lbs	11.3 in	14.1 in	7.1 in	Gross Weight	Length	Width	Height							
4.29 lbs	11.3 in	14.1 in	7.1 in													
Gross Weight	Length	Width	Height													
<p>The above display provides the real time results of the ExpressCube weight and dimensional measurements. These are the values that will be acquired or in automatic operation; acquired and recorded. The indicated weight is actual Gross Weight and has not been mathematically altered by dim factor(s).</p>																
<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;">Dim Factor:</td> <td style="width: 25%;">276.7</td> <td style="width: 25%;">194.0</td> <td style="width: 25%;">172.8</td> <td style="width: 25%;">166.0</td> </tr> <tr> <td>Label:</td> <td>Alpha Courier</td> <td>Ground</td> <td>Cardinal</td> <td>Air</td> </tr> <tr> <td>Dim Weight:</td> <td>4.09</td> <td style="color: red;">5.83</td> <td style="color: red;">6.55</td> <td style="color: red;">6.81</td> </tr> </table>		Dim Factor:	276.7	194.0	172.8	166.0	Label:	Alpha Courier	Ground	Cardinal	Air	Dim Weight:	4.09	5.83	6.55	6.81
Dim Factor:	276.7	194.0	172.8	166.0												
Label:	Alpha Courier	Ground	Cardinal	Air												
Dim Weight:	4.09	5.83	6.55	6.81												
<p>The above display provides up to four different calculated dimensional weights (Dim Weight) based on the dimensions of the carton and the labeled Dim Factor. The user can select the Dim Factor using the pull down arrow to select. The Dim Factor and Dim Weight are used widely by courier companies who wish to control the minimum amount of revenue from a carton of a specific volume.. (Refer to appendix for more detail) Larger Dim Weights than the actual gross weight is indicated by the red font.</p>																
<p>Activated:</p> <p><input type="checkbox"/> Group</p> <p><input checked="" type="checkbox"/> Multi-Pack</p> <p><input type="checkbox"/> Swap L/W/H</p>	<p>Features are activated in Options menu. Detailed operation in following section.</p> <p>Group: Provide accurate measurements of thin items (CD's, books).</p> <p>Multi-Pack: Provides single item, measurements from full box of several items.</p> <p>Swap L/W/H: Object rotation for measurement with output correction</p>															
<p>Units:</p> <p><input checked="" type="radio"/> in / lb</p> <p><input type="radio"/> cm / kg</p>	<p>There is a feature in the Options menu that allows the user to set the measurement units (metric/U.S.). In the event that the Units is fixed in the options menu, this selection menu will not be displayed.</p>															
<p style="text-align: center;">Zero</p> <p style="text-align: center;">Zero</p>	<p>The Zero button is designed to establish the empty platform reference (i.e. Zero weight) for accurate weight measurements. The user should verify the platform is clean and empty prior to the Zero function use. The Zero button will fade (as illustrated below) and become inoperable if the ExpressCube device detects one or more valid dimensions (i.e. an object on the platform).</p>															

	<p>The Options button allows access to features, operating characteristics and file recording settings as explained in detail in the following sections of this manual. The Options button is only available when the ExpressCube is in the idle mode. The Options button is not available during the Acquire and/or Record activities.</p>
	<p>This Icon verifies that the SizeIt II program has established USB communication with the ExpressCube device.</p>
	<p>This Icon verifies that the SizeIt II program <u>cannot</u> establish USB communication with the ExpressCube device.</p>

2.2. Preparation for Measurements

2.2.1. Verify Selected Units (cm/kg : in/lb)

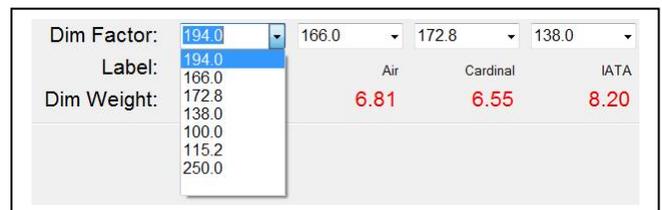
If the unit selection appears on the screen, verify that the appropriate units (cm/kg / in/lb) are selected. The units indicated on the screen are the same units that will be recorded in the data fields.



2.2.2. Verify / Select Dim Factors

Each of the four displayed Dim Factors can be selected from up to 10 dim factors stored in the Dim Factor table.

To select a Dim Factor for a particular field, click the downward arrow adjacent to the Dim Factor window to display a drop down list of available Dim Factors.



Select the appropriate Dim Factor from the menu to load it into Dim Factor window as illustrated.

Note: Refer to section 4.3 for adding or modifying the values in the Dim Factor table.

2.2.3. Verify Select Trigger Mode (Manual or Automatic)

The Acquire can be triggered by either using the cursor to activate the Acquire button or the hand scanner connected to the ExpressCube by scanning a code. The Acquire function will preview the measurement data that will be recorded in the data file. The preview of data will be located in the bottom portion of the screen and marked 'Acquire'. If the oversize manual feature is used, the results will be shown in the Acquired display.



The benefit of the Acquire button is that it allows the user to review the measurement data before it is recorded. If the user determines that the data is not to be recorded, remove the item from the platform to reset SizeIt II.

The Record button will record the Acquired data to be recorded into a file. If Tags were requested to be included in the data field, the user will now be requested to enter data into the Tag window. Upon finishing the input of tag information, the data is recorded and the Record data will be shown at the bottom portion of the screen until SizeIt II is reset.



Automatic Acquire & Record will combine both Acquire & Record functions described above into one event triggered by either the Acquire button or the hand scanner operation. Upon activation, measurement (& hand scanner if equipped) data is collected, modified by oversize if required and then tag info added before the data is written. The Record data will be shown at the bottom portion of the screen until SizeIt II is reset.



To change setting, refer to section 4.4 of this guide.

2.3. Oversize Manual Record

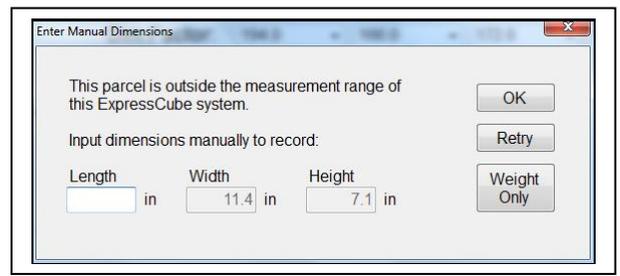
2.3.1. General

The Oversize Manual Record feature is a non-commercial application used primarily in WMS (Warehouse Management Systems) measurements. It allows the ExpressCube system to provide a measurement or data entry of an object or package that cannot be measured directly by ExpressCube. Virtually all objects to be recorded unless the object is too heavy or large to be rested on the ExpressCube platform. This permits an audit of a warehouse to be completed without the necessity of keeping separate lists for irregular objects.

The Oversize Manual Record is activated when one or more of the length, width or height dimensions cannot be determined (N/A) when the Acquire sequence begins. The user is presented with an 'Enter Manual Dimensions' window. The resolved dimensions will be included but any unresolved dimensions will be blank.

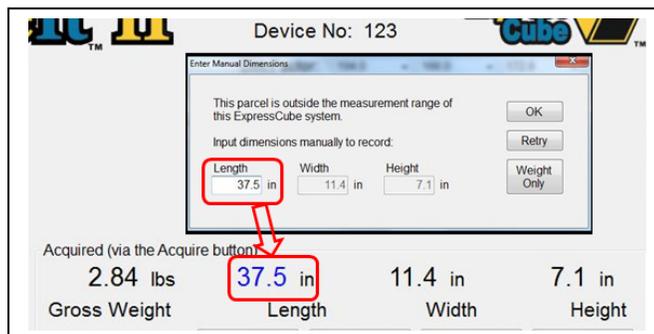
The user can:

- Fill in the unresolved dimension with a manual measurement and hit OK to continue. Manual measurements will be indicated on the screen with a blue font.
- Press OK to record the unresolved dimension as N/A with the other recorded dimensions.
- Press Retry if highlighted to attempt the measurement again. (Cannot be done with hand scanner)
- Press Weight Only to record the weight only (all dimensions are recorded as N/A)



2.3.2. Example 1 An Oversized Carton

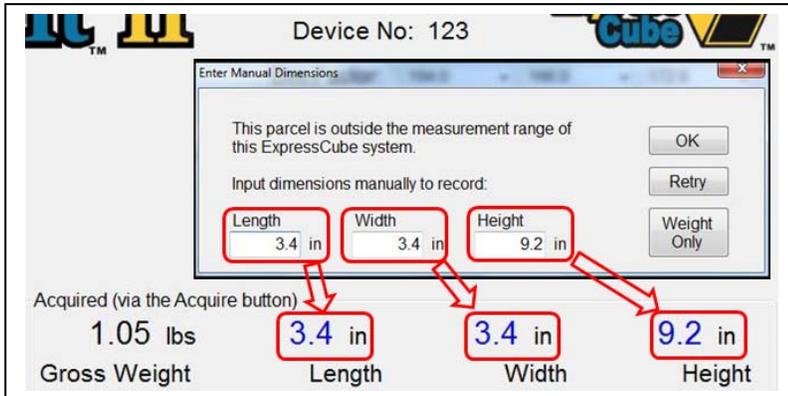
In this example a carton is placed on the platform that has at least one edge extending beyond the ExpressCube dimensioning boundaries. In this example 37.5 in is entered into the empty Length box and the OK button is pressed. The resulting measurement is illustrated.



2.3.3. Example 2 Irregular Shaped Item

To record the dimensions of a non-cuboidal item into the data record, place the object on the platform but not touching any of the dimensional sensors. Activating the Acquired button (or hand scanner) will return a Manual Dimension window that has the weight without any dimensions.

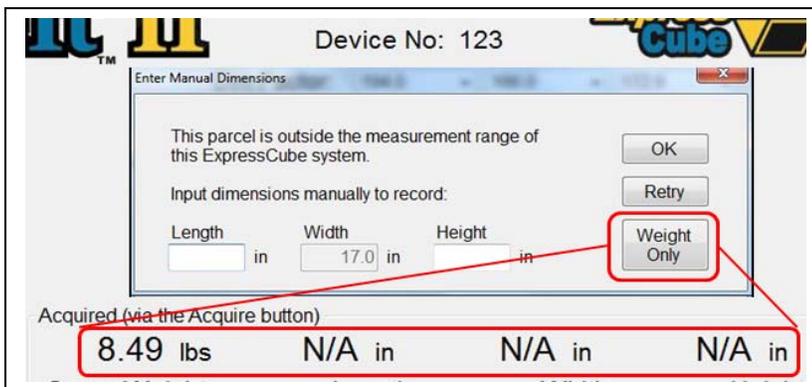
Measure the dimensions manually and fill in the appropriate data entry boxes. When complete hit okay to confirm data to record.



2.3.4. Example 3 Weight Record Only

Occasionally, it is desired to enter the weight only of an object. Place the object on the platform of the ExpressCube device with the object ~ 2 in (5 cm) away from the back of the platform. The length sensor will be clearly visible behind the object. This will trigger the Enter Manual Dimension window to appear.

To record only the weight press the Weight Only button. The weight will be recorded and all dimensions recorded as 'N/A'

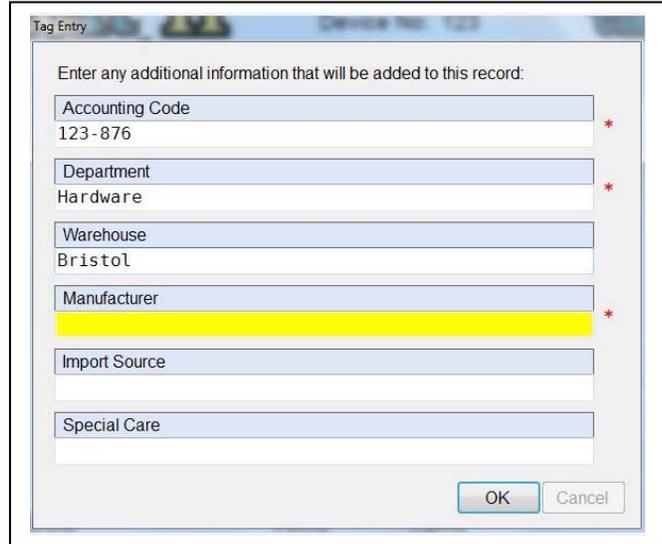


2.4. Tag Record

The tag record is set of up to 6 additional fields that is appended to the measured data field. The tag request is set up as described in Section 3.6 in this guide. If activated the data entry field will be presented at the point that a data field is about to be written. Field labels will direct the user to the information requested. The information can be optional or mandatory depending on the original tag field setup.

In this sample, a mix of mandatory and optional fields is presented. Tag entry follows these guidelines:

- Move from field to field using the cursor (mouse).
- A maximum of 50 characters may be typed in each field.
- Carriage Return (Entry) will close the tag entry box unless a mandatory field has not been filled.
- Each highlighted field terminating in an ‘*’ must be filled.
- All fields not terminated in ‘*’ are optional field and filled at the operators discretion.

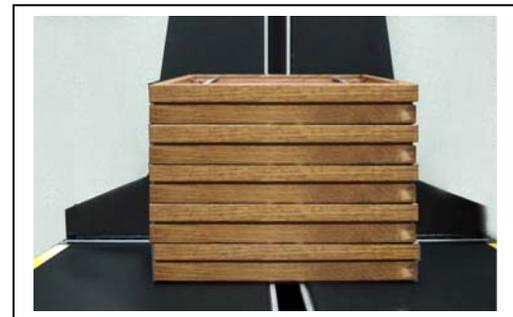


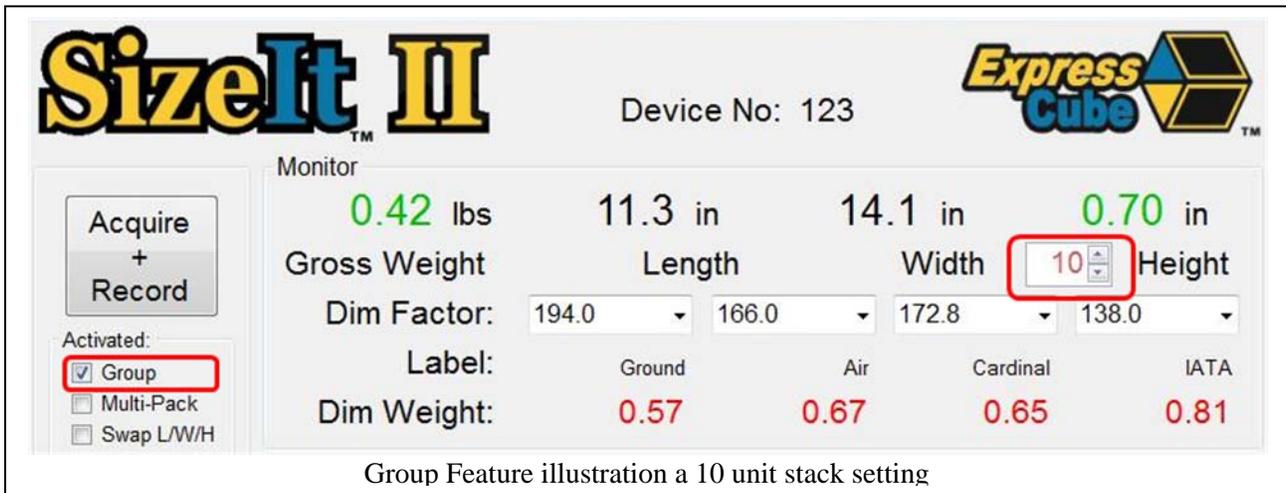
2.5. Group Feature

The group feature is a method to measure very thin items (such as CD's, DVD, Books, Magazines, etc) by measuring a group of identical items stacked on the scale against the height array. The accuracy of the height dimension will increase by the number of items stacked. SizeIt II will calculate the dimensions and weight automatically and record the single unit dimensions.

As an example, we wish to record the dimensions of a picture frame into our WMS software. A single picture frame is less than 1" thick giving us an unacceptable error in the thickness. To record an accurate thickness, follow this procedure:

- Place a group of stacked identical pictures onto the ExpressCube platform setting the group against the height dimensioning bank.
- Verify that the group is in alignment and configured with no overlap in the stacked units.
- Press the 'Group' feature to bring up the Group counter located adjacent to the Height display.
- Press Acquire or trigger hand scanner to record individual dimensions and weight.





NOTE: Group feature will turn off after a recorded dimension measurement.

2.6. Multi-Pak Feature

2.6.1. Description

The multi-Pak feature is a method used to calculate the individual dimension and weights of one item of many items contained in a box or package. The individual units could be bottles, boxes or packages but they must be identical and fill the box in a divisible format – that is – it cannot be random configured items such as boxes containing unpackaged jelly beans, pills, screws, etc.

Multi-Pack is an excellent feature for measuring objects of irregular or unusual shapes such as liquor, wine or perfume bottles. Multi-Pack will deliver the rectangular shelf space and individual weight. Note: The packaging is assumed to be a nominal portion of the individual dimensions and weight thus not factored in.

2.6.2. Package Samples in Which Multi-Pack Could Be Used



2.6.3. How to Determine Multi-Pack Factors for Measuring

Sample 1

Generally the orientation (rows) of the units to be measured in a shipping carton is known. Here we are illustrating the determination of these rows with the box opened.

With the longest side on the length (along the back) of the ExpressCube the count of bottles along the length is 6 bottles, width 4 bottles and height 1 bottle.



Multi-Pack Factors: L =6 ; W=4 ; H=1



Sample 2

Generally the orientation (rows) of the units to be measured in a shipping carton is known. Here we are illustrating the determination of these rows with a box of 24 cans.

With the longest side on the length (along the back) of the ExpressCube the count of cans along the length is 3 cans, width 2 cans and height 4 cans.



Multi-Pack Factors: L =3 ; W=2 ; H=4



2.7. Swap Feature

The swap feature permits the user to utilize the full dimensional capability of the ExpressCube machine to measure boxes and still orient the dimensions to the WMS software to reflect the proper length, width and height measurements. This will allow the WMS to allocate the proper orientation of the box on the shelf.

The most common application for swap is rotating the box so that a length greater than 24" (60 cm) on the 165R or 265R can be placed on the platform so that the box length is actually being measured by the longer height. The swap feature is then activated and the box dimensions adjusted to reflect the proper orientation.



To orient the dimensions correctly, activate the Swap L/W/H feature on the SizeIt II display. Each dimension will have a yellow rectangle pointers appearing beside a dimensional result. The yellow pointer consists of three small boxes representing the actual physical location of the dimension to be recorded. The illustration has L,W & H showing but only one letter appears representing the true location of a dimension on the scale.

Sample: A box with a dimension of 33.9 in is rotated to allow the longer height array to measure it. The SizeIt II display is indicated below:

Monitor					
<input type="button" value="Acquire + Record"/> Activated: <input type="checkbox"/> Group <input type="checkbox"/> Multi-Pack <input type="checkbox"/> Swap L/W/H	4.25 lbs	7.1 in	11.3 in	33.9 in	
	Gross Weight	Length	Width	Height	
	Dim Factor:	194.0	166.0	172.8	138.0
	Label:	Ground	Air	Cardinal	IATA
	Dim Weight:	5.75	6.72	6.45	8.08

Note that the length measurement appears in the Height box. This must be moved before recording the measurement.

Monitor					
<input type="button" value="Acquire + Record"/> Activated: <input type="checkbox"/> Group <input type="checkbox"/> Multi-Pack <input checked="" type="checkbox"/> Swap L/W/H	4.24 lbs	7.1 in	11.3 in	33.9 in	
	Gross Weight	Length	Width	Height	
	Dim Factor:	194.0	166.0	172.8	138.0
	Label:	Ground	Air	Cardinal	IATA
	Dim Weight:	5.75	6.72	6.45	8.08

After activating the Swap Feature, the pointers appear with the default being a proper orientation (L=Length, W=Width, H=Height)

Monitor					
<input type="button" value="Acquire + Record"/> Activated: <input type="checkbox"/> Group <input type="checkbox"/> Multi-Pack <input checked="" type="checkbox"/> Swap L/W/H	4.25 lbs	33.9 in	11.3 in	7.1 in	
	Gross Weight	Length	Width	Height	
	Dim Factor:	194.0	166.0	172.8	138.0
	Label:	Ground	Air	Cardinal	IATA
	Dim Weight:	5.75	6.72	6.45	8.08

Set the Length pointer to H (Height) indicated by arrow. Data is moved and now ready to be recorded.

2.8. Calibration of Measurement Arrays

The lens arrays should be routinely calibrated. The calibration can vary according to frequency of use but once a week should be adequate for most locations.

The procedure below mirrors the same functionality provided through the Program key on the LCD Controller. During the calibration procedure, the platform must be empty and the measuring arrays cleaned with a damp cloth.

To access this feature, press the Options key to bring up the Option menu. Select the Calibration tab to bring up the menu illustrated below.

Step 1: Press the Calibrate button to start.

Step 2: Calibrating with a digital counter.

Step 3: When the green Finished indicator, press OK

During the calibration cycle, the status LEDs will flash as each array is calibrated:
Blue -> Green -> Yellow

Note: Weight calibration (not related to the Zero function) requires a trained technician and cannot be done with SizeIt II software.



2.9. SizeIt II Information (About)

A summary on the SizeIt II software version and the current firmware version running in the ExpressCube device the software is connected is found in this window.

To access the About window, press the Option button and select the About tab. Use the information in this window when communicating to your ExpressCube representative.

Visit www.expresscube.com to check for the latest SizeIt II upgrade.

Product Information

Sizelt Version: 2.1.0001
 Serial Number: AA000000000000000000
 Release Date: 2013
 Vendor: Global Sensor Systems
 Operating System: Windows XP (and above)
 .NET Framework: Version 2.0
 Firmware Revision: 4.0.24

3. Installation

3.1. The Sizelt II USB Key

The Sizelt II USB key has two purposes. The Sizelt II USB key contains the initial setup program, Windows driver, Framework software and Sizelt II documentation.

The Sizelt II key contains a specific key code which is installed in the host computer by the initial setup program included on the Sizelt II. The Sizelt II software will only run if the original Sizelt II key is connected to a USB port on the computer.

The Sizelt II program can be installed on additional computers but the computer currently running the program must have the Sizelt II USB key connected to the USB port.



The Sizelt II USB key must be connected to the computer that the Sizelt II is running. In the event of a Sizelt II software upgrade, the original Sizelt II program must be present before the upgrade software is installed. When using a new computer, install the original software before installing the latest Sizelt II upgrade.

3.2. Sizelt II USB Contents

Insert the Sizelt II USB key into a spare port on the computer. If the file explorer does not start immediately, use the right click on the Start button to start the Windows Explorer.

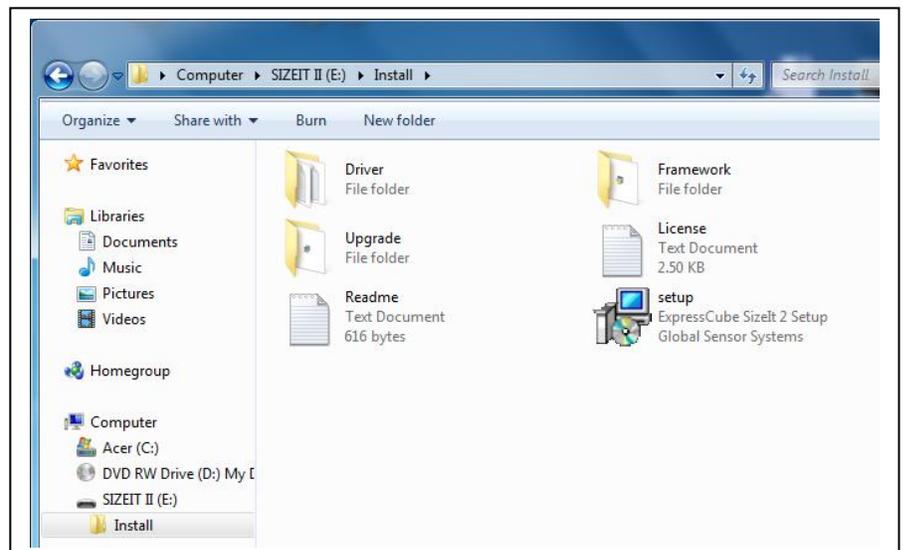
3.2.1. Text Files

License

A legal summary of the terms of use (license) and warranty for the Sizelt II product.

Readme

Very short installation summary.



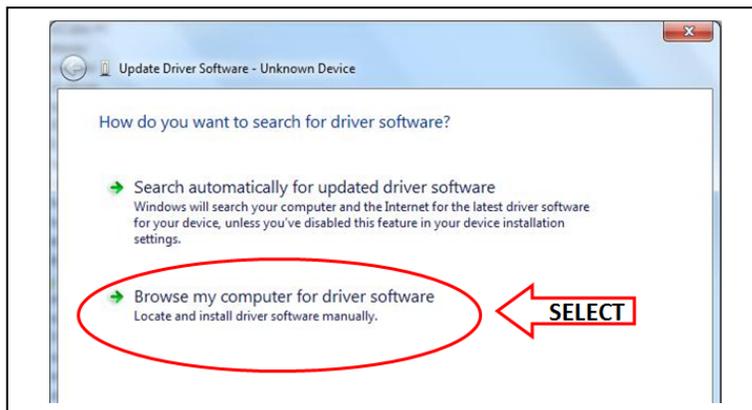
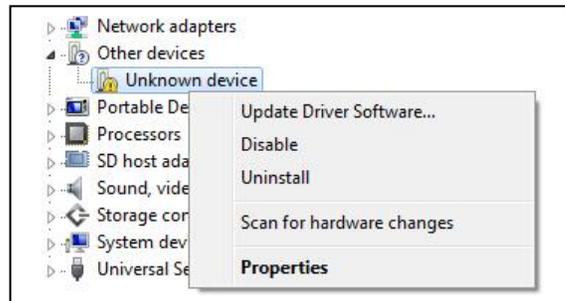
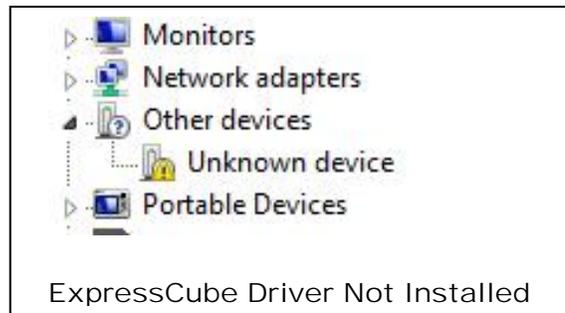
3.2.2. (Windows) Driver

This folder contains the Windows driver for the ExpressCube scale. The driver is compatible with Windows XP, Windows Vista and Windows 7.

Connect the ExpressCube dimension & weighing system using a USB cable. If Windows is looking for a driver, use the browse feature to direct Windows to this folder. The folder contains a text file with more detailed information if required.

If Windows does not request a driver, open the Device Manager (located in the Windows Control Panel). If the driver is not loaded, the ExpressCube USB connection will be listed as an 'Unknown Device' in the Other Devices (illustrated).

Right click on the Unknown Device and a menu will appear as illustrated. Select 'Update Driver Software ...' to bring up a selection window.

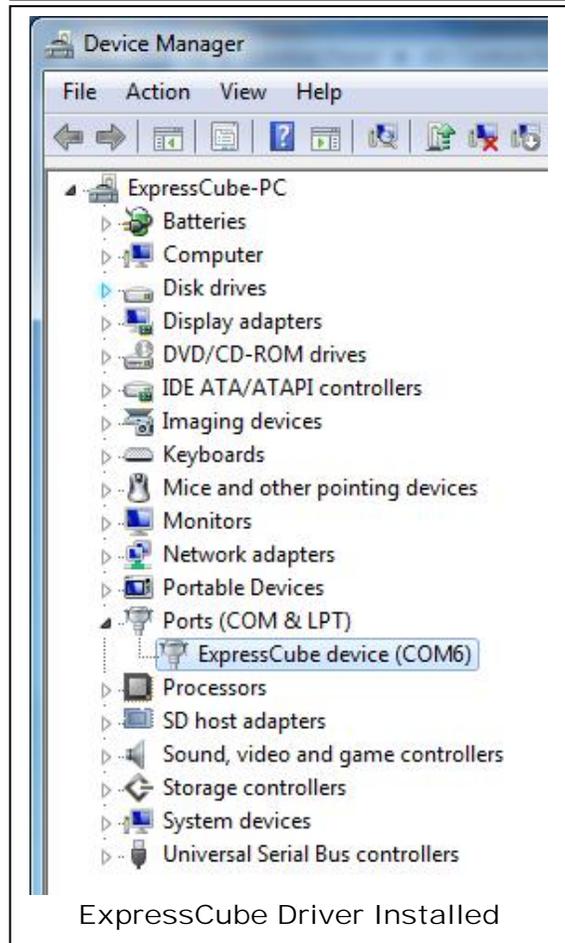


Select the SizeIt II USB key , then the Install folder and then click on the Driver folder. A message will appear: '**Windows cannot verify the publisher of this driver software**'

Select: **Install this driver software anyway**

Windows will install the driver and verify that the installation was successful.

The driver will present the ExpressCube USB connection as a virtual COM port as indicated in the final illustration. SizeIt II will now find and communicate with the ExpressCube system using the USB cable.



3.2.3. Framework

SizeIt II requires .NET Framework installed in Windows to run. If a copy of .NET Framework is not installed, open the folder and .NET Framework run the program in it.

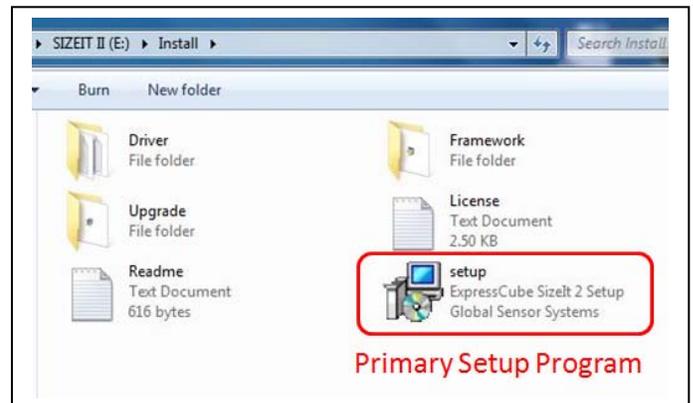
For the latest versions of .NET Framework and additional information, visit the following Microsoft web site:

<http://www.microsoft.com/net>

3.3. Installation of Sizelt II with the Setup Program

3.3.1. Installing Sizelt II for the First Time On A Computer

Each SizeIt II USB key has a unique primary setup program that is matched only to the USB key. This is the Primary Setup program and must be run on new computers even if new updated software exists on the USB key.

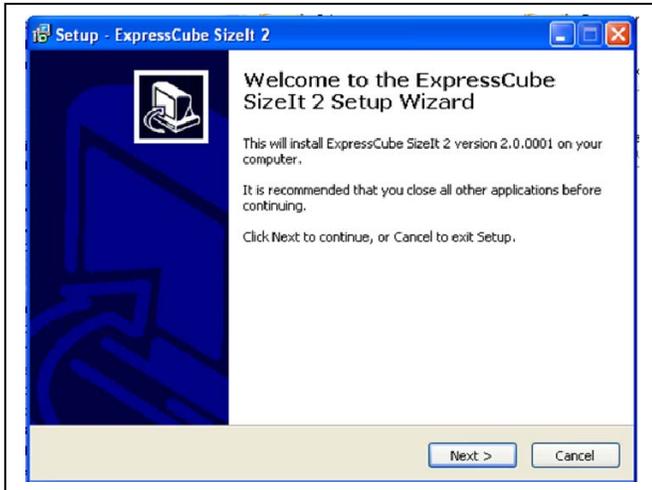


 ***The primary setup program should never be replaced or deleted. In the event that the Sizelt II program is moved to a new computer, run the primary setup program to set the USB key to the computer.***

 ***If an upgraded version of Sizelt II has been downloaded, it will be located in the Upgrade folder. Run the upgrade software after the primary setup software has been installed.***

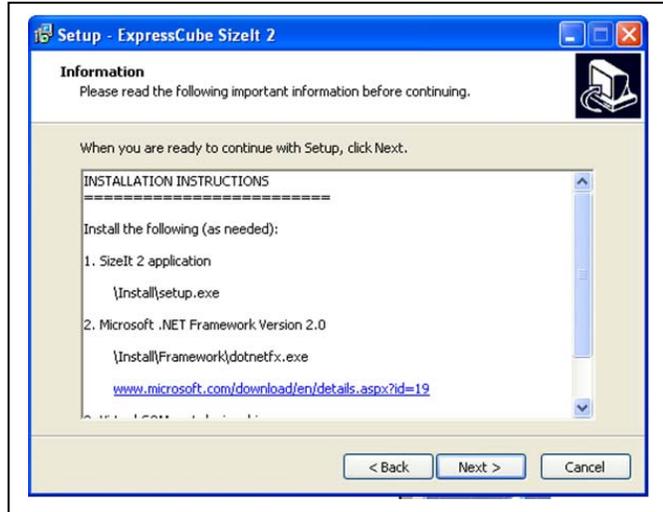
3.3.2. Running Setup

Double click on the Setup icon to start the installation process. Step through the installation process using the Next > key. Read and accept the agreement to continue the installation.



The installation instructions are a brief summary of instructions covered in greater detail in this guide.

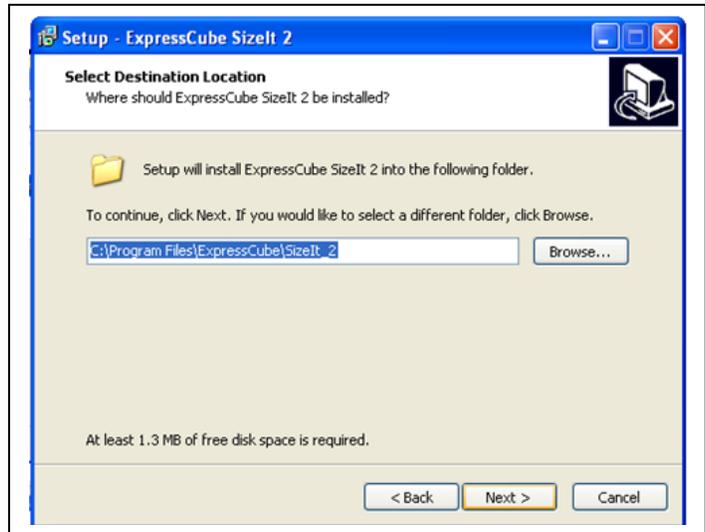
Continue with the Next > key.



A general installation information window is followed by a suggested location for the program files. It is recommended to keep the program files on the hard drive in the program folder.

For a change from the suggested file location, use the Browse feature to set the new file folder location.

Next >



This window will place a short cut in the startup menu which includes a recommended location. The window has a default name and location selected.

For a change from the suggested file location, use the Browse feature to set the new file folder location.

Next >

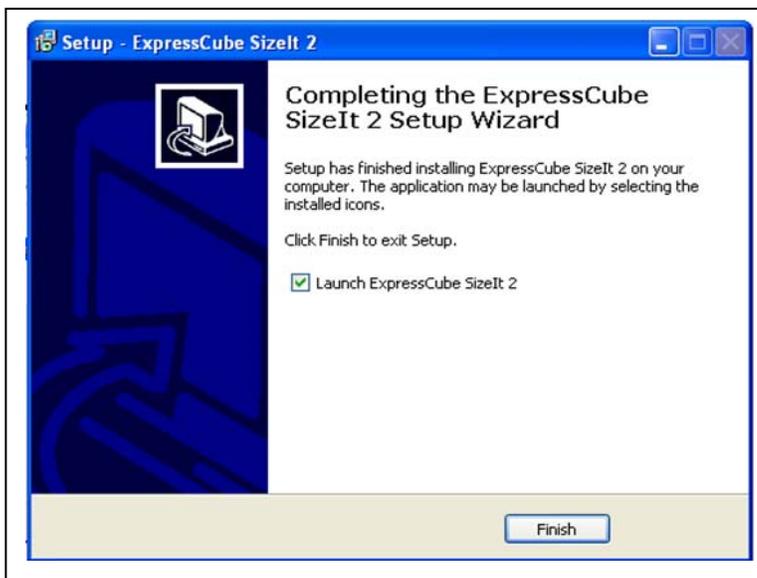
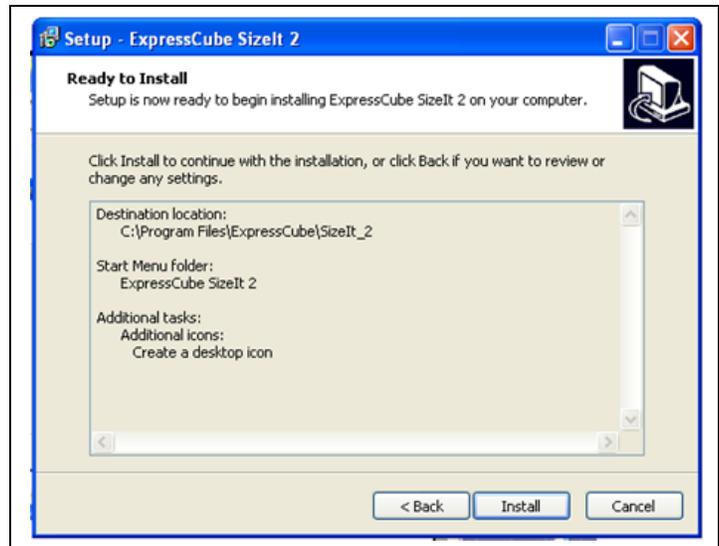
This window will place a quick start icon on the desktop. Uncheck the selection box if a desktop icon is not desired.

Next >



The Ready to Install window will give you a summary of your previous selections including any changes in the file locations.

If the summary is in error, click the [< Back] key to return to the appropriate window for a correction. If the summary is correct, press the [Install] key to load SizeIt II onto your computer.



The installation is now complete. Check the 'Launch ExpressCube SizeIt II' if you wish to start SizeIt II when exiting the setup program.

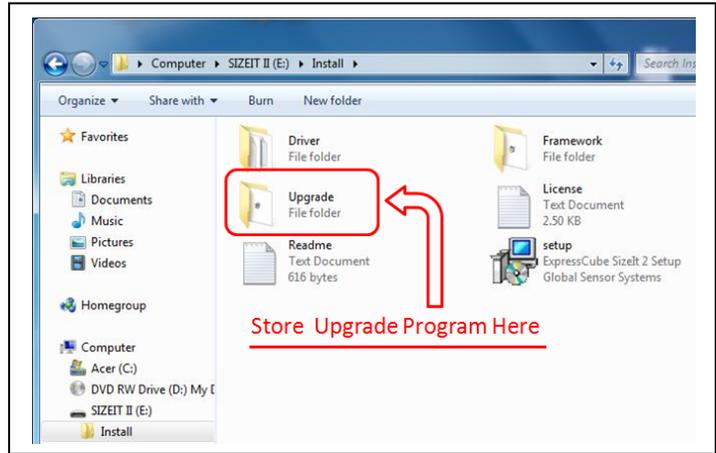
Click 'Finish' to exit the setup program.

3.4. SizeIt II Upgrade Programs

Check the ExpressCube website www.expresscube.com for free SizeIt II software upgrades.

If an upgrade is available, download the software upgrade and store it in the ExpressCube USB Key directory labeled 'Upgrade'. This will simplify operating the SizeIt II on a new computer with the Primary and Upgrade software both located on the ExpressCube USB Key.

To upgrade a computer with the Primary Program already installed, run the upgrade program located in the upgrade folder.



 ***In a new installation, always run the primary setup program before installing the upgrade program.***

4. Sizelt II Set Up – User Features

4.1. Verify Sizelt II USB Connection to ExpressCube Device

Verify that the ExpressCube is on and the platform is empty and zeroed with the LCD Controller. Connect the USB cable from the ExpressCube device to a spare USB port on the computer that is running SizeIt II.

 **Once the USB is connected to a computer, the LCD Controller keyboard will no longer function. The LCD Controller display will continue to operate and display the data and operating status. The LCD Controller keyboard will operate again once the USB is removed from the USB computer port.**

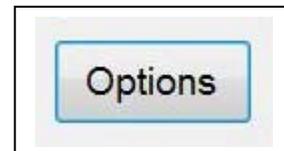


The SizeIt II screen should be as illustrated above. Press and release the ExpressCube platform to confirm the SizeIt II connection is made. If the USB connection is established, the platform weight will increase as you press the platform and decrease to zero (starting weight) as the platform returns to its resting position.

If there is no ExpressCube USB connection, verify the installation of the driver as described in section 2.2.2 of this guide.

4.2. Options Menu Activation

The Options menu is activated by hitting the Options button located on the left side of the SizeIt II screen. The Options button will not appear when a measurement is Acquired or Recorded. Remove the object or press on the scale to return the ExpressCube platform to a ready in idle state, or, a ready to record state to return the Options button back to the screen.



4.3. Input Dim (Dimensional) Factors

Dim Factor:	194.0	166.0	172.8	138.0
Label:	Ground	Air	Cardinal	IATA
Dim Weight:	5.83	6.81	6.55	8.20

SizeIt II will calculate four different dimensional weights based on four Dim Factors selected from a predefined Dim Factor table. Each Dim Factor has an optional label that appears under each Dim Factor and above the Dim Weight. The Dim Weight can be used to compare shipping weights of various carriers or have been used to determine and record the ground and air shipping rates for future reference.

Note: Dim Factor and corresponding Dim Weight for each object can be recorded with each measurement. Labels are not included in the recorded data field. The labels are included for the user reference only.

To place Dim Factor into the table, select the **Options** button and select the top tab labeled **Factors**.

Select the row (No.) and type in the Dim Factor that corresponds with the appropriate units (cm³/kg or in³/lb).

When your entry is in, SizeIt II will automatically convert and fill in the adjacent unit field. Type your label (optional) in the field provided. Complete the entries and when finished, hit the OK button to exit.

The new entries can be added to the measured dimensions by using the pull down tab at the appropriate Dim Factor display (See operation section for more details).

No.	cm ³ /kg	in ³ /lb	Label
1	7010	194.0	Ground
2	6000	166.0	Air
3	6244	172.8	Cardinal
4	4986	138.0	IATA
5	3613	100.0	Swift & Shift
6	4162	115.2	Doggie Bus Co
7	9034	250.0	Freight Frwd
8			LABEL_08
9			LABEL_09
10			LABEL_10

4.4. Automatic Acquire/ Record Set-Up

The Automatic Acquire / Record allows the user to determine if they would like to review the Acquired record before recording the data or automatically Acquire & Record in one operation.

To change the Automatic Acquire/ Record setting, select the **Options** button and select the top tab labeled **Operation**. Change the setting by clicking on the square beside the Automatic Acquire/ Record.

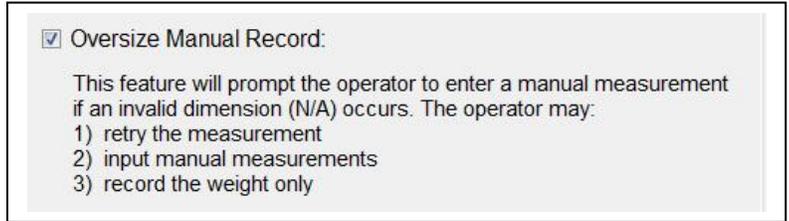
Automatic Acquire/Record:
 This feature will acquire and record data in one step. Measurement data can be acquired and recorded using the Acquire button or the handheld scanner.

Verify the selection by returning to the front page and looking at the Acquired button.

4.5. Oversized Manual Record Set-Up

The Oversized Manual Record will always prompt the user for recording options whenever an invalid dimension exists in a recorded measurement. For more detailed use of this feature, refer to the Operations section of this guide.

To change the Oversized Manual Record setting, select the **Options** button and select the top tab labeled **Operation**. Change the setting by clicking on the square beside Oversized Manual Record.



4.6. Tag Record Set-Up

The Tag Record feature allows the user to add up to 6 additional fields which are prompted to the user as measurement data is being recorded. Each of the 6 additional fields can have a programmable prompt and the field entry can be set to either optional or mandatory. For more detailed use of this feature, refer to the Operations section of this guide.

To change the Oversized Manual Record setting, select the **Options** button and select the top tab labeled **Operation**. Change the setting by clicking on the square beside Oversized Manual Record.



Press the setup button (as illustrated) to set the Tag Fields.

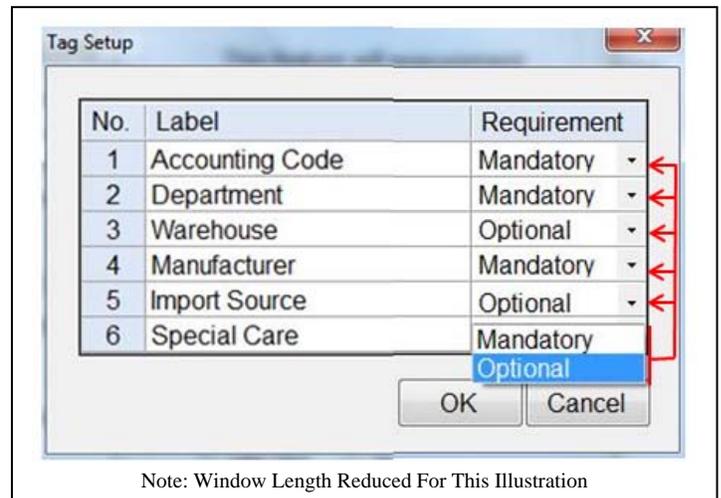
4.6.1. Set Up Tag Fields

Clicking the **Setup** button beside the Tag Record brings up the Tag Setup Window. Each tag entry can have a label associated with it.

Click on the label field of the tag that you wish to place the label. At the end of the field, you will see a column labeled 'Requirement'. Click on the downward arrow to bring up the choices 'Mandatory' & 'Optional' [Default]. Click on the appropriate choice to select for that tag field.

Mandatory – User response required. 'Enter' (Carriage Return) will not bypass these fields without an entry.

Optional – User response is not required. Selecting a different field or Enter (Carriage Return) before or at this entry will bypass the field.



Note: To finish the Tag entries before 6 (for example, if only four were Tags needed), simply leave the remaining fields 'Optional' and the user can end the query by hitting the Enter (Carriage Return).

4.6.2. Tag Field Sample Output

The example entry shown in 4.6.1 (above) is illustrated in this window. The mandatory fields are highlighted with an asterisk at the end of the field. Attempts to bypass the mandatory field without any entry will cause a warning to appear.

The fields are typed in and then the cursor used to pick the next entry. If the Enter (Carriage Return) is pressed – the OK button will be activated and the tag window will close. If a mandatory field has not been filled, the warning window will be issued without the tag window closing.

4.7. ExpressCube ID

The ExpressCube ID is used to identify a particular ExpressCube operating in a particular branch. The assignment of the ExpressCube ID is determined by administration and should not be changed. The ExpressCube ID appears in the data field. The Branch Name is used in naming the file and is described in section 5.3.2.

4.8. User Feature Activation on Main Screen (Display)

4.8.1. Units Lock

This option sets the units (cm/kg) or (in/lb) that will be on the display and recorded in the data records. It is recommended for consistency that the units are locked and not available to the user. The data field #04 has a units descriptor to use as a check on the displayed units.

Selecting 'User' will put a units menu on the front screen allowing the user to select units used in the display and data fields. The user selection is illustrated below:



4.8.2. Group - Multi-Pack - Swap L/W/H

To access the Group, Multi-Pack and /or Swap feature settings, select the **Options** button and select the top tab labeled **Operation**. The three feature activation squares are located at the bottom of the Operations menu page as indicated below:

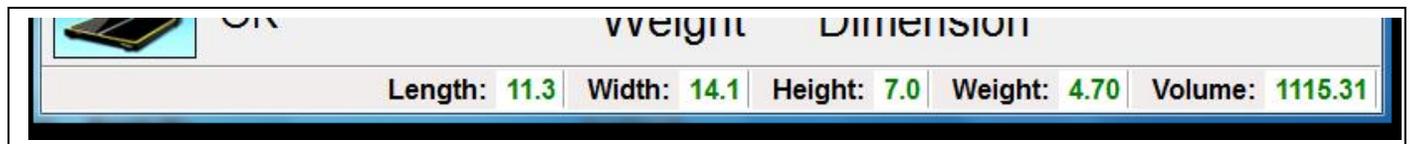


The use of these features is explained in detail in the operation section of this guide.

4.9. Status Bar

The status bar is an optional display located on the bottom of the SizeIt II display. The status display contains a summary of the displayed or recorded dimensions of SizeIt II. The Principal benefit of this label is to provide a summary of the SizeIt II measurements that can be referenced from an application window in front of it. This allows the user to fill in the results by looking at the status bar.

To access the Status Bar setting, select the **Options** button and select the top tab labeled **Operation**. The Status Bar activation key is located at the bottom of the Operations menu page as indicated. An example of the status board is illustrated below.



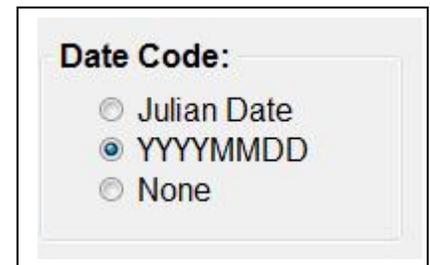
5. Sizelt II Set Up – Data Output Format

5.1. General

The settings described in this section are for administration staff only. The settings determine the file name, location, data contents and data format of ExpressCube measurements recorded by SizeIt II. Once set, any changes in these options may cause data errors in other software programs that are utilizing a particular preset data format.

5.2. Output : Date Code

A date code can be selected to form a part of the file name used to record the dimensional data from the ExpressCube device. This can make the data verification and file location much faster. There are three options that can be selected.



The screenshot shows a window titled "Date Code:" with three radio button options: "Julian Date", "YYYYMMDD" (which is selected), and "None".

5.2.1. Julian Date

The Julian Date code is a three digit number that represents the day of the year. In a non-leap year July 5 = 186. Example file name is: DIM-186_LONDON_123

5.2.2. YYYYMMDD

Selection of the YYYYMMDD option puts a digital date format indicating year (4 digits), month (2 digits) and day (2 digits)

Example file name is: DIM-20130705_LONDON_123

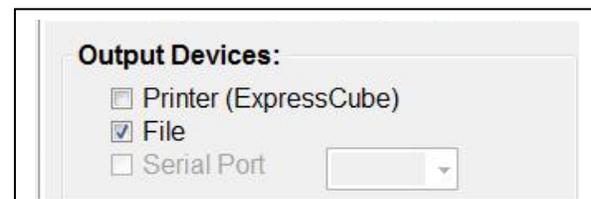
5.2.3. None

Selection of None will generate a file name without a date reference.

Example file name is: DIM-_LONDON_123

5.3. Output : Output Device

The measurement data can be recorded or printed from this selection. Multiple outputs can be selected allowing a printer to be connected to the ExpressCube printer port while detailed data can be recorded to file.



The screenshot shows a window titled "Output Devices:" with three checkboxes: "Printer (ExpressCube)", "File" (which is checked), and "Serial Port". To the right of the "Serial Port" checkbox is a dropdown menu.

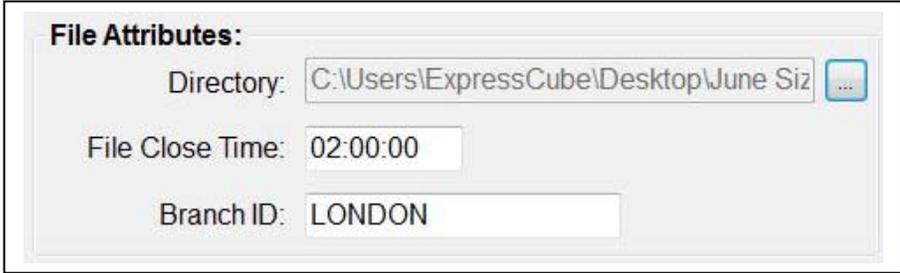
5.3.1. Printer (ExpressCube)

The serial RS-232C printer port is used to transfer measurements. The printer output from this printer port will only contain Length, Width, Height, Gross Weight, First Dim Weight, First Dim Factor and the serial hand scanner output (connected to the ExpressCube device).

5.3.2. File

This selection will output the measurement data and user information to an ASCII text file (flat database file). The file can then be imported into third party applications such as Warehouse Management System (WMS), shipping programs, least cost routing, accounting, etc or spreadsheets.

The file directory must be selected. The file directory does not have to reside on the computer but connected and accessible through the Windows directory search.



File Attributes:

Directory: C:\Users\ExpressCube\Desktop\June Siz

File Close Time: 02:00:00

Branch ID: LONDON

5.3.2.1.Directory

The directory may be typed or use the Browse button  to select the file destination directory. The default directory is C:\



A warning will be displayed if a measurement is taken and the output 'File' has not been selected (see bottom page 30).

5.3.2.2.File Close Time

File Close Time indicates the time after which a new file with the current date will begin. This setting is commonly used by courier companies whose shift and billing cycle that can start in the afternoon and end a few hours into the next day. The File Close Time ensures that all the records will be together in the one billing cycle.

5.3.2.3.Branch ID

The Branch ID is part of the file label that along with the ExpressCube ID (set in the Operations Tab) and (optionally) the date, allow quick identification of the ExpressCube device and location when centralized records are kept.

Example file name is: DIM-20130705_LONDON_123 [DIM-Date_Branch ID_ExpressCube ID]

5.3.3. Serial Port

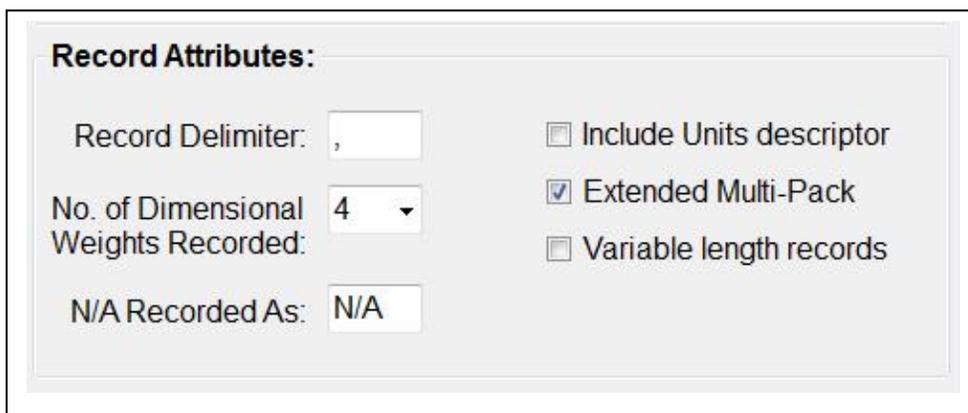
If the computer has a working unassigned serial port, this comm. Port selection will transfer the SizeIt II data out the selected port.

5.4. Record Attributes - Settings

5.4.1. General

The record attributes determine the actual data content and the format of the data presented in the data record. It is important the record attributes once set are not changed without careful analysis of the resulting data field changes.

The following list of attributes are explained with examples. The detailed description for each record will follow in the detailed data format section following the settings description.



The screenshot shows a dialog box titled "Record Attributes:". It contains the following settings:

- Record Delimiter: ,
- No. of Dimensional Weights Recorded: 4
- N/A Recorded As: N/A
- Include Units descriptor:
- Extended Multi-Pack:
- Variable length records:

5.4.2. Record Delimiter

The record delimiter specifies what ASCII character is used to separate each data value. The default delimiter character is a comma (,).

5.4.3. No. of Dimensional Weights Recorded:

This records the number of Dim Weights selected in the measurement window that are recorded in the data field. Value= 0 (none) to 4. Unused fields are empty. Note: Variable length option only includes fields for the selected number of weights recorded.

5.4.4. N/A Recorded As:

The characters (if any) that are used to indicate a dimension that cannot be resolved.

Note: In the NTEP properties setting – any unresolved dimension will result in all dimensions as unresolved.

5.4.5. Include Units Descriptor

Determines if unit descriptor (cm/kg/in/lb) is displayed with data. If the units descriptor is not included, an empty data field will still be present.

5.4.6. Extended Multi-Pack

The selection of this field will add an additional four fields dedicated to multi-pack dimensions and weight. These fields will be present independent of the use of the multi-pack feature. In extended multi-pak, the actual measurements are recorded with the calculated multi-pak unit in the dedicated fields. If the multi-pack feature is used without the extended multi-pack feature – only the calculated multi-pak dimensions are recorded..

5.4.7. Variable Length Records

The variable length record is an option that condenses the data field to only include the dim weight and dim factor as set in the number of dim weights recorded field (Section 4.4.3).

Note: If the variable length record field is not used, the length of the field will change for multi-pack only.

5.4.8. Multi-Pack (Options - Operation Tab)

The Multi-Pack feature is included in this section as it has an impact on the data format in the record file. Multi-Pack adds four additional records representing the dimension and weight of an individual package in the group of packages inside the measured carton.

Note: For more a detailed description of this feature, refer to the Operation portion of this guide.

5.5. Record Attributes – Output Data Format (Samples)

5.5.1. General

The data format of SizeIt II 2.1 depends on the selection of the data attributes as described in detail in section 3.4. The following data output records will use a box with the following measurements:

Length 11.3 in; Width 14.1 in; Height 7.1 in; Weight 4.29 lb; Bar Code 089369976

Additional Info (if used/printed)

Dim Factor #1: 194.0; Dim Factor #2: 166.0; Dim Factor #3: 172.8; Dim Factor #4: 138.0

Tags: Tag#1, Tag#2, Tag#3, Tag#4, Tag#5, Tag#6

Multi Pack: Length/2; Width/2; Height/2

Group (10): Length; Width; Height/10

5.5.2. Multi-Pack – OFF/ON; Extended– OFF; Variable– OFF

Tag fields (6) are provided in all configurations independent of selection or the number of tags recorded.

<p>Record Attributes:</p> <p>Record Delimiter: <input type="text" value=","/> <input checked="" type="checkbox"/> Include Units descriptor</p> <p>No. of Dimensional Weights Recorded: <input type="text" value="4"/> <input type="checkbox"/> Extended Multi-Pack</p> <p>N/A Recorded As: <input type="text" value="N/A"/> <input type="checkbox"/> Variable length records</p>	<p><input type="checkbox"/> Tag Record: <input type="button" value="Setup"/></p> <p>This feature prompts the user for a maximum 50-character text. The user may enter a product identifier or comment that will be appended to the recorded data.</p> <p>Units Lock: <input type="radio"/> cm / kg <input checked="" type="radio"/> in / lb <input type="radio"/> User</p> <p>ExpressCube ID: <input type="text" value="123"/></p> <p>Status Bar: <input checked="" type="checkbox"/> Enabled</p> <p>Group: <input checked="" type="checkbox"/> Enabled</p> <p>Multi-Pack: <input checked="" type="checkbox"/> Enabled</p> <p>Swap LWH: <input checked="" type="checkbox"/> Enabled</p>
---	---

Data 1 (no Multi-Pack measurement) : **0,20131003,23:08:36,123,1,11.3, in,14.1, in,7.1, in,4.28, lb,5.83,194.0,6.81,166.0,6.55,172.8,8.20,138.0,08936976,tag 1,tag 2,tag 3,tag 4,tag 5,tag 6,**

Data 2 (Multi-Pack measurement) : **1,20131003,23:11:51,123,1,5.65, in,7.05, in,3.55, in,0.54, lb,0.73,194.0,0.85,166.0,0.82,172.8,1.02,138.0,08936976,tag#1,tag#2,tag#3,tag#4,tag#5,tag#6,**

Description of Fields

Field	Data 1	Data 2	Description
01	0	1	Calculated Dimension(s) : 0= No 1= Yes
02	20131003	20131003	Date (YYYYMMDD)
03	23:08:36	23:11:51	Time (24 Hour)
04	123	123	Units Descriptor (0=metric, 1=imperial)
05	1	1	Device Number
06	11.3	5.65	Length
07	in	in	Units
08	14.1	7.05	Width
09	in	in	Units
10	7.1	3.55	Height
11	in	in	Units
12	4.28	0.54	Gross Weight
13	lb	lb	Units
14	5.83	0.73	Dimensional Weight 1
15	194.0	194.0	Dimensional (Dim) Factor 1
16	6.81	0.85	Dimensional Weight 2
17	166.0	166.0	Dimensional (Dim) Factor 2
18	6.55	0.82	Dimensional Weight 3
19	172.8	172.8	Dimensional (Dim) Factor 3
20	8.20	1.02	Dimensional Weight 4
21	138.0	138.0	Dimensional (Dim) Factor 4
22	08936976	08936976	Scan Code (or bar code)

Description of Fields

Field	Data 1	Data 2	Description
23	tag#1	tag#1	Tag 1
24	tag#2	tag#2	Tag 2
25	tag#3	tag#3	Tag 3
26	tag#4	tag#4	Tag 4
27	tag#5	tag#5	Tag 5
28	tag#6	tag#6	Tag 6

5.5.3. Multi-Pack – OFF/ON; Extended– ON; Variable– OFF

Tag fields (6) are provided in all configurations independent of selection or the number of tags recorded.

Record Attributes: Record Delimiter: , <input type="text"/> <input checked="" type="checkbox"/> Include Units descriptor No. of Dimensional Weights Recorded: 4 <input type="text"/> <input checked="" type="checkbox"/> Extended Multi-Pack N/A Recorded As: N/A <input type="text"/> <input type="checkbox"/> Variable length records		<input checked="" type="checkbox"/> Tag Record: <input type="button" value="Setup"/> <small>This feature prompts the user for a maximum 50-character text. The user may enter a product identifier or comment that will be appended to the recorded data.</small> Units Lock: <input type="radio"/> cm / kg <input checked="" type="radio"/> in / lb <input type="radio"/> User <input type="text" value="123"/> ExpressCube ID: <input type="text" value="123"/> Status Bar: <input type="checkbox"/> Enabled Group: <input type="checkbox"/> Enabled Multi-Pack: <input checked="" type="checkbox"/> Enabled Swap LWH: <input type="checkbox"/> Enabled
---	--	---

Data 1 (no Multi-Pack measurement) : **0,20131008,19:06:19,123,1,11.3, in,14.1, in,7.1, in,4.28, lb,,,,,5.83,194.0,6.81,166.0,6.55,172.8,8.20,138.0,08936976,tag 1,tag 2,tag 3,tag 4,tag 5,tag 6,**

Data 2 (Multi-Pack measurement) : **1,20131008,19:18:24,123,1,11.3, in,14.1, in,7.1, in,4.28, lb,5.65,7.05,3.55,0.54,0.73,194.0,0.85,166.0,0.82,172.8,1.02,138.0,08936976, tag 1,tag 2,tag 3,tag 4,tag 5,tag 6,**

Description of Fields

Field	Data 1	Data 2	Description
01	1	2	Calculated Dimension(s) : 0= No 1= Yes
02	20131008	2013/07/10	Date (YYYYMMDD)
03	19:06:19	08:03:49	Time (24 Hour)
04	123	1	Device Number
05	1	123	Units Descriptor (0=metric, 1=imperial)
06	11.3	11.3	Length
07	in	in	Units
08	14.1	14.1	Width
09	in	in	Units
10	7.1	7.1	Height
11	in	in	Units
12	4.28	4.29	Gross Weight
13	lb	lb	Units
14	<empty>	5.65	Multi-Pack Length
15	<empty>	7.05	Multi-Pack Width
16	<empty>	3.55	Multi-Pack Height
17	<empty>	0.54	Multi-Pack Weight
18	5.83	0.73	Dimensional Weight 1
19	194.0	194.0	Dimensional (Dim) Factor 1
20	6.81	0.85	Dimensional Weight 2
21	166.0	166.0	Dimensional (Dim) Factor 2
22	6.55	0.82	Dimensional Weight 3
23	172.8	172.8	Dimensional (Dim) Factor 3
24	8.20	1.02	Dimensional Weight 4
25	138.0	138.0	Dimensional (Dim) Factor 4
26	08936976	08936976	Scan Code (or bar code)

Description of Fields (Continued)

Field	Data 1	Data 2	Description
27	tag#1	tag#1	Tag 1
28	tag#2	tag#2	Tag 2
29	tag#3	tag#3	Tag 3
30	tag#4	tag#4	Tag 4
31	tag#5	tag#5	Tag 5
32	tag#6	tag#6	Tag 6

5.5.4. Multi-Pack – OFF; Extended– OFF; Variable– ON

Tag fields (6) are provided in all configurations independent of selection or the number of tags recorded.

Record Attributes:

Record Delimiter: ,

No. of Dimensional Weights Recorded: 0

N/A Recorded As: N/A

Include Units descriptor

Extended Multi-Pack

Variable length records

Each dim weight adds an additional two fields to the data record.
Samples: Dim Wgt Recorded=0, 2, 4

Tag Record: Setup

This feature prompts the user for a maximum 50-character text. The user may enter a product identifier or comment that will be appended to the recorded data.

Units Lock: cm / kg in / lb User

ExpressCube ID: 123

Status Bar: Enabled

Group: Enabled

Multi-Pack: Enabled

Swap LWH: Enabled

Samples:

Dim Wgt Record= 0 Tag =ON

0,20131008,18:07:17,123,1,11.3, in,14.1, in,7.1, in,4.28, lb,08936976,tag 1,tag 2,tag 3,tag 4,tag 5,tag 6,

Dim Wgt Record= 2 Tag = OFF

0,20131008,18:04:28,123,1,11.3, in,14.1, in,7.1, in,4.28, lb,5.83,194.0,6.81,166.0,08936976,,,,,,,,

Dim Wgt Record= 4 TAG = ON

0,20131008,18:10:10,123,1,11.3, in,14.1, in,7.1, in,4.28,
lb,5.83,194.0,6.81,166.0,6.55,172.8,8.20,138.0,08936976,tag 1,tag 2,tag 3,tag 4,tag 5,tag 6,

-

Description of Fields (3.5.4 Continued)

Dim Wgt Rec=0		Dim Wgt Rec=2		Dim Wgt Rec=4		Multi-Pack – OFF ; Extended – OFF ; Variable Records – ON
Field	Data	Field	Data	Field	Data	Description
01	0	01	0	01	0	Calculated Dimension(s) : 0= No 1= Yes
02	20131008	02	20131008	02	20131008	Date (YYYYMMDD)
03	18:07:17	03	18:04:28	03	18:10:10	Time (24 Hour)
04	123	04	123	04	123	Device Number
05	1	05	1	05	1	Units Descriptor (0=metric, 1=imperial)
06	11.3	06	11.3	06	11.3	Length
07	in	07	in	07	in	Units
08	14.1	08	14.1	08	14.1	Width
09	in	09	in	09	in	Units
10	7.1	10	7.1	10	7.1	Height
11	in	11	in	11	in	Units
12	4.28	12	4.28	12	4.28	Gross Weight
13	lb	13	lb	13	lb	Units
		14	5.83	14	5.83	Dimensional Weight 1
		15	194.0	15	194.0	Dimensional (Dim) Factor 1
		16	6.81	16	6.81	Dimensional Weight 2
		17	166.0	17	166.0	Dimensional (Dim) Factor 2
		18		18	6.55	Dimensional Weight 3
		19		19	172.8	Dimensional (Dim) Factor 3
		20		20	8.20	Dimensional Weight 4
		21		21	138.0	Dimensional (Dim) Factor 4
14	08936976	18	08936976	22	08936976	Scan Code (or bar code)
15	tag#1	19	<empty>	23	tag#1	Tag 1
16	tag#2	20	<empty>	24	tag#2	Tag 2
17	tag#3	21	<empty>	25	tag#3	Tag 3
18	tag#4	22	<empty>	26	tag#4	Tag 4
19	tag#5	23	<empty>	27	tag#5	Tag 5
20	tag#6	24	<empty>	28	tag#6	Tag 6

5.5.1. Multi-Pack – ON; Extended– OFF; Variable– ON

Tag fields (6) are provided in all configurations independent of selection or the number of tags recorded.

Samples:

Dim Wgt Record= 0 Tag =ON

1,20131008,18:18:36,123,1,5.65, in,7.05, in,3.55, in,0.54, lb,08936976,tag 1,tag 2,tag 3,tag 4,tag 5,tag 6,

Dim Wgt Record= 2 Tag = OFF

1,20131008,18:19:07,123,1,5.65, in,7.05, in,3.55, in,0.54, lb,0.73,194.0,0.85,166.0,08936976,,,,,,

Dim Wgt Record= 4 TAG = ON

1,20131008,18:19:57,123,1,5.65, in,7.05, in,3.55, in,0.54, lb,0.73,194.0,0.85,166.0,0.82,172.8,1.02,138.0,08936976,tag 1,tag 2,tag 3,tag 4,tag 5,tag 6, _

Description of Fields (3.5.4 Continued)

Dim Wgt Rec=0		Dim Wgt Rec=2		Dim Wgt Rec=4		Multi-Pack – ON ; Extended – OFF ; Variable Records – ON
Field	Data	Field	Data	Field	Data	Description
01	1	01	1	01	1	Calculated Dimension(s) : 0= No 1= Yes
02	20131008	02	20131008	02	20131008	Date (YYYYMMDD)
03	18:18:36	03	18:19:07	03	18:10:10	Time (24 Hour)
04	123	04	123	04	123	Device Number
05	1	05	1	05	1	Units Descriptor (0=metric, 1=imperial)
06	5.65	06	5.65	06	5.65	Length
07	in	07	in	07	in	Units
08	7.05	08	7.05	08	7.05	Width
09	in	09	in	09	in	Units
10	3.55	10	3.55	10	3.55	Height
11	in	11	in	11	in	Units
12	0.54	12	0.54	12	0.54	Gross Weight
13	lb	13	lb	13	lb	Units
		14	0.73	14	0.73	Dimensional Weight 1
		15	194.0	15	194.0	Dimensional (Dim) Factor 1
		16	0.85	16	0.85	Dimensional Weight 2
		17	166.0	17	166.0	Dimensional (Dim) Factor 2
		18		18	0.82	Dimensional Weight 3
		19		19	172.8	Dimensional (Dim) Factor 3
		20		20	1.02	Dimensional Weight 4
		21		21	138.0	Dimensional (Dim) Factor 4
14	08936976	18	08936976	22	08936976	Scan Code (or bar code)
15	tag#1	19	<empty>	23	tag#1	Tag 1
16	tag#2	20	<empty>	24	tag#2	Tag 2
17	tag#3	21	<empty>	25	tag#3	Tag 3
18	tag#4	22	<empty>	26	tag#4	Tag 4
19	tag#5	23	<empty>	27	tag#5	Tag 5
20	tag#6	24	<empty>	28	tag#6	Tag 6

5.5.2. Multi-Pack – OFF; Extended– ON; Variable– ON

Tag fields (6) are provided in all configurations independent of selection or the number of tags recorded.

The screenshot displays two panels of the configuration interface. The left panel, titled 'Record Attributes', includes a 'Record Delimiter' set to a comma, 'No. of Dimensional Weights Recorded' set to 0, and 'N/A Recorded As' set to N/A. It also has three checked options: 'Include Units descriptor', 'Extended Multi-Pack', and 'Variable length records'. A red box highlights the 'No. of Dimensional Weights Recorded' dropdown and a callout box explains: 'Each dim weight adds an additional two fields to the data record. Samples: Dim Wgt Recorded=0, 2, 4'. The right panel shows 'Tag Record' checked with a 'Setup' button, a description of the feature, 'Units Lock' set to 'in / lb', 'ExpressCube ID' set to 123, and four 'Enabled' checkboxes for 'Status Bar', 'Group', 'Multi-Pack', and 'Swap LWH'.

Samples:

Dim Wgt Record= 0 Multi-Pack ON Tag =ON

0,20131008,19:54:44,123,1,11.3, in,14.1, in,7.1, in,4.28, lb,,,,,08936976,tag 1,tag 2,tag 3,tag 4,tag 5,tag 6,

Dim Wgt Record= 2 Multi-Pack ON Tag = OFF

0,20131008,19:49:31,123,1,11.3, in,14.1, in,7.1, in,4.28, lb,,,,,5.83,194.0,6.81,166.0,08936976,,,,,,

Dim Wgt Record= 4 Multi-Pack ON TAG = ON

0,20131008,19:57:22,123,1,11.3, in,14.1, in,7.1, in,4.28, lb,,,,,5.83,194.0,6.81,166.0,6.55,172.8,8.20,138.0,08936976,tag 1,tag 2,tag 3,tag 4,tag 5,tag 6, _

Dim Wgt Rec=0		Dim Wgt Rec=2		Dim Wgt Rec=4		Multi-Pack – OFF ; Extended – ON ; Variable Records – ON
Field	Data	Field	Data	Field	Data	Description
01	0	01	0	01	0	Calculated Dimension(s) : 0= No 1= Yes
02	20131008	02	20131008	02	20131008	Date (YYYYMMDD)
03	19:54:44	03	19:49:31	03	19:57:22	Time (24 Hour)
04	1	04	1	04	1	Device Number
05	123	05	123	05	123	Units Descriptor (0=metric, 1=imperial)
06	11.3	06	11.3	06	11.3	Length
07	in	07	in	07	in	Units
08	14.1	08	14.1	08	14.1	Width
09	in	09	in	09	in	Units
10	7.1	10	7.1	10	7.1	Height
11	in	11	in	11	in	Units
12	4.28	12	4.28	12	4.28	Gross Weight
13	lb	13	lb	13	lb	Units
14	<empty>	14	<empty>	14	<empty>	Multi-Pack Length
15	<empty>	15	<empty>	15	<empty>	Multi-Pack Width
16	<empty>	16	<empty>	16	<empty>	Multi-Pack Height
17	<empty>	17	<empty>	17	<empty>	Multi-Pack Weight
		18	5.83	18	5.83	Dimensional Weight 1
		19	194.0	19	194.0	Dimensional (Dim) Factor 1
		20	6.81	20	6.81	Dimensional Weight 2
		21	166.0	21	166.0	Dimensional (Dim) Factor 2
				22	6.55	Dimensional Weight 3
				23	172.8	Dimensional (Dim) Factor 3
				24	8.20	Dimensional Weight 4
				25	138.0	Dimensional (Dim) Factor 4
18	08936976	22	08936976	26	08936976	Scan Code (or bar code)
19	tag#1	23	<empty>	27	Tag#1	Tag 1
20	tag#2	24	<empty>	28	Tag#2	Tag 2
21	tag#3	25	<empty>	29	Tag#3	Tag 3
22	tag#4	26	<empty>	30	Tag#4	Tag 4
23	tag#5	27	<empty>	31	Tag#5	Tag 5
24	tag#6	28	<empty>	32	Tag#6	Tag 6

5.5.3. Multi-Pack – ON; Extended– ON; Variable– ON

Tag fields (6) are provided in all configurations independent of selection or the number of tags recorded.

Record Attributes:

Record Delimiter: ,

No. of Dimensional Weights Recorded: 0

N/A Recorded As: N/A

Include Units descriptor

Extended Multi-Pack

Variable length records

Each dim wgt adds an additional two fields to the data record.
Samples: Dim Wgt Recorded=0, 2, 4

Tag Record:

This feature prompts the user for a maximum 50-character text. The user may enter a product identifier or comment that will be appended to the recorded data.

Units Lock: cm / kg in / lb User

ExpressCube ID: 123

Status Bar: Enabled

Group: Enabled

Multi-Pack: Enabled

Swap LWH: Enabled

Samples:

Dim Wgt Record= 0 Multi-Pack ON Tag =ON

1,20131008,20:03:55,123,1,11.3, in,14.1, in,7.1, in,4.28, lb,5.65,7.05,3.55,0.54,08936976,tag 1,tag 2,tag 3,tag 4,tag 5,tag 6,

Dim Wgt Record= 2 Multi-Pack ON Tag = OFF

1,20131008,20:04:24,123,1,11.3, in,14.1, in,7.1, in,4.28, lb,5.65,7.05,3.55,0.54,0.73,194.0,0.85,166.0,08936976,,,,,,

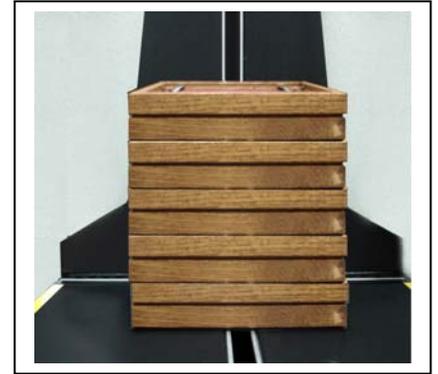
Dim Wgt Record= 4 Multi-Pack ON TAG = ON

1,20131008,20:06:02,123,1,11.3, in,14.1, in,7.1, in,4.28, lb,5.65,7.05,3.55,0.54,0.73,194.0,0.85,166.0,0.82,172.8,1.02,138.0,08936976,tag 1,tag 2,tag 3,tag 4,tag 5,tag 6,

Dim Wgt Rec=0		Dim Wgt Rec=2		Dim Wgt Rec=4		Multi-Pack – ON ; Extended – ON ; Variable Records – ON
Field	Data	Field	Data	Field	Data	Description
01	1	01	1	01	1	Calculated Dimension(s) : 0= No 1= Yes
02	20131008	02	20131008	02	20131008	Date (YYYYMMDD)
03	20:03:55	03	20:04:24	03	20:06:02	Time (24 Hour)
04	1	04	1	04	1	Device Number
05	123	05	123	05	123	Units Descriptor (0=metric, 1=imperial)
06	11.3	06	11.3	06	11.3	Length
07	in	07	in	07	in	Units
08	14.1	08	14.1	08	14.1	Width
09	in	09	in	09	in	Units
10	7.1	10	7.1	10	7.1	Height
11	in	11	in	11	in	Units
12	4.28	12	4.28	12	4.28	Gross Weight
13	lb	13	lb	13	lb	Units
14	5.65	14	5.65	14	5.65	Multi-Pack Length
15	7.05	15	7.05	15	7.05	Multi-Pack Width
16	3.55	16	3.55	16	3.55	Multi-Pack Height
17	0.54	17	0.54	17	0.54	Multi-Pack Weight
		18	0.73	18	0.73	Dimensional Weight 1
		19	194.0	19	194.0	Dimensional (Dim) Factor 1
		20	0.85	20	0.85	Dimensional Weight 2
		21	166.0	21	166.0	Dimensional (Dim) Factor 2
		22		22	0.82	Dimensional Weight 3
		23		23	172.8	Dimensional (Dim) Factor 3
		24		24	1.02	Dimensional Weight 4
		25		25	138.0	Dimensional (Dim) Factor 4
18	08936976	22	08936976	26	08936976	Scan Code (or bar code)
19	tag#1	23	<empty>	27	tag#1	Tag 1
20	tag#2	24	<empty>	28	tag#2	Tag 2
21	tag#3	25	<empty>	29	tag#3	Tag 3
22	tag#4	26	<empty>	30	tag#4	Tag 4
23	tag#5	27	<empty>	31	tag#5	Tag 5
24	tag#6	28	<empty>	32	tag#6	Tag 6

5.5.4. Sample Output: Group Measurement Feature

The Group Measurement is a procedure that allows the measurement of a thin item with increased accuracy through a multiple group stack of identical items (e.g. books, magazines, CDs DVDs, etc). For more detail on the use of this feature, refer to the Operation section of this guide.



The data from a measurement of the **Group Measurement feature is recorded identical to the measurement of any other non Multi-Pack measurement.** That first field will be '1' to indicate that at least one of the measurements recorded are the result of a software calculation.

The following chart illustrates the use of the Group Measurement feature with three different data output configurations.

Samples:

Extended Off ; Variable Record Off ; No Tags

1,20131024,13:41:11,123,1,11.3, in,14.1, in,0.70, in,0.43, lb,0.57,194.0,0.67,166.0,0.65,172.8,0.81,138.0,08936976,,,,,,

Extended On ; Variable Record Off ; No Tags

1,20131024,13:45:50,123,1,11.3, in,14.1, in,0.70, in,0.42, lb, , , ,0.57 ,194.0,0.67,166.0,0.65,172.8,0.81,138.0,08936976,,,,,,

Extended Off ; Variable Record On – Dim Weight=2; No Tags

1,20131024,13:48:10,123,1,11.3, in,14.1, in,0.70, in,0.42, lb,0.57,194.0,0.67,166.0,08936976,,,,,,

Extended On ; Variable Record On – Dim Weight=2; No Tags

1,20131024,13:49:39,123,1,11.3, in,14.1, in,7.0, in,4.24, lb,11.3,14.1,0.70,0.42,0.57,194.0,0.67,166.0,08936976,,,,,,

Description of Fields (3.5.4 Continued)

Dim Wgt Rec=0		Dim Wgt Rec=2		Dim Wgt Rec=4		Multi-Pack – OFF ; Extended – OFF ; Variable Records – ON
Field	Data	Field	Data	Field	Data	Description
01	0	01	0	01	0	Calculated Dimension(s) : 0= No 1= Yes
02	20131008	02	20131008	02	20131008	Date (YYYYMMDD)
03	18:07:17	03	18:04:28	03	18:10:10	Time (24 Hour)
04	123	04	123	04	123	Device Number
05	1	05	1	05	1	Units Descriptor (0=metric, 1=imperial)
06	11.3	06	11.3	06	11.3	Length
07	in	07	in	07	in	Units
08	14.1	08	14.1	08	14.1	Width
09	in	09	in	09	in	Units
10	7.1	10	7.1	10	7.1	Height
11	in	11	in	11	in	Units
12	4.28	12	4.28	12	4.28	Gross Weight
13	lb	13	lb	13	lb	Units
		14	5.83	14	5.83	Dimensional Weight 1
		15	194.0	15	194.0	Dimensional (Dim) Factor 1
		16	6.81	16	6.81	Dimensional Weight 2
		17	166.0	17	166.0	Dimensional (Dim) Factor 2
		18		18	6.55	Dimensional Weight 3
		19		19	172.8	Dimensional (Dim) Factor 3
		20		20	8.20	Dimensional Weight 4
		21		21	138.0	Dimensional (Dim) Factor 4
14	08936976	18	08936976	22	08936976	Scan Code (or bar code)
15	tag#1	19	<empty>	23	tag#1	Tag 1
16	tag#2	20	<empty>	24	tag#2	Tag 2
17	tag#3	21	<empty>	25	tag#3	Tag 3
18	tag#4	22	<empty>	26	tag#4	Tag 4
19	tag#5	23	<empty>	27	tag#5	Tag 5
20	tag#6	24	<empty>	28	tag#6	Tag 6

5.6. Special Compatibility Settings

5.6.1. General

The settings described in Section 3.2 are extremely important as they affect the format and content of the stored data recorded by SizeIt II. SizeIt II can duplicate the earlier format of previous ExpressCube software to allow the user to retain the existing data programs (accounting, WMS, shipping, etc) and use of some of the new features offered in this new release of SizeIt II.

SizeIt II can be set to a Universal format to allow direct integration to programs that currently have the capability of interfacing into a Universal Format used by other dimension and weighing systems. (e.g. CubiScan™).

The default SizeIt II configuration (no compatibility options selected) is the only configuration that will provide the full feature set of this version of the SizeIt II.

To set the Record Compatibility to a particular format, go to the 'Output' tab of the Options menu and select one of the following:



 **Changing the Record Compatibility during the recording of measurements will change the data content and could cause data errors in the software importing the data.**

 **Sample Record Dimensions: The format of the data records of each compatible selection will be given and a sample record provided. The carton used in these sample recordings has the following weight, dimensions & settings:**

Length = 11.3 in ; Width= 14.1 in ; Height= 7.1 in ; Gross weight= 4.25 lbs ; Scan Code: 08936976

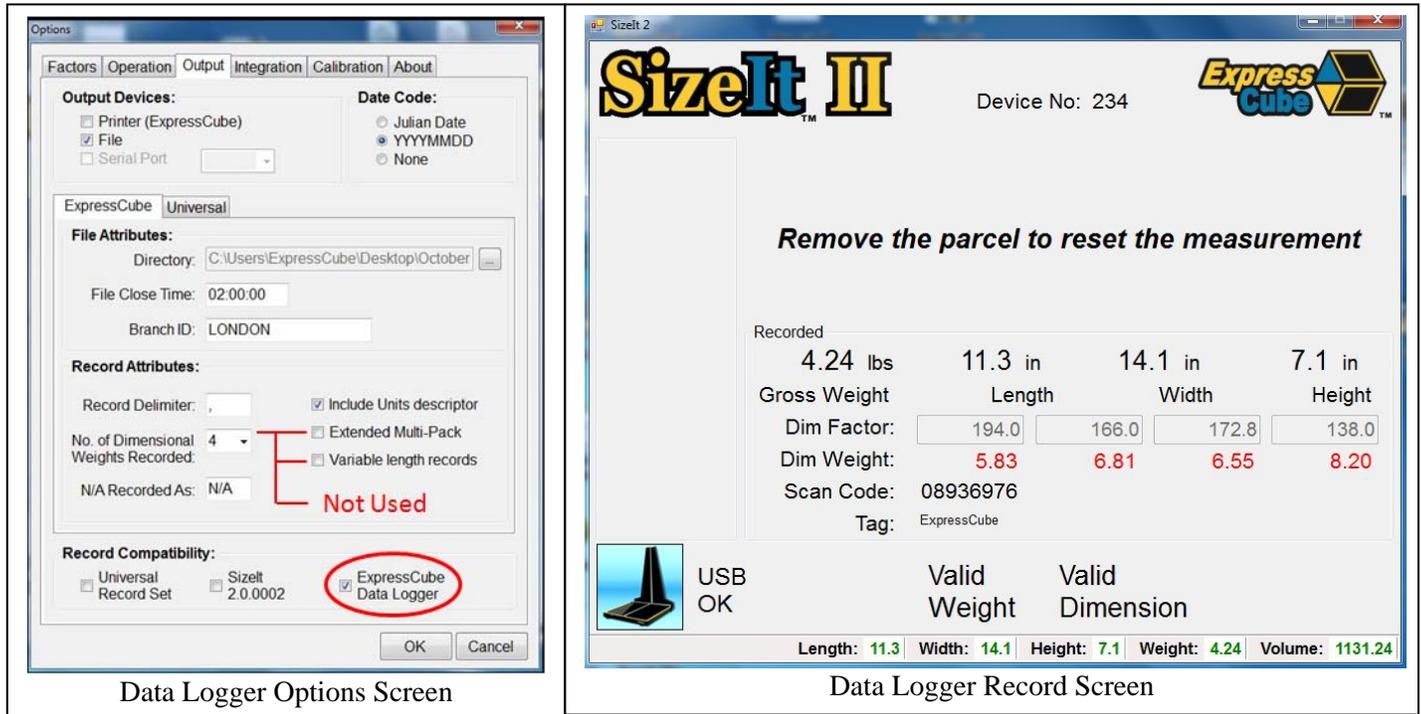
Dim Fctr 1=194.0 Dim Wgt 1= 5.83 ; Dim Fctr 2=166.0 Dim Wgt 2= 6.81

Dim Fctr 3=172.8 Dim Wgt 1= 6.55 ; Dim Fctr 2=138.0 Dim Wgt 2= 8.20

Tag: ExpressCube

5.6.2. ExpressCube Data Logger

The ExpressCube Data Logger compatibility will display one dimensional weight and one tag.



Sample: Output A Unit Descriptor On : 2013/06/18,22:55:59,234 ,11.3 in ,14.1 in ,7.1 in ,4.24 lb ,5.83 ,194.0 ,08936976 ,ExpressCube

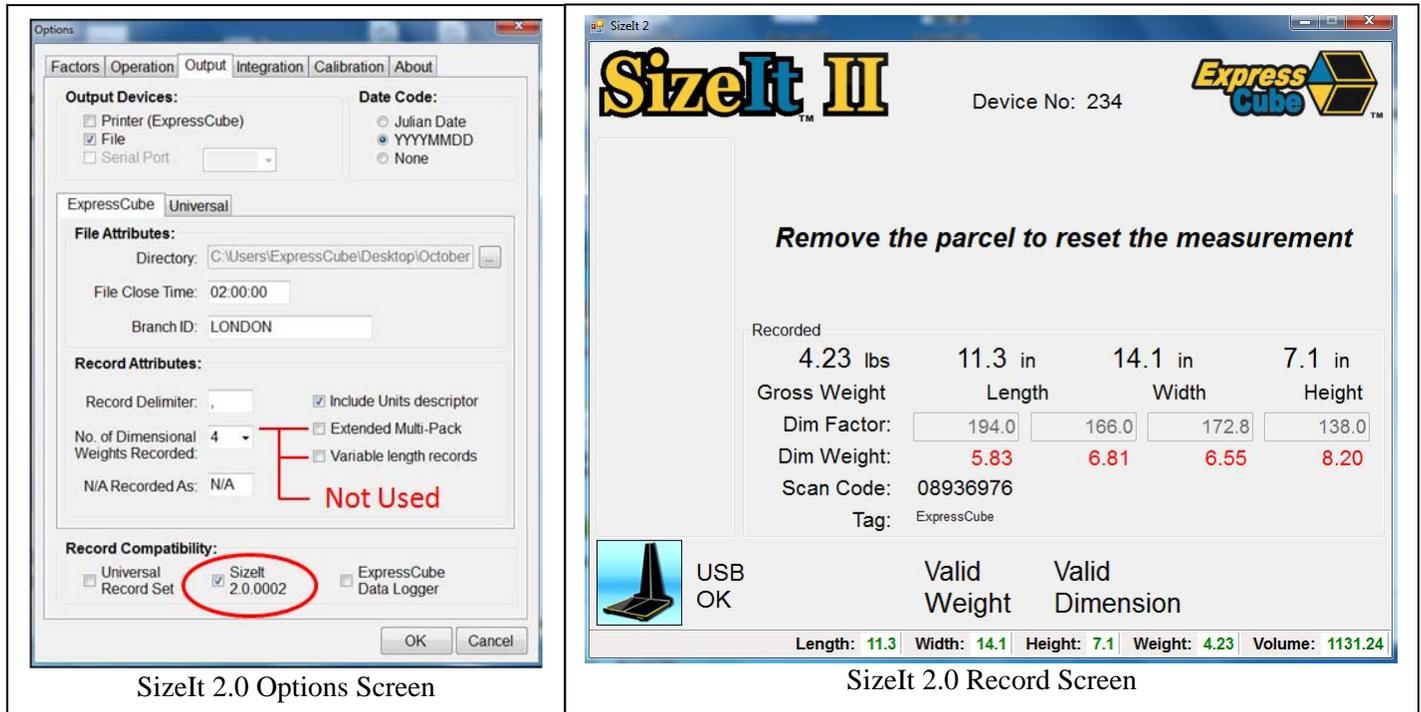
Sample: Output B Unit Descriptor Off : 2013/06/18,22:53:16,234 ,11.3 ,14.1 ,7.1 ,4.25 ,5.83 ,194.0 ,08936976 ,ExpressCube

Description of Fields

Field	Output A	Output B	Description
01	2013/06/18	2013/06/18	Date (YYYYMMDD)
02	22:55:59	22:53:16	Time (24 Hour)
03	234	234	Device Number
04	11.3 in	11.3	Length
05	14.1 in	14.1	Width
06	7.1 in	7.1	Height
07	4.24 lb	4.24	Gross Weight
08	5.83	5.83	Dim Weight
09	194.0	194.0	Dim Factor
10	08936976	08936976	Scan Code (Bar Code)
11	ExpressCube	ExpressCube	Tag

5.6.3. SizeIt II 2.0

The ExpressCube SizeIt II 2.0 has the ability to display up to four dim weights, one tag and has a fixed data field length.



Sample Output :
 20130619,21:50:37,1,234 ,11.3, in,14.1, in,7.1, in,4.23,
 lb,5.83,194.0,6.81,166.0,6.55,172.8,8.20,138.0,08936976,ExpressCube,

Description of Fields

Field	Data	Description
01	2013/06/19	Date (YYYYMMDD)
02	21:50:37	Time (24 Hour)
03	234	Device Number
04	1	Units Descriptor (0=metric, 1=imperial)
05	11.3	Length
06	in	Units
07	14.1	Width
08	in	Units
09	7.1	Height
10	in	Units
11	4.23	Gross Weight
12	lb	Units

Description of Fields (Cont'd)

Field	Data	Description
-------	------	-------------

13	5.83	Dim Weight 1
14	194.0	Dim Factor 1
15	6.81	Dim Weight 2
16	166.0	Dim Factor 2
17	6.55	Dim Weight 3
18	172.8	Dim Factor 3
19	8.20	Dim Weight 4
20	138.0	Dim Factor 4
21	08936976	Scan Code (Bar Code)
22	ExpressCube	Tag

5.6.4. Universal Record Set

The Universal Record format provides the dimensional record that duplicates a popular data format in use by Accellos, CubiScan™ and other software vendors/manufacturers. This permits ExpressCube to work with software already designed to run with this data format. Please note that this record set does not have many of the records available with ExpressCube SizeIt II version 2.1 software.



Note: *Universal Records have their own tab setting on in the Output options page.*

Universal Options Screen

Universal Record Screen

Sample Output (Delimited):

08936976,11.3,14.1,7.1,in,4.250,lb,1131.243,in,5.830,194.0,234,11:47:09 PM,06/23/13,ExpressCube 01,ExpressCube 02,ExpressCube 03,ExpressCube 04,ExpressCube 05,ExpressCube 06

Description of Fields

Field	Data	Description	Fixed Length*
01	08936976	Item Number	20
02	11.3	Length	20
03	14.1	Width	20
04	7.1	Height	20
05	in	Dim Unit	2
06	4.250	Weight	20
07	lb	Weight Unit	2
08	1131.243	Volume	20
09	in	Volume Unit	2
10	5.830	Dim Weight	20
11	194.0	Dim Factor	11
12	234	ExpressCube ID	6
13	11:47:09 PM	Record Time	13
14	06/23/13	Record Date	11
15	ExpressCube 01	User Field 1	20
16	ExpressCube 02	User Field 2	20
17	ExpressCube 03	User Field 3	20
18	ExpressCube 04	User Field 4	20
19	ExpressCube 05	User Field 5	20
20	ExpressCube 06	User Field 6	20

*Fixed Length: This is an Record Attribute selection available in :

Options -> Output-> Universal -> Record Attributes Delimited or Fixed Length

Fixed length records consist of fields fixed quantity of characters (as described above) without delimiters. Data fields are padded with leading blanks to the required fixed length and characters are padded with trailing blanks to the required fixed length.

6. Appendix 1: Dimensional Weight & DIM FACTOR

6.1. *The Importance of Volume and Weight of Cargo for Transportation*

All cargo space involved in transporting goods has physical limits based on the volume of the cargo and the weight. Once a cargo has reached a limit in either volume or weight – the container (trailer, train, plane or shipping container) is transported. Weight has traditionally been the measurement which the transportation costs of individual packaged freight has been calculated.

The difference in weight and volume costs can be appreciated if one considered the expense of transporting a large volume with little weight (e.g. large boxes of Styrofoam drinking cups). Transportation companies have recognized these variables and most have allocated a volume per weight standard in their billing to capture cargo of light density.

6.2. *Dimensional (Volume) Weight*

The dimensional weight (also known as volume weight) is the minimum weight that a package a given size may have that is handled by a carrier. A carrier may state that any package of one cubic foot (12"x12"x12") will have a minimum weight allowance of 10 pounds. If the cubic foot package actually weighs 8 pounds – it will be invoiced for 10 pounds. This is a ***minimum*** weight allowance – if the cubic foot package weighs 12 pounds – the charges will be based on 12 pounds.



There are no international or domestic standards concerning values of dimensional weight. A significant number of courier companies use the dimensional weight standard set by the International Air Transport Association (IATA) but many define their own dimensional weights.

The value of dimensional weights will probably change as the nature of shipments change over time. Organizations such as the International Air Transport Association (IATA) have produced studies that suggest the density of packaging is changing as the commodities become more high tech. As a result the IATA itself has already passed a resolution (Resolution 501) to change the IATA dimensional weight.

6.3. DIM Factor (Dimensional Weight Factor)

The DIM factor is a mathematical factor used to calculate the dimensional weight of an object. The DIM factor represents the volume of a package allowed per unit of weight. Although mathematically related, the DIM factor is different for measurements in units of inches/pounds and for measurements in centimeters/ kilograms.

All major courier companies now apply the DIM Factor to every cuboidal (rectangular/ square) parcel that they handle to determine the dimensional weight. They then adjust customer invoicing to reflect charges based on the greater weight between actual weight and dimensional weight.

Finding a DIM Factor using in/lb

Find the DIM factor if each cubic foot (12"x12"x12") has a minimum weight allowance of 10 pounds:

$$\frac{1 \text{ cu ft}}{10 \text{ lbs}} = \frac{12" \times 12" \times 12"}{10 \text{ lbs}} = \frac{1728 \text{ in}^3}{10 \text{ lbs}} \quad \boxed{172.8 \text{ in}^3/\text{lb}}$$

Finding a DIM Factor using cm/kg

Find DIM factor if each cubic meter (100cm x 100cm x 100cm) has a minimum weight allowance of 200 kg:

$$\frac{1 \text{ m}^3}{200 \text{ kg}} = \frac{100\text{cm} \times 100\text{cm} \times 100\text{cm}}{200 \text{ kg}} = \frac{1000000 \text{ cm}^3}{200 \text{ kg}} \quad \boxed{5000 \text{ cm}^3/\text{kg}}$$

6.4. Using DIM Factor (Dimensional Weight Factor)

The DIM Factor provides a quick determination of the dimensional weight of any cuboidal package. The best way to describe this application is by an example of the application and use of the DIM Factor by a courier company:

What is the billing rate of a 10"x 12"x 14" package that weighs 8 lbs by a courier that has a minimum dimensional weight of 10 lbs per cubic foot (i.e.: DIM Factor = 172.8 in³/lb) ?

$$\frac{\text{Volume}}{\text{DIM Factor}} = \frac{\text{Volume}}{\text{Volume} / \text{lb}} = \frac{10 \times 12 \times 14 \text{ in}^3}{172.8 \text{ in}^3/\text{lb}} = \frac{1680 \text{ in}^3 \text{ lb}}{172.8 \text{ in}^3} \quad \boxed{9.7 \text{ lb}}$$

The courier company will invoice based on 9.7 lbs – the dimensional weight.



This is an example. Some courier companies always round dimensional weight up to the next pound, which in this sample would make the billing weight 10lbs.

6.5. Dim Factor Conversion Between in³/lb and cm³/kg

The ExpressCube Countertop will automatically adjust the selected DIM Factor to correspond to the units selected by the user. The mathematical relationship between DIM Factors can be expressed as follows:

$$\text{Dim Factor [cm}^3\text{/kg]} = \text{Dim Factor [in}^3\text{/lb]} \times 36.12728079$$

$$\text{Dim Factor [in}^3\text{/lb]} = \text{Dim Factor [cm}^3\text{/kg]} \times 0.027679913$$

 ***Some DIM Factors maybe provided in both units such as the IATA value of Dim Factor 166 in³/lb or Dim Factor 6000 cm³/kg. These have been slightly modified for ease of application. The ExpressCube countertop will correctly convert a user-selected input of Dim Factor 166 in³/lb to Dim Factor 5997 cm³/kg. This 0.05% difference is not large enough to affect dimensional weight readings. The user can input another DIM Factor of 6000 cm³/kg if desired and choose from two different Dim Factor selections depending on the units selected.***

7. Appendix 3: ExpressCube Tips and Techniques

7.1. Dimensional Weight

Virtually every courier company is now calculating an allowable (dimensional) weight for the size of the package that you are shipping. If your dimensional weight exceeds the actual weight, you will be charged based on the dimensional weight¹.

It is important that you understand how dimensioning equipment works, how your courier company determines the dimensional weight and the impact of proper packaging to minimize shipping costs.

¹ For a detailed description of the mathematics of dimensional weight and DIM factors, read *Understanding Dimensional Weight and DIM FACTORS* included in your ExpressCube Operators Guide or obtain a free copy from the ExpressCube website (www.expresscube.com)

7.2. How ExpressCube Measures Packages

The ExpressCube product line obtains dimensions by measuring the dimensions of three faces of the package placed on the machine. Each measurement is taken 90° from the axis of the other two measurements.

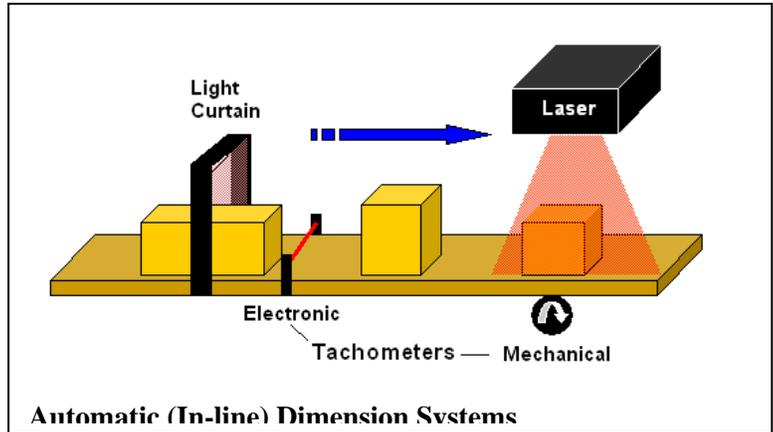
One measurement axis (length) is fixed on an edge but the other two axis do allow the operator to determine the point of measurement (illustrated in red). This is useful when measuring irregular packages as explained later in this document.



7.3. How Laser & Light Curtain Conveyor Systems Measures Packages

Many large courier companies use automated (in-line) conveyor dimensioning systems to arrive at a dimensional weight. These systems may use a speed-based tachometer to measure the length of the parcel traveling on the conveyor and either a laser scanner or a light curtain (emitters/receivers) to determine height and width.

These automatic dimensioning systems are able to provide dimensions quickly. Without human intervention, automated devices measure the largest dimension on each axis irrespective if it is an actual part of the box, a fat packet of documents or a bulging flap. On a recent visit to a large courier depot, this author was able to change the chargeable weight indicated on a Laser dimensioning system by placing a pencil on top of the parcel.



Appreciating the nature of the automatic systems allows shippers to package wisely and predicts the effect of the deformed boxes using the ExpressCube countertop unit (detailed below).

7.4. Know Your Courier's Method of Calculating Dimensional Weight

It is possible for two different courier companies to use the same DIM factor on the same package and arrive at two different dimensional weights for calculating courier charges.

The mathematical formula for determining dimensional weight for a package using a set DIM Factor is equal to volume (LxWxH) divided by the DIM Factor. The ExpressCube dimensional weight calculation utilizes straight mathematics obtained by multiplying the displayed dimensions and dividing by the DIM Factor.

The mathematical dimensional weight of a package 12¼ " x 18½ " x 24¼ "
 DIM Factor = 194:

Volume	Volume	12.25x18.5x24.25 in ³	5496 in ³ lb	28.3 lb
DIM Factor	Volume / lb	194 in ³ /lb	194 in ³	

There are some courier companies that round up measurements before they are used in calculations. This can have a significant cost impact, particularly on smaller packages. These courier companies would calculate the dimensional weight as follows:

The rounding up method to calculate dimensional weight of a package
 13 (12¼) " x 19 (18½) " x 25 (24¼) " DIM Factor = 194:

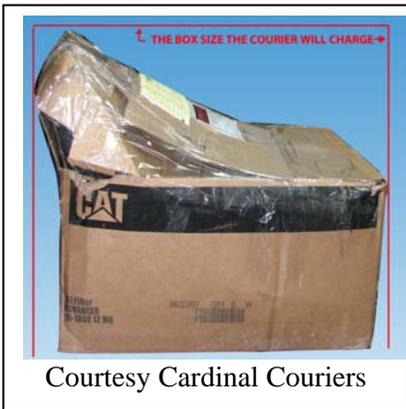
$\frac{\text{Volume}}{\text{DIM Factor}}$	$\frac{\text{Volume}}{\text{Volume / lb}}$	$\frac{13 \times 19 \times 25 \text{ in}^3}{194 \text{ in}^3/\text{lb}}$	$\frac{6175 \text{ in}^3 \text{ lb}}{194 \text{ in}^3}$	31.8 lb
---	--	--	---	----------------

In this example, subtle differences currently in use by two major couriers to calculate the dimensional weight of the same package would result in one charge based on 28.3 lb and another charge based on 31.8 lb.

7.5. Minimizing Package Size

Long gone are the days when a small item is thrown in an oversized carton and then surrounded in foam chips. It is possible to quickly surpass the value of the protected item with excessive shipping cost if a careful analysis is not used to determine the appropriate insulation required to protect an item.

While it is important to keep the size of the carton to a minimum, it is also important to find boxes that fit the item to be shipped properly. If an irregular item is presented to most courier companies, they will calculate the dimensional weight based on '*the minimum dimensions of a carton that would contain the irregular package*'. Loosely translated, the maximum measurements obtained by the automatic dimensioning systems will be used to determine the dimensional weight for invoicing.



These actual photos illustrate how sloppy packaging can incur extra shipping costs from dimensional weight. If the item pictured in the left photo was placed flat in a fitted box there could have been a 35% savings in shipping costs. Furthermore, irregular packaging is harder to handle and store making it much more vulnerable to damage.



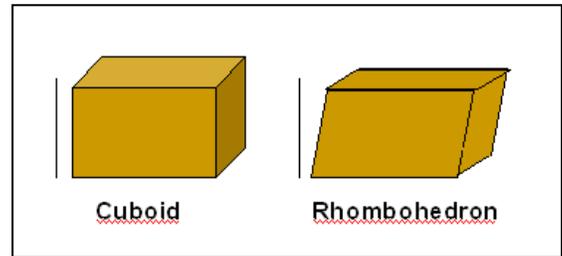
Remember that box manufacturers quote inside dimensions. The outside dimension used to calculate your dimensional weight will depend on the thickness of the cardboard, how it is folded and taped, the thickness of documentation, and, how a courier company treats fractional measurements in their calculations (as detailed above).

7.6. **Measuring Packages on ExpressCube Dimensioning Systems**

To acquire accurate measurements, the box should be placed such that the back surface of the box is in full contact with the rear height surface of the ExpressCube unit. The box must cover the three sensor arrays completely.

If the box is relatively light (e.g. pharmaceuticals, electronic components, etc), keep the top and bottom sealed flaps away from the ExpressCube surfaces (i.e. to the left and right sides of the operator). This procedure will negate any slight bulge on the openings that can cause the box to 'rock' on the surface due to the light weight of the box.

It is possible from box assembly or the contents that the box can become 'skewed' (some angles are not 90°) causing the box to change shape from a cuboid to a rhombohedron. Because two sides are 'skewed', there are two or more surfaces that will not rest flush against the ExpressCube height measuring array. To obtain an accurate measurement, rotate the box 90° to place a full contact surface against the height measuring array.



Note: The volume obtained by the ExpressCube for a rhombohedron for calculating dimensional weight will be accurate but as the box becomes more 'skewed', there will be a point that the courier company will treat the rhombohedron as an irregular shape and assess a volume based on the minimum size cuboidal box that could contain it. (If the edge of one side is 'skewed' 2" from the 90° axis, the courier company will calculate dimensional weight based on a box 2" larger in that dimension.)

7.7. Measuring Irregular Cartons¹ With ExpressCube

ExpressCube systems are designed and rated for the measurement of cuboidal boxes. As illustrated above, understanding the method used by courier companies to determine the dimensional weight of an irregular shaped package allows an operator to obtain similar measurements on the ExpressCube by orienting the package on the platform to obtain the maximum dimensions.

¹The irregular carton measured on the ExpressCube must consist of flat surfaces of which at least two must be at 90° angles. Curved surfaces such as cylinders, liquid containers, bags, and pouches cannot be measured and such articles must be quoted by the courier/shipping company to determine the final cost.

To obtain the dimensional weight of an irregular carton, rotate the object on the measurement platform such that the largest portions of the carton cover the sensor arrays. Remember that the length, width and height designations of the carton are arbitrary axis assignments to obtain a volume measurement – that is – freely rotate the carton on any axis to allow a measurement to be taken. Samples of measurement techniques are illustrated in the photos below.



Points Summary

- Dimensional Weight calculations using identical measurements can vary with different carriers. Check with each carrier for calculation method.
- Carton dimensions quoted by manufacturers describe the inside dimensions. The dimensions used by carriers will depend on package thickness, etc.
- Automatic (in-line) dimensioning systems generally measure the largest dimension in a direction including packaged invoices, tape bulges, skewed shapes, etc.
- Use proper fitting cartons to minimize dimensional weight and avoid damage.
- ExpressCube systems can be used to measure maximum dimensions on most irregular cartons by rotation and placement location on the measuring surface. (See detailed description above).