Technical Manual

C190 CubetapePRO + Cradle

CubetapePRO -- provides exact volumetric weight measurement by measuring L x W x H of an object.

An optional cradle can be used for charging the unit and also for HID connectivity to a host application. For example WMS packages and shipping software.

Contents

Contents

1. Introduction

1.1 CubetapePRO Overview

The CubetapePRO is a portable data-capture device for use in transport, shipping and warehousing applications. It is designed to collect, record and transfer data records made up of a series of items, including barcodes, piece counts, weights, dimensions, and other information, such as device serial number and units.

Cubetape captures dimensions using an integrated digital tape, and (if configured) item information using a barcode scanner. On-board display and function keys allow other data to be collected using a series of configurable tasks.

Data is collected and stored on Cubetape. The recorded data can be transferred to a host application running on a PC, PDA, smart indicator, tablet or phone. Communication options include Bluetooth (HID and SPP profiles) and physical USB cable. When connection is established, data transmission can be performed in either online or batch modes.

Cubetape supports multiple data-capture tasks, which can be selected and loaded by an operator from the application menu. Standard applications are Measure, Weigh, Consolidate, Batch Upload and Ship.

1.2 Main Features

- Easy-to-handle robust enclosure with protective silicone sleeve
- Standard 3 meter tape for dimensional measurement – BoT (Barcode on Tape)
- OLED 24-bit full-color display with 128 × 128 resolution
- Li-ion 970mAh battery with 2-hour recharge cycle
- Motorola scan engine for tape + barcode reading and decryption
- Class 2 SPP and HID profile Bluetooth connectivity for data transmission
- USB serial port for PC connection and battery charging
- Front button access to basic functions, such as scan and measure
- Supplementary Cubetape Manager software for configuration and management
- Supplementary CheckMate for Windows software for data handling and processing
- Supplementary CheckMate for Android App for data capture including server software
- Automatic shutdown features for energy conservation

1. Introduction

1.3 Specification

Measurement	Tape	19mm × 3m (9ft)
	Units	US – inches (rounded to whole, half or tenth) Metric – cm (rounded to whole or half), mm
Communications	Bluetooth®	Class 2 SPP and HID profiles
	USB	Types AB for data transfer and recharge
Power	Li-ion	970mAh with 2-hour recharge cycle
	Duty Cycle	Minimum 2 days on heavy duty cycle
Display	OLED	128 × 128 @ 24 bit full color
Scanner	1D	Optical 650nm visible laser diode
	Program	Common symbology's and features
Functions	Five Buttons	Measure, Scan/Record, Send/Next, Save/Append, Back/Power
	Shortcuts	Insert Pallet, Same as Last, Append
	Ergonomics	Tactile, 3 × LEDs, buzzer
Physical	Dimensions	123mm × 72mm × 31mm
	Weight	Approximately 230g
Software	SDK	.NET and .NET Compact Framework, Desktop, PDA and PDA wedge sample applications
	Software	Cubetape Manger configuration and management utility CheckMate for Windows CheckMate App for Android CheckMate for server
	PDA Pairing Utility	Windows Mobile and WinCE utility to simplify and streamline connection and data transfer to qualified Motorola PDAs
Regulatory	Environment	C-Tick, CE and FCC Certifications
	Metrology	NMI 13-1-23, MID 008, NTEP
Other	Application	Programmable/Configurable
	Temperature	-20°C to 50°C, 14°F to 120°F
	Humidity	Operating: non-condensed 10% to 80% Storage: 5% to 80%
	Accessories	Tape cassette, Silicone Sleeve, Battery
	Warranty	12 months on Cubetape device 3 months on accessories Tape Cassette is a consumable item and provided without warranty

Table 1

1.4 Model Identification

The CubetapePRO model number, serial number, firmware version, counter and MAC address can be found either in the About tab in the Settings menu, or under the "Device Info" tab in Cubetape Manager software when the device is connected with a PC host. See Chapter 3 Section 3.7.1 for more detailed information.

1. Introduction

1.5 Inspection and Contents Checklist

Verify the contents and inspect the package immediately upon delivery. If the shipping container is damaged, check for internal damage and file a freight claim with the carrier, if necessary. If the container is not damaged, remove the device from its protective package, noting how it was packed, and inspect each component for damage.

If shipping the device is required, it is best to use the original shipping container. The device must be packed correctly to ensure its safe transportation.

The package should include:

- C190CubetapePRO Device
- Quick User Guide
- Battery Pack (assembled inside)
- Tape Cassette (assembled inside)
- USB Cable

1.6 Physical Dimensions

The physical layout of CubetapePRO is shown in Figure 1-1

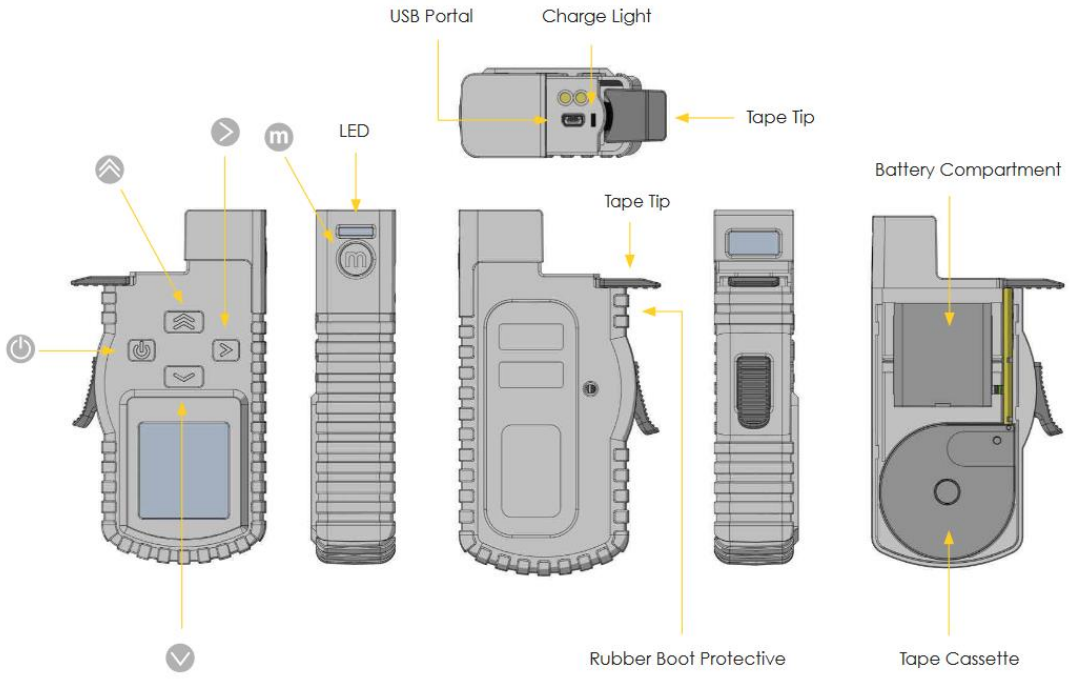


Figure 1-1

1. Introduction

1.7 Display and Buttons

C190CubetapePRO uses an OLED 24 bit full color display with a resolution of 128 × 128.

1.7.1 Display Elements

The screen display has three major components: Operation Data, Navigation and Status.

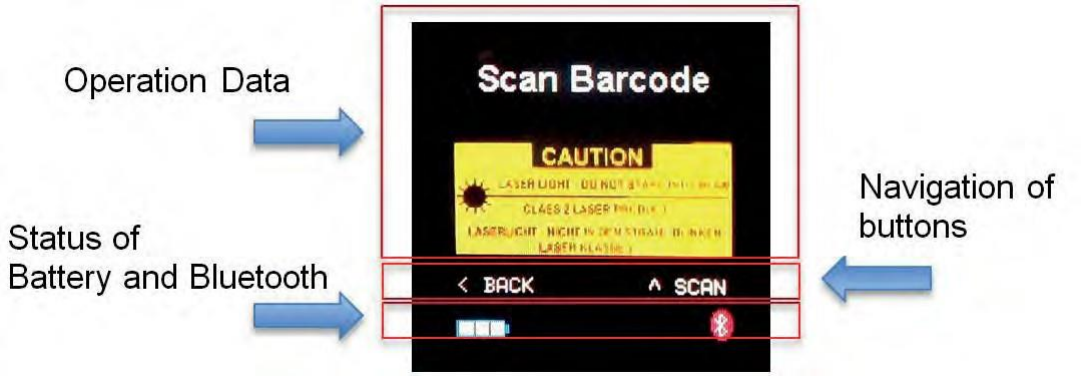


Figure 1-2

- Data is displayed as it is collected.
- Navigation information assists the operator complete tasks.
- Status area provides information on the battery and Bluetooth®.

Battery information is displayed at the bottom left corner of the screen while Bluetooth connectivity is displayed at the bottom right corner. When the Bluetooth icon is red, there is no active Bluetooth connection, and when the icon is blue the connection is active.

Also on the side above the M button you can find a blue LED – flashing means > no Bluetooth connection, and continuous blue means Bluetooth pairing successful > unit is connected with a host device.
The green LED indicates the ON / OFF status.

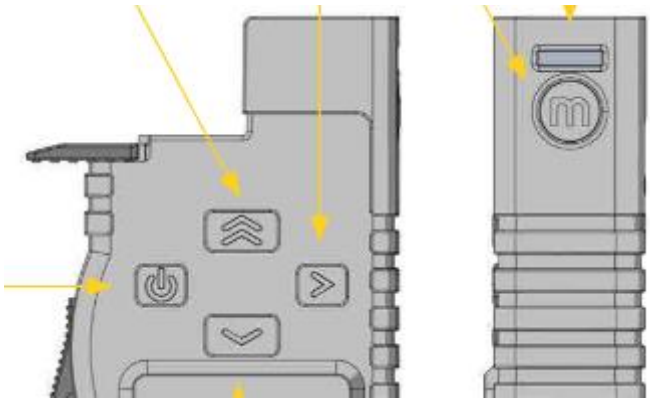
1. Introduction

1.7.2 Button + Brake Operation

The CubetapePRO has five main buttons.

The four buttons on the front are used for navigation or data collection purposes.

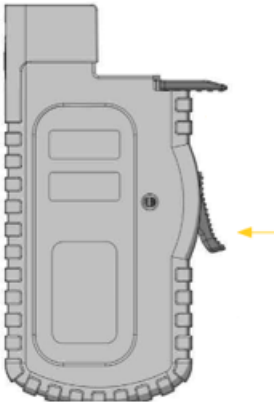
The button – press to record measurement
The button – press to scan a barcode label
The button for power on/off. Buttons are context sensitive.



Press to record measure
Scan barcode
Send data record
Append; save data
Backspace; power on/off
All buttons can be used for navigation under menu mode except for .

Figure 1-3

Tape retraction brake



The manual retraction brake on the side of the Cubetape must be used at all time when the tape is retracted and develops high speeds which could damage the tape tip

2. Operation

2.1 Overview

This chapter provides information about the main functions of C190CubetapePRO, including button usage, display options, basic field operations and workflows.

Operation of the device depends on which functions are enabled. The functionality discussed in this chapter is based on the device only, without any communication or configuration from the Cubetape Manager software. For detailed information about configurations via PC software, see Chapter 3.

2.2 Power On/Off

- To turn on the device, short press .
- * Legal for trade versions will present an info screen- press any key to proceed
- To shut down the device, press for approximately 3 seconds, then release when "Power Off" is indicated on screen or five beeps are heard.
- Cubetape will auto shut down after 10 minutes of no key press

NB -- Please charge your Cubetape regularly to avoid 'low bat' situations Parceltools provide a convenient charger / cradle unit for this purpose.

2.3 Basic Functionality

This section provides information of some fundamental functions of C190CubetapePRO The following functions are addressed in this section:

- Scan
- Transmit Data
- Append
- Measure
- Insert Pallet
- Return to Last Recorded Data

2. Operation

2.3.1 Scan

- Turn on the device and “Scan Barcode” is indicated on screen.
- Aim the scanner at a proper tilting angle (ideally perpendicular to the scanning surface).
- Press to scan.

Figure 2-1 Scan Operation

2.3.2 Measure

- Stretch the tape tip to one end of the object, then align the Tape Stop with other end of the object.
- Make sure the tape is parallel with the edge of the object during measurement
- Measure item length.
- Record measured length by pressing or
- Measure item width.
- Record measured width by pressing or
- Measure item height.
- Record measured height by pressing or

2. Operation

Figure 2-2 - Measure Operation

2.3.3 Transmit Data

- In the **Measure** task, when connected online to a host system via Bluetooth recorded data can be sent to the host system by pressing .
- In batch mode, recorded data can be sent to a host system using the **Batch Upload** method in the application menu via USB connection. See Section 2.4.5 in this chapter for detailed instruction
- In the **Ship** or **Scan** task, transmit is automatic and is part of scanning or measuring process.

2.3.4 Insert Pallet dimensions (if activated in settings)

- With the tape in the Home position and cursor in the Length field, press or to insert the default pallet length and width.

2. Operation

2.3.5 Append (if activated in Settings)

The Append function enables the operator to add up to three length measurements together, useful when the item length is longer than the 3 meter tape.

- The append function enables the operator to sum three measurements of length together, especially when the item length is longer than the 3 meter tape.
- When in Length measurement position - Press to Append measurement 1;
- Measure length 2 and if needed length 3;
- Record appended measurement by pressing whiles take your last measurement ;
- The length recorded will be the sum of length 1, 2 and length 3.

2.3.6 Return to Last Recorded Data

- Press several times until the cursor is in the length field;
- Press will display the last recorded measurement on screen.

2.4 Tasks

The CubetapePRO provides five different tasks, which can be directly accessed on the device. When the device is turned on, it will be set up for the Task last used.

If a different task is needed, the operator has to access the menu to load a different task.

Enter the Tasks menu from current operation by pressing and together.

The four buttons on the front panel can be used for navigation and selection.
See Section 1.7.2 for more details.

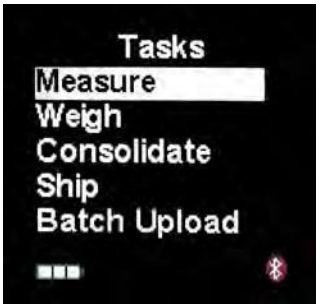


Figure 2-3

2. Operation

2.4.1 Measure

- Use and to scroll, when the cursor is on the Measure tab, press to select.
- The display will be redirected to the first step in the Measure workflow.
  All the operation steps can be configured via Cubetape Manager software.
  See chapter 3 for more details. If the operation is disabled, the operation will skip to the next step directly.

Figure 2-3

Figure 2-4

Figure 2-5

Figure 2-6

Figure 2-7

- Scan the operator ID: This operation needs to be performed when the device is powered on only. To change the Operator ID, restart the device See Figure 2-3.
- Scan barcode: Up to 3 barcodes can be scanned, depending on the configuration. The sequence number shows on the left top on the screen See Figure 2-4.
- Input pieces: Use and to scroll the value See Figure 2-5.
- Measure the length, width and height See Figure 2-6.
- Show the volume and dimensional weight. Press to send/save the record.

2. Operation

2.4.2 Weigh

The CubetapePRO can record the weight from supported scales via Bluetooth. This application only works in “batch” mode. The weight data is stored in a record along with barcode, dimensions and other information. The records needs by uploaded by the “Batch Upload” operation to a PC with CargoDesk software.

Pair with a weighing scale first. Chapter 4 Section 4.5 for instructions and information.

- Use and to scroll, when the cursor is on the Weigh tab, press to select.

Figure 2-8

- The display will be redirected to the first step in the Weigh workflow.
  The Weigh workflow is similar to the Measure application.
  See Section 2.4.1 for more details.
- Keep the goods on the scale before scanning the barcode label on the goods. After scanning the barcode the weight is automatically received as shown on Figure 2-8. Press to accept / continue.
- After the dimensioning process, the record will be saved automatically.

Note: In order to receive weight from the scale, Cubetape must be connected. If the scale is not connected, the warning shown in Figure 2-9 will be displayed. Please check the connection and pair again if required.

If the scale cannot respond to the Cubetape, the display would stay on the capturing screen, see the Figure 2-10. Please check the configuration on the scale.

2. Operation

Figure 2-9

Figure 2-10

2.4.3 Consolidate

C190Cubetape can consolidate multiple items under one barcode. This application also works in “batch” mode. The records needs be uploaded by the Batch Upload operation to a host.

- Use and to scroll, when the cursor is on the Consolidate tab, press to select. See Figure 2-11.

Figure 2-11

Figure 2-12

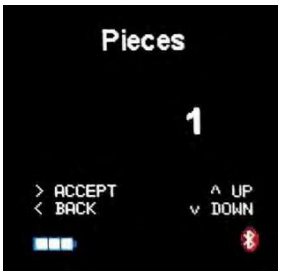


Figure 2-13

- The display will be redirected to the first step in the Consolidate workflow. The process is similar to the “Measure” Task. See Section 2.4.1 for more details.
- After the dimensioning measurements, the workflow loops back to collect data for the next item (see Figure 2-13).
- After the dimensioning measurements, the record is saved automatically.

2. Operation

2.4.4 Cubetape Shipper (Ship) Instructions

Introduction

The workflow or task SHIP provides an on-line connection with a host, sending data in real time using a Bluetooth connection.
The Measure button, (on the side) will record the length from the tape and send it (followed by a tab) via Bluetooth to a connected host The Bluetooth on this device is setup to use the HID profile, meaning the data is sent to the foreground application running on a host (typically a PC, PDA, iPad, Phone etc.) The device will need to be paired to a host system before use. Also the Parceltools Cradle can be used for this functionality.

If using an iPad as a demo host, the right arrow acts as a keyboard escape key - pressing it when connected will display or hide the iPad on screen keyboard. This is useful if you need to enter alpha text as well as transfer barcode and dimensional information.

The Cubetape has an inbuilt Dim Weight calculator. Pressing the down arrow once, will display the Dim Weight for a domestic shipment (using factor 166) for the last 3 measurements, and pressing down arrow again, will display Dim Weight for an export shipment (using factor 139).

Some customers have discounted conversion factors and the value of the conversion factor[s] can be adjusted from the settings menu. To do this hold and select settings and use the and to increment and decrement the values

Figure 2-14

Figure 2-15

2. Operation

Integration

Bluetooth HID mode is ideal for demonstration as there is no need for any software on the host. Data will appear in the active application wherever the cursor is located, and format characters (tab, cr, lf for example) can be used to position the data in the right location. However if cursor independence is an issue, Cubetape can instead be connected to the host using Bluetooth serial port profile (SPP). The data sent from Cubetape can be accessed at the relevant COM port on the host and can be made available programmatically. To simplify this process for the host application, ParcelTools has published an SDK comprising a dll and a sample desktop application. The dll manages the low level Cubetape interface (BT and COM port connection) and makes the data available via a higher level set of methods and properties. We envisage the major shipping applications would require cursor independence, and if so the SDK may be a useful tool. There are a number of implementations in Australia and Asia where this approach has been us used

2.4.5 Batch Upload

Batch Upload functions when there is locally saved data records in the device.
Note: Please note the configuration for the communication. Usually, this function works under the **USB connection** option. See Section 3.3.5 and Section 4.3 for detailed information.

- Use and to scroll, when the cursor is on the Batch Upload tab, press to select. See Figure 2-16.

- The display will show the number of records saved in the device. See Figure 2-16. Press to send the data.
- Completing the data transmission, select to keep or delete the current records.

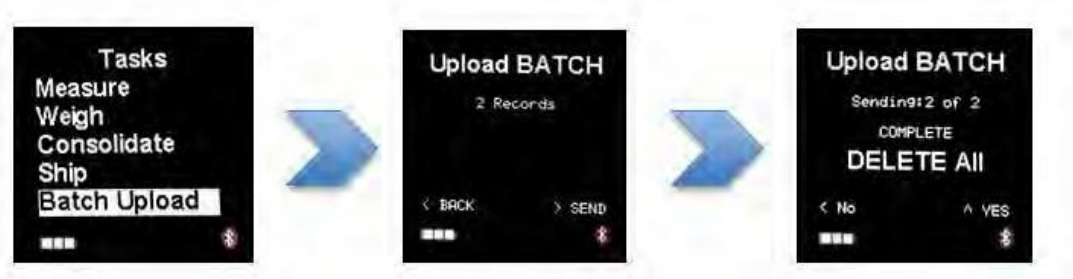


Figure 2-16

3. Configuration

3.1 Overview

This chapter provides information about how to configure the C190CubetapePRO device. It describes access to the Settings menu where the device can be managed. It also provides detailed information on configuring Cubetape via the PC based Cubetape Manager software.

3.2 Settings in C190Cubetape

The CubetapePRO has six basic settings, which can be directly accessed on the device. Upon turning on the device, it automatically functions under default or previously configured settings.

If a different settings configuration is needed, the operator has to enter the Settings menu to adjust.

- To enter the Settings menu, power the device on.
- When the display is showing the Laser warning screen, press  and  simultaneously to enter the Settings menu.

3.2.1 Settings Menu

The five buttons on the front and side of the device are used for navigation and selection purposes under the Settings menu. See Section 1.7.2 for more details.

3.2.1.1 Cubetape Manager software

Plug the USB cable into the host computer (Windows), which has installed the Cubetape Manager software.

- Press  and  simultaneously to enter the Settings menu. - the cursor is on the CubeTapeMgr tab, press  to select.

3. Configuration

- The display shows “Setup with CubetapePRO Manager.” See Figure 3-1.
- Press the “Detect” button on the Cubetape Manager software to connect to the device. When the device is detected by the software, the display shows “Connected”. See Figure 3-1.
- See Section 3-3.in this chapter for more information on software configuration.
- After “Write” the configuration to the device, press to reboot the Cubetape This enables new configurations using a PC.

Figure 3 – 1

3.2.1.2 Bluetooth Settings

- Use and to scroll, when the cursor is on the Config tab, press to select and enter Bluetooth settings.
- The display will show Comm Method tab in Config screen press to select.
- Select desired Bluetooth connection profile according using Up and Down keys. Press to accept a (new) setting. Press to go back.

3.2.1.2 About

- Use and to scroll. When the cursor is on the About tab, press to select.

The About setting displays the identification information of the device, including serial number, firmware version, model ID, etc.

3.2.2 Scan Engine Configuration

The scan engine used by Cubetape is the Motorola SE965. The SE965 is very widely used in both Motorola and third-party equipment, which is fully programmable, supports all of the standard barcode symbology’s and has many other features and options.

Cubetape ships with factory defaults set for the SE965, but these can be changed to suit local conditions. Ask your dealer for instructions.

3. Configuration

3.3 Settings via PC

The CubetapePRO is a powerful device with many possible configurations. This section introduces the functions configurable through Cubetape Manager software.

Cubetape Manager enables administrators to configure units, dimension-weight factor, pallet size, workflow sequence, data format and a variety of other settings.

The taskbar on Cubetape Pro provides ready access to different data capture tasks. The default taskbar contains 5 tasks for use in presenting the main features of the device with minimal setup and configuration. In production, end users typically have one or more tasks setup for their operational requirement using the Manager desktop application. Custom configurations can be saved in an xml format to simplify provisioning and customer support

TASK	APPLICATION	DATA OUTPUT	CONFIGURATION
Scan	Unstructured data capture in online mode Useful Demo tool	Unstructured data: Barcode or Length	Bluetooth HID Comms Pair with host Auto sends data to mobile app
Measure	Capture of single or same size items on Probill Records stored on Cubetape for later upload	Structured data with one record per barcode: Serial number, Barcode, Pieces, Length, Width, Height	USB Comms Desktop app on PC Connect Cubetape by cable and upload data using Upload task
Consolidate	Capture of multiple items of different sizes consolidated on Probill Records stored on Cubetape for batch upload	Structured data with multiple records per barcode: Serial number, Barcode, Pieces, Length, Width, Height	USB Comms Desktop app on PC Connect Cubetape by cable and upload data using Upload task
+Weight	Adds weight from supported scale platform to the record Records stored on Cubetape for batch upload	Structured data with one record per barcode: Serial number, Barcode, Pieces, Weight, Length, Width, Height	USB Comms Run desktop app on PC Connect Cubetape by cable and upload data using Upload task
Upload	Data upload	Upload of structured data records	USB Comms Desktop app on PC Connect Cubetape by cable and upload data using Upload task

Current version of the Cubetape Manager software supports Windows operating systems only. System requirement:

- Windows XP SP2 or later
- A minimum of 64MB RAM
- At least 10MB of hard drive space

3. Configuration

3.3.1 Cubetape Manager Software Download

The software can be accessed and downloaded from the link below:
www.cubetape.com

3.3.2 Cubetape Manager Software Installation

- Extract the ZIP file into a new folder after downloading
- Click on CubetapeManager.exe to install the application

3.3.3 Connect the device to Cubetape Manager software

USB connection is the supported method for connection.

- Turn on the CubetapePRO device.
- Connect the CubetapePRO with PC by plugging in the USB ports with the USB cable at both ends. Typically, a new serial port will be automatically installed. If the driver fails running automatically, please download the driver from the flowing link and install the driver manually: www.cubetape.com
- Enter the Settings menu on C190CubetapePRO, select CubeTapeMgr
- The Cubetape Manager interface displays connection status as "Connecting."
- See Figure 3-2.

3. Configuration

Figure 3-2

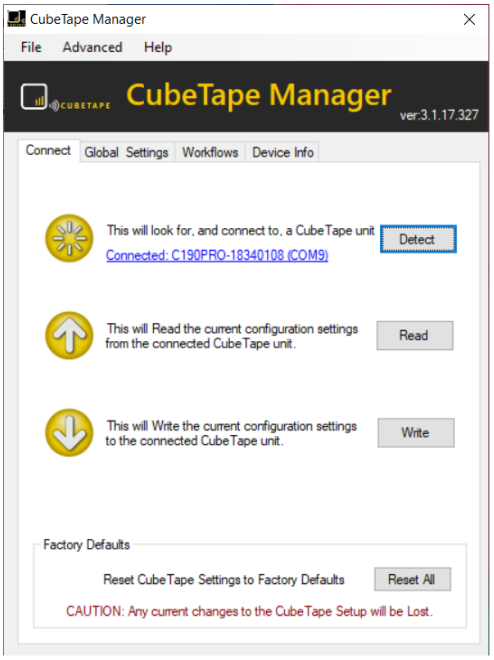


Figure 3-3

- Click on “Detect” and Cubetape Manager will find the connected Cubetape and both Cubetape and Cubetape Manager will display “Connected.” See Figure 3-3.

3.3.4 Configure the CubetapePRO via Cubetape Manager Software

This subsection discusses the various settings managed through Cubetape Manager.

- The “Read” button is used for reading the existing configuration in Cubetape. It should be used to load an existing configuration from the connected Cubetape into Cubetape Manager.
- To load the existing configuration to the Cubetape Manager, click the File on menu and then click Load Configuration. See Figure 3-4.
- After the configuration, the current setting can be saved as one “.xml” file which can be load to another Cubetape. Click Save Configuration.
- The “Write” button is used to write a new configuration to Cubetape, it should be selected after configuration by PC and before disconnecting the USB cable. Note that the new configuration is only available on the CubetapePRO after writing.
- After clicking on the “Write” button, the writing process starts and ends with a confirmation window

3. Configuration

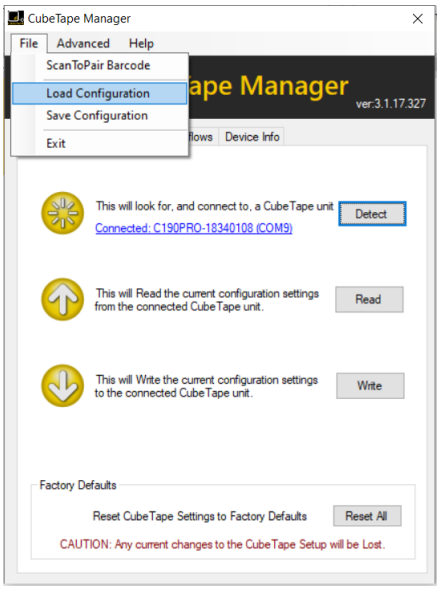


figure 3–4

3.3.5 Global Settings

The Global setting tab is used to set the device parameter including Units, Dimensional-Weight Factor, Pallet Size, Communication Method, Audio Feed back etc… for CubetapePRO.

- Use the navigation arrows on the menu bar and click on “Global Settings” tab. See Figure 3-5.
- To change the unit for measurement, adjust in “Units of Measure” bar. See Figure 3-6.
- To change values of dimension-weight factor, default pallet size, adjust in corresponding bars under “Global Settings” tab. Note that pallet width and length are always expressed in centimeters.
- To change the communication method, adjust in “Comm Method” bar. For the on live application, the communication should be set as Bluetooth (BT-SPP or BT-HID). USB port is usually used for Batch Mode See Figure 3-7.

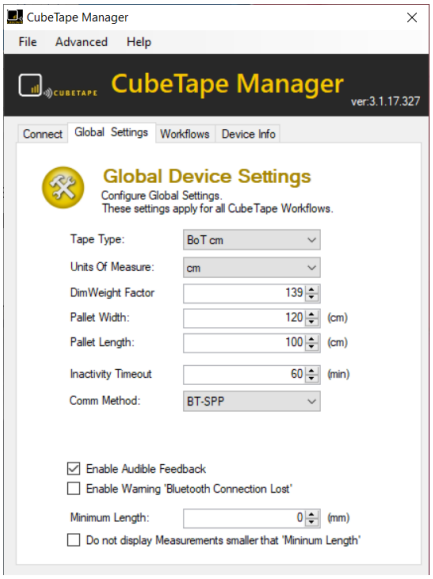


Figure 3-5

Figure 3-6

3. Configuration

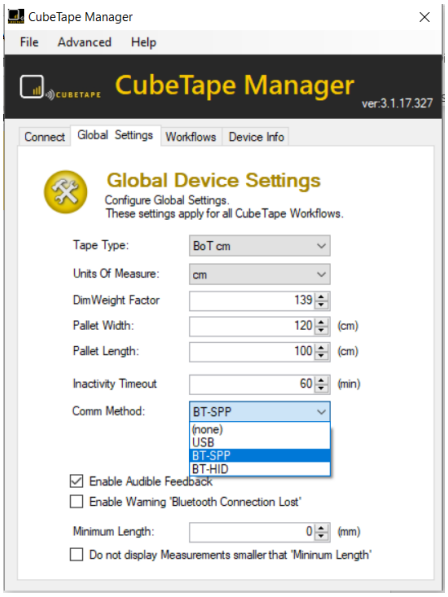


Figure 3-7

3.3.6 Workflows (or Tasks)

- Use the navigation arrows on the menu bar and click on “Workflows” tab.
  This screen controls the content of the task menu on Cubetape. The order of the applications can be changed, or they can be removed altogether. See Figure 3-8.
  Note that needs be careful to remove the Task from the list. To find back the Task that is removed, the only way is turning to the Connect tab and clicking the Reset All to load all the default settings.

Figure 3-8

- Also the five applications in Cubetape can be configured independently.
- For instance, to modify the **Measure** Application, highlight “**Measure**” then click on “Configure.”

A configuration window will be displayed. See Figure 3-9.

3. Configuration

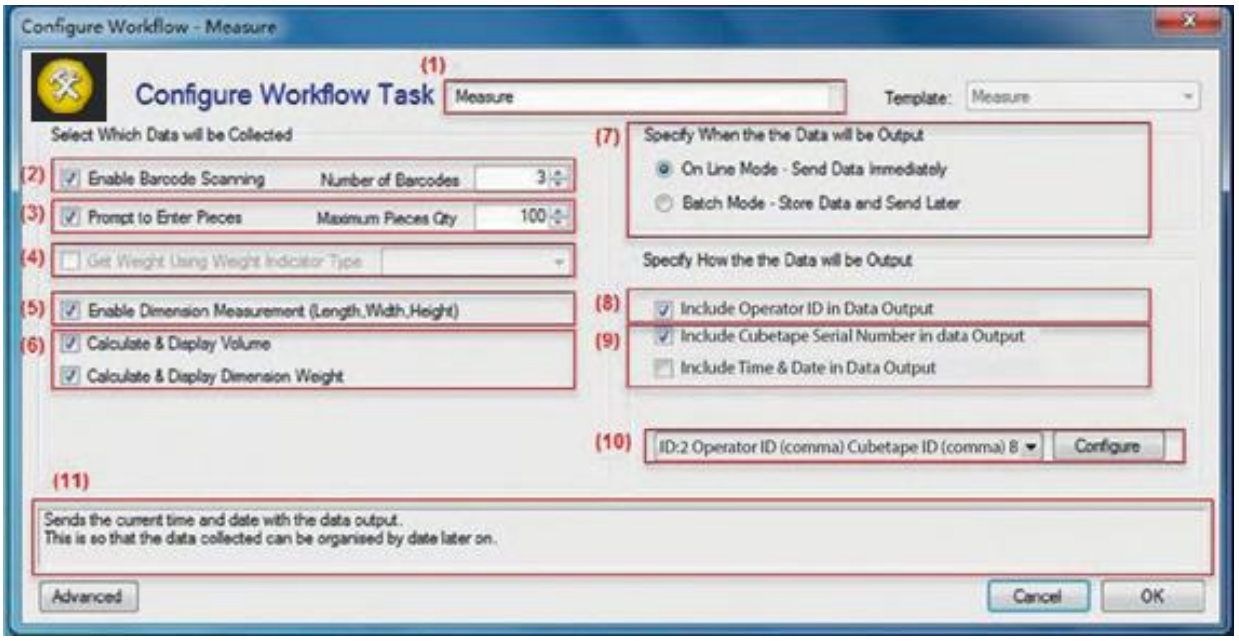


Figure 3-9

(1) The name of Task can be edited.

(2) Enable Barcode Scanning should show a scanning window during application. See Figure 3-10. The maximum number of barcodes is 3. The barcodes number will be on the top left corner of display. Move out the tick to disable this operation in application.

Figure 3-10

Figure 3-11

Figure 3-12

Figure 3-13

(3) Enable to Enter should show Piece window during application. See Figure 3-11. Set the maxim piece number, which can be entered via application. Move out the tick to disable this operation in application.

(4) This configuration is only available in Weigh Task. Choose the needed scale from the pull down list.

(5) Dimensioning Measurement should be always enabled for most applications except Ship. The operation windows shows on Figure 3-12.

3. Configuration

(6) Enable the Calculation of Volume or Dimensional Weight will show the result window (See Figure 3-13) before the data transmission/save.

(7) Select the correct working mode for different applications. For certain tasks, the working mode is fixed as Live or Batch. Typically, On Live mode should be available for Bluetooth communication.

(8) Enable Operator ID will show an Input ID window once. See Figure 3-14. When operator ID is scanned successfully one time, the ID will store in the device.

Figure 3-14

Note that the Cubetape needs to restart to reenter the operator ID.

(9) The serial number of the Cubetape and real-time data can be included into the data output. It can be configured in Data Format too.

(10) Click the Configure button to go into the Output Data Format window. See Figure 3-15. For Weighing, Consolidate Tasks that choose Batch communication. The Data Output Format should be configured under Batch Upload Task. See more details on section 3-15.

(11) Help window.

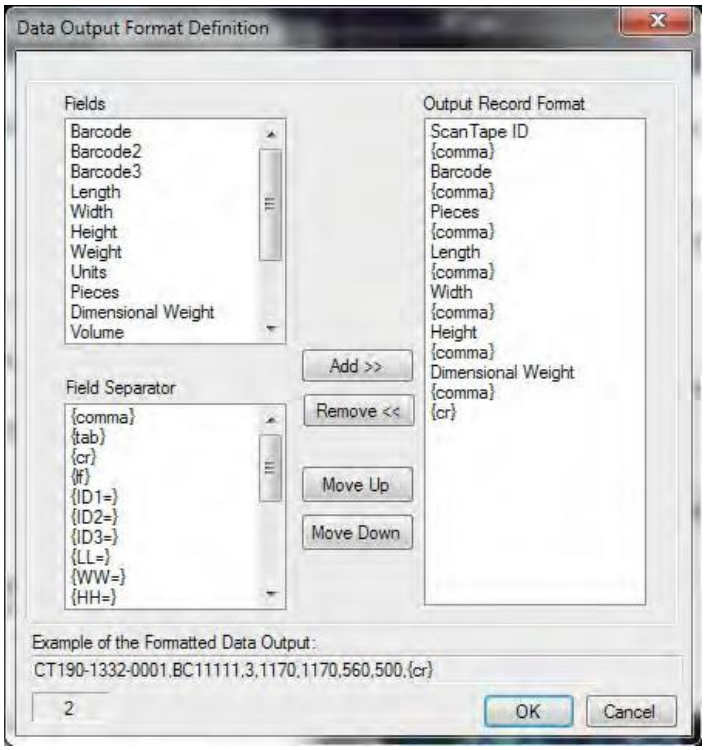


Figure 3-15

3. Configuration

3.3.7 Device Information

- Use the navigation arrows on the menu bar and click on “Device Information” tab.
- Device information, such as model ID, serial number, firmware version, time and date and tape counter can be reviewed under the tab. See Chapter 1 Section 1.5 also.

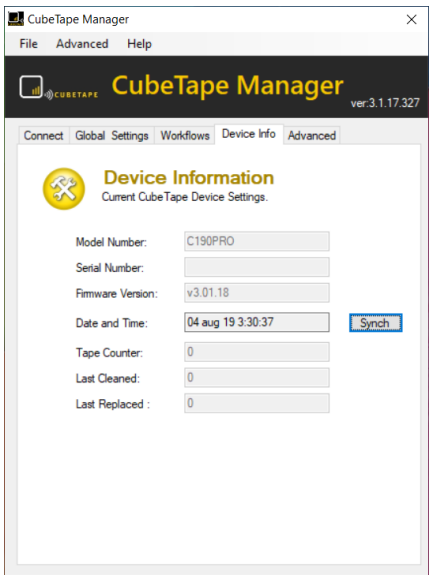


Figure 3-16

- Bluetooth Pair with the Cubetape

The File menu item provides access to the **ScanToPair Barcode** utility.
Access to create barcode. See Figure 3-17.

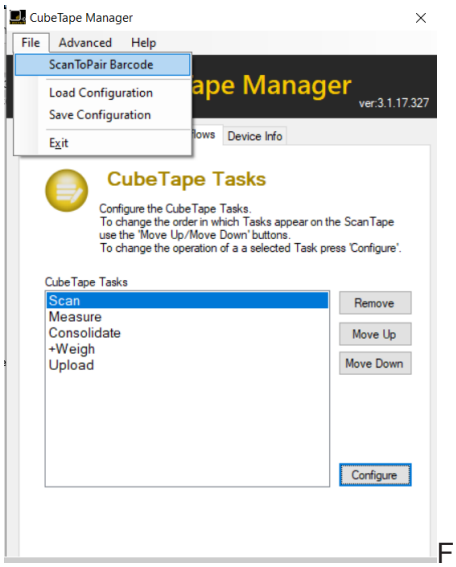


Figure 3-17

3. Configuration

Select from a list of available Bluetooth configuration options (serial slave, PDA SPP, PDA HID, PC SPP, and PC HID), enter the 12 digit Bluetooth MAC address of the device to be paired with, and click Generate to produce a pairing barcode.

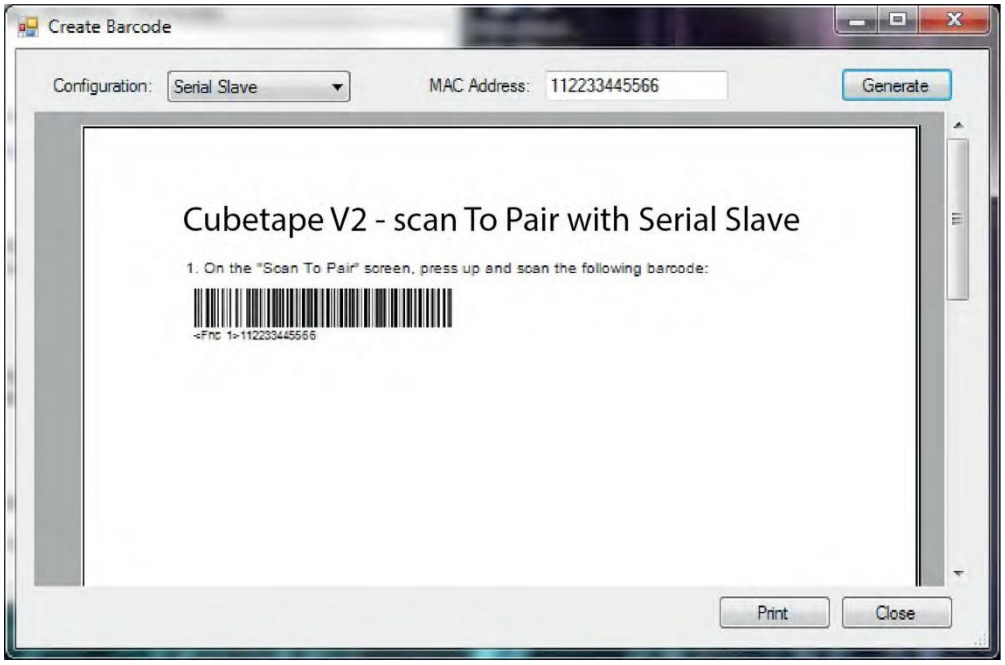


Figure 3-18

Print out the barcode. And scan the barcode under the scan window of Cubetape. See Figure 3-18. The Cubetape will pair Bluetooth automatically. See Figure 3-19. After the paring successfully (wait for 5 seconds), the Bluetooth icon on the bottom right corner would turn to blue.

3.3.8 Advanced Menu Item

- Advanced menu option allows password access to factory settings only.

3.3.9 Disconnect

Press Exit on Cubetape for exit and restart after the configuration has been written into Cubetape.

- Close the Cubetape Manager application and disconnect the USB cable.
- Cubetape will restart with the new configuration.

Note: Please remember to write configured settings onto the device before closing the application or disconnecting, otherwise all configured data will be lost.

4. Communication and Development

4.1 Overview

This chapter provides information on the communication options for the CubetapePRO. The setup process for each communication method is described in depth in this chapter.

4.2 Connection via Bluetooth

The CubetapePRO includes an embedded Bluetooth unit with SPP and HID profiles available. Cubetape can be connected to any device supporting SPP or HID profiles.

Cubetape needs to be paired and connected with a host before data can be transferred. Pairing can be performed with no physical connection between the device and the host. The process should be straight forward, but issues can arise across different Bluetooth radio hardware, operating systems and Bluetooth stacks.

4.2.1 PC Requirements

- For Windows users: Windows XP SP2 or later with either embedded or separate Bluetooth module.
- For Macintosh users: Mac OS X 10.2 or later.

4.2.2 Connection Procedure

The connection procedure can vary across PC or Mac platforms and under different versions of operating systems. The instruction below provides a standard procedure on Windows 7 and Mac OS X 10.9.

4. Communication and Development

4.2.2.1 PC Connection

- Make sure Bluetooth is enabled on your PC.
- Turn on the CubetapePRO.
- Enter Settings on Cubetape, inside the Bluetooth option, select “BT SPP” by pressing . See Chapter 3 Section 3.2.1.1 for more details, or configure using Cubetape Manager.
- Click on the “Bluetooth Device” icon at the bottom right corner of your PC screen, then select “Add a Device.”
- Cubetape should be displayed in the “Add a Device” dialogue box. This may take a short while and may need to be repeated if the device is not found. See Figure 4-1.

Figure 4-1

- Highlight Cubetape, select “Next,” and you may see the “Select a pairing option” dialogue box. (This step can be omitted if the host is using SSP Bluetooth pairing). See Figure 4-2.

4. Communication and Development

Figure 4-2

• Select “Enter the device’s pairing code” and key the default PIN code: 1234. See Figure 4-3.

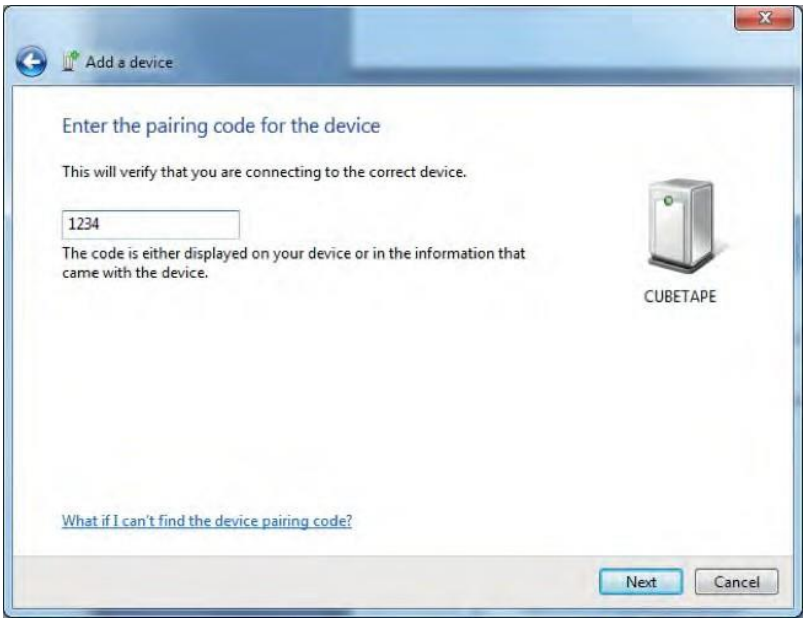


Figure 4-3

• Typically, there will be some driver installation, then a success message will be displayed. See Figure 4-4

4. Communication and Development

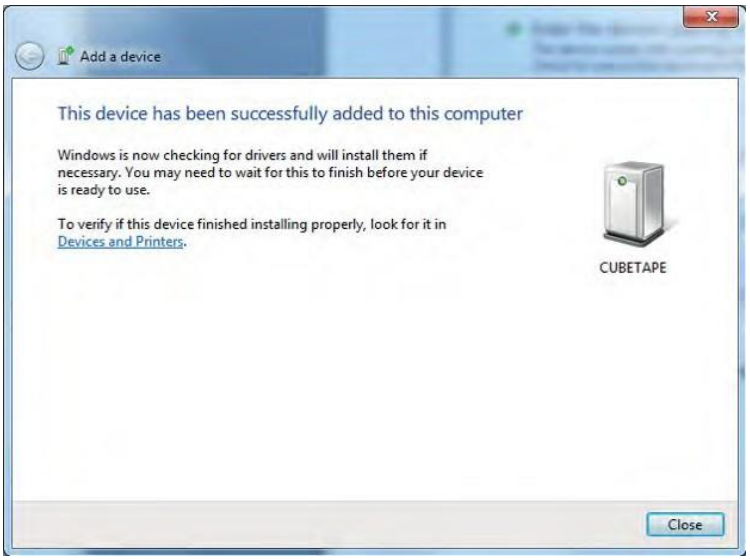


Figure 4-4

• To confirm which services and ports are in use right click on Cubetape in “Bluetooth Devices” and select “Properties.” The “Services” tab displays the services and the COM port in use. See Figure 4-5.

Figure 4-5

• Cubetape is now connected and data can be transferred under the Serial Port Profile (SPP).

* Please note that the above instructions must be followed in sequence strictly, otherwise the application might not respond or breakdown.

4. Communication and Development

4.2.2.2 iOS Connection

- Turn on C190CubetapePRO.
- Enter Settings on Cubetape, inside the Bluetooth option, select “BT HID” by pressing . See Chapter 3 Section 3.2.1.1 for more detail, or configure from Cubetape Manager.
- Turn on the Bluetooth switch on the upper right corner of the task bar. See Figure 4-6.

Figure 4-6

- Select “Open Bluetooth Preferences.” See Figure 4-7.

Figure 4-7

- Find Cubetape in the searching window, this may take a while or be repeated if not successful at first. See Figure 4-8.

Figure 4-8

4. Communication and Development

• When Cubetape is discovered by the system, select “Pair” to connect with Cubetape. See Figure 4-9.

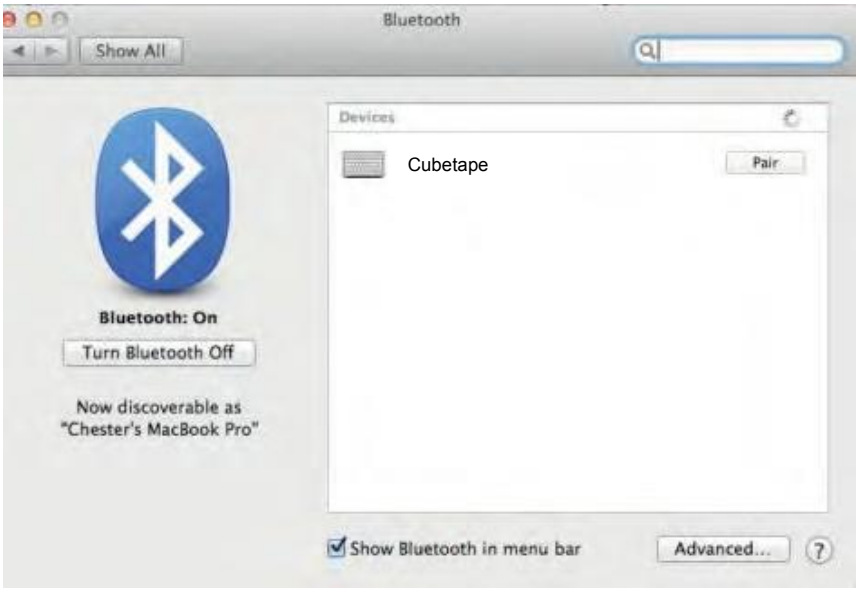


Figure 4-9

• When pairing is successful, a small subtext indicating “connected” will be displayed underneath the Cubetape icon. See Figure 4-10.

Figure 4-10

• Cubetape is now connected and data can be transferred under the Human Interface Device Profile (HID).

* Please note that the above instructions must be followed in sequence otherwise the application might not respond or breakdown.

4.2.3 Connection Feedback

- A Bluetooth indicator symbol appears at the right bottom of the screen.
- When Bluetooth connection is established, the symbol displays as bright blue.
- If Bluetooth is not activated or the connection is lost, the symbol displays as red.

4.3 Connection via USB

C190MFT Cubetape™ comes standard with a USB cable for data transmission, software connection and battery charging.

4.3.1 PC Requirements

The USB port is solely provided for data connection to Windows PCs. Connection with host systems other than Windows PCs via USB functions as charging the device only.

The Windows system requirements are:

- Windows XP SP2 or later.
- USB 2.0 port or later.

4.3.2 Connection Procedure

- Turn on C190MFT Cubetape™ first to connect.
- The system may take a while to install drivers for the USB program upon first-time connection.
- Once the connection is established, the device will be charged automatically.
- See Chapter 3 Section 3.3.3 for advanced USB connection methods.

4. Communication and Development

4.4 Data Format

Data format of C190MFT Cubetape™ is in the form of standard text mapped by ASCII codes. Table 4 provides a general view of the format for data item records.

Item	Description	Source
OpID	Operator ID	Scanned at beginning of shift
SN	Device Serial Number	Device constant
ID1	32 character barcode	Scanner
ID2	32 character barcode	Scanner
ID3	32 character barcode	Scanner
Pieces	4 character item count	Direct entry
Weight	4 character weight	Connected scale indicator
Length	4 character dimension	Digital tape
Width	4 character dimension	Digital tape
Height	4 character dimension	Digital tape
Volume	L × W × H	Calculated
Dim Weight	Derived from Volume	Calculated
Units	Metric or US	Configuration Setting

Table 4

Table 5 provides the data format in output. The data output format can be customized under the “Workflows” tab in Cubetape Manager.

Field	Field Separator (*Typical description string	Field Separator (*Normal symbol)
Barcode	{ID1=}	
Barcode2	{ID2=}	
Barcode3	{ID3=}	
Length	{LL=}	
Width	{WW=}	
Height	{HH=}	
Weight	{WW=}	
Units	{UN=}	
Pieces	{PC=}	
Dimensional Weight	{PW=}	
Volume	{VV=}	
Operator ID	{OP=}	
Cubetape ID	{SN=}	

Table 5

		{comma}
		{tab}
		{cr}
		{lf}
		*{star}
		/{slash}
		{custom-start}
		{custom-end}

Example of the Formatted Data Output:
ID1=BC23015234, PC=3, LL=1170, WW=1170, HH=560, VV=73.45, DW=500, UN=mm

4.5 Pair with Supported Weighing Scale

The CubetapePRO is specially optimized for tasks in combination with supported weighing scales.

4.5.1 Connection Method

The CubetapePRO is connected with the weighing scale via Bluetooth communications. The weighing scale should have a Bluetooth interface available.

Make sure to select the “Weigh” application in the Cubetape Application menu, as discussed in Chapter 2 Section 2.4.1.2, for connection preparation.

4.5.2 Connection Procedure

Find the 12-digit Bluetooth MAC address of the weighing scale. Create the barcode as the following format: <Fnc 1>112233445566, where “112233445566” is the MAC address of the indicator. This barcode also can be created using the Scan to Pair utility by the Cubetape Manager software detailed in Section 3.3.8. Sample barcode as follows:

4. Communication and Development

The CubetapePRO needs to use Bluetooth SPP (Serial Port Profile) to pair and communicate with the indicator. The complete process is as follows:

- Ensure that the CubetapePRO is in SPP mode by going to Settings/Bluetooth and selecting SPP with the m button, or by configuring BT SPP in Cubetape Manager.
- Ensure the weighing scale is turned on.
- Scan the pairing barcode with Cubetape.
- The CubetapePRO will display: “Pair Sent 112233445566 SPP”
- Devices will pair in a couple of seconds when the Bluetooth icon on Cubetape turns bright blue.
- Enter the Application menu on the Cubetape and select “Weigh” to start tasks.
- Sample tasks can be found in Chapter 2 Section 2.4.2.3.

4.6 SDK

4.6.1 SDK Overview

The SDK is provided to simplify the integration of Cubetape with Windows desktop and mobile environments, remove hardware and connectivity dependencies from the application developer and expose a standard set of methods and properties for ISVs.

4.6.2 SDK Contents

The SDK contains the following items:

- Cubetape dll (.NET Compact Framework - Windows CE 5.00 or Windows Mobile 5.0 and later)
- Cubetape dll (.NET Framework - Windows XP SP2 and later)
- Desktop Client
- Device Sample (.cab file)
- Device Keyboard Wedge (.cab file)
- Samples (Desktop and Device sample application code)
- Compiled Object-Model Help documentation (Integrates with Visual Studio on installation)

4.6.3 PC Requirements

Desktop PC

- Windows XP SP2 or later
- .NET Framework 2.0 or later
- Microsoft or Broadcom Bluetooth stack software
- Visual Studio 2008 (Using either C# or Visual Basic)

Mobile Device

- Windows CE 5.0 or later
- Windows Mobile 5.0 or later
- Microsoft, Broadcom or Stone Street One stack software
- .NET Compact Framework 2.0 or later

4.6.4 Samples

The Samples folder contains two sample applications, one for Desktop Windows and the other for mobile devices. They both perform the same functions but are optimized for the screen and input options available, respectively. The code is written in C# and illustrates how to use the Cubetape Manager class in the SDK to connect to the device and receive data. A pre-compiled version of the Desktop Sample is installed, which you can access from the “Desktop Sample” start menu shortcut. A compiled version of the device sample is provided in .cab format for installation onto a compatible device.

The “Device Sample” start menu shortcut will open the folder containing this .cab file enabling you to copy it to an attached device.

The samples are created with Visual Studio 2008 as C# projects. The code is simple to follow and can be easily duplicated in Visual Basic with very few changes. It is possible to open the desktop sample in Visual Studio 2010, which will perform a one-off upgrade. The device sample must be opened in Visual Studio 2008 as Visual Studio 2010 does not support .NET Compact Framework projects.

4.6.5 Device Keyboard Wedge

The Device Keyboard Wedge provides a method to use the Cubetape device with existing software by passing through received data as Keyboard input. This allows you to use the Cubetape device even if you can't modify an existing application to use the Cubetape SDK. The CubetapeWedge.cab file installs the wedge to the device and it will load whenever the device is soft-reset.

The keyboard output is defined by the contents of a registry key, which contains a mask for the generated keystrokes.

The default behavior is:
"ID = {id}, PC = {pc}, LL = {ll}, WW = {ww}, HH = {hh}, UN = {un}, {ENTER}"

- The two letter codes in curly braces are replaced with the values of those specific fields.
- {ENTER} is a constant which defines the keyboard Return/Enter key.
- The string interprets special constants like the System.Windows.Forms.SendKeys. Send.NET method.

Therefore the following special keys are supported:
- {TAB} = Tab
- {PGUP}, {PGDN} = Page Up / Page Down
- {LEFT}, {RIGHT}, {UP}, {DOWN} = keyboard arrow keys

These special characters must be escaped in curly brackets: + ^ % { } [ ] ~
- For example: "{ [}"

So to send the record contents with no headers and a tab control between each field the mask should be set to:
"{id} {TAB} {pc } {TAB} {ll} {TAB} {ww} {TAB} {hh} {TAB} {un} {ENTER}"

The value is stored in the Registry at: HKEY_LOCAL_MACHINE\SOFTWARE\Cubetape

In a string value called “WedgeMask,” you can provision this value either:

- Within a .cab Setup project specifying this registry key
- Using a Registry Editor application on the device or remotely from a desktop PC
- From your own application code using the Registry API or .NETCF RegistryKey class

4.6.6 Operating Notes

Quickstart instructions to pair with a PDA and transfer data records from Cubetape:

- Power up the PDA
- Ensure that Bluetooth is turned on
- Power up the Cubetape
- Select Cubetape sample from the PDA start menu or menu bar
- To pair the devices scan the barcode on Cubetape, or select Search and select the Cubetape mac address
- Data collection screen will load in a few seconds while devices are now paired
- Item and dimensional data can be collected on Cubetape and transferred to the PDA
- Current item data will be displayed on the current item tab and all data for this session will be displayed on All Data tab.

5. Service and Maintenance

5.1 Overview

This chapter provides information of professional services, device maintenance, common problem diagnostics and other miscellaneous items.

C190MFTCubetape™ is designed to provide years of dependable operation. However, Parceltools recommends that as with any industrial measurement equipment - the device is serviced periodically. Timely, factory - specified maintenance and calibration by a Parceltools - authorized service technician would ensure and document accurate and dependable performance to specifications.

5.2 Service Alert System

Cubetape firmware includes an alert system to support the process of cleaning and replacement of tapes.

Cubetape tracks tape usage and will issue two types of service alerts, “clean tape” and “replace tape cassette” alert.

When the tape is due for cleaning or replacement, Cubetape will issue a service alert at power on. The operator can proceed to normal data capture by selecting “next,” but will be reminded to clean the tape or change the tape cassette until the alert is dismissed from Settings/Maintenance.

5.3 Cleaning and Maintenance Process

When the “clean tape” alert has been issued it is recommended to follow the following process:

- Inspect the tape markings.
- If the regular black marks are dirty or obscured, clean gently with a soft cloth and a mild alcohol-based solvent.

5. Service and Maintenance

When the “replace tape” alert has been issued it is recommended to follow the following process:

- Remove the tape cassette
- Blow out the tape sensor area and cassette recess with an air duster
- Replace the tape cassette with a new unit

Clean the device’s keypad and rubber cover with a clean, soft cloth that has been dampened with mild glass cleaner. Do not use any type of industrial solvent, such as toluene or isopropanol (IPA) that could damage the device’s finish. Do not spray cleaner directly on the device.

Regular maintenance inspections and calibration by a qualified service technician are recommended. Care should be taken to avoid any punctures to this surface or any vibrations or shocks to the instrument. If the front display is punctured, ensure that steps are taken to prevent dust and moisture from entering the unit until the device can be repaired.

5.4 Service

Only qualified personnel should perform installation, programming and service. Please contact a local authorized Parceltools representative for assistance.

Parceltools recommends periodic preventative maintenance for the device to ensure reliability and to maximize service life. All measurement systems should be periodically calibrated and certified as required to meet production, industry and regulatory requirements. We can help you maintain uptime, compliance and quality system documentation with periodic maintenance and calibration services. Contact your local Parceltools authorized service organization to discuss your requirements.

5.5 Battery Charging and Feedback

- The battery indicator symbol appears at the left bottom of the screen.
- The symbol displays battery in the form of percentage.
- To charge the battery, connect C190CubetapePRO to a PC or power adaptor via the USB cable. OR place the device in the Parceltools charging cradle
- The charge light is on during the charging process.
- When charging is finished, the charge light will go off.
- If the battery remaining drops below 33 percent, the symbol turns red and alerts the operator.

5. Service and Maintenance

5.6 Tape Cassette and Battery Replacement

- To replace the tape cassette and battery, remove the silicone sleeve first.
- To slide the rear cover of the device down, push the index finger at the upper right corner of the rear cover as indicated.

5.6.1 Tape Cassette Replacement

- Remove and replace the tape cassette by turning over the C190CubetapePRO, extracting the tape a few centimeters and then lifting the tape away from the device slowly.

5.6.2 Battery Replacement

- To replace the tape cassette and battery, remove the rubber sleeve first.
- Then slide the rear cover of the device down by pushing the index triangle at the upper right corner of the rear cover as indicated below.
- Remove and replace the battery by slightly press the trough at the middle edge of the battery upward as indicated below
- Remove and replace the tape cassette by turning Cubetape PRO over, extracting the tape a few centimeters and then lifting the tape away from the device slowly

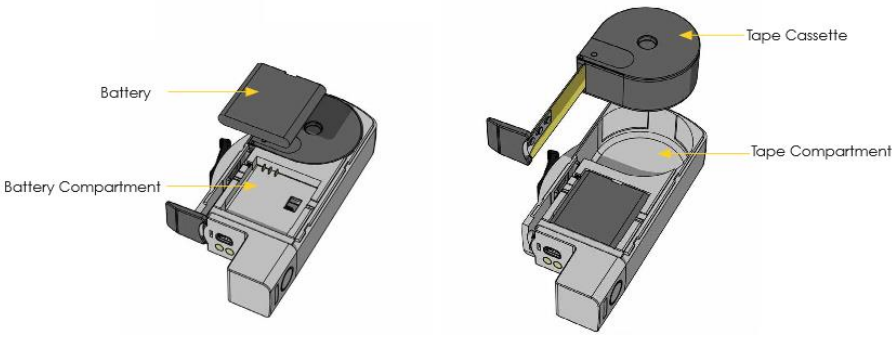


Figure 5-1
Tape Cassette and Battery Replacement

5. Service and Maintenance

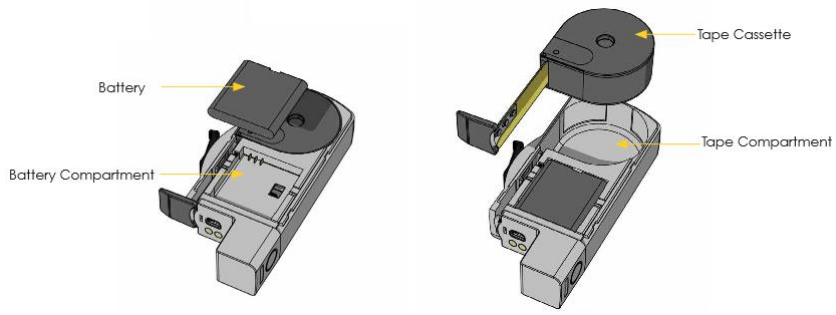
5.7 Troubleshooting

The following chart lists a few potential symptoms and some suggestions for resolving the issue. If a problem that is not listed in Table 5 occurs, or if the suggested fix does not resolve the problem, contact an authorized Parceltools service representative for assistance.

Symptom	Suggestion
Device breakdown or not responding	Replace the battery then reassemble.
Unable to connect to STManager via USB	Disconnect all components, then follow the instructions in chapter 4 Section 4.3 to reconnect.
Bluetooth connection problems Bluetooth	Check the Bluetooth profile and other procedures as described in chapter 3 Section 3.3.8 and chapter 4 Section 4.2 to reconnect.
Hardware problems	Please contact an authorized Parceltools representative for hardware maintenance services.

Table 5

6 Service and Maintenance



Battery Charging and Feedback

A battery indicator symbol appears at the left bottom of the screen.
The symbol displays battery in the form of percentage.
To charge the battery, connect Cubetape PRO to a PC or power adaptor via the USB cable.
The charge light is on during the charging process.
When charging is finished, the charge light will go off.
If the battery remaining drops below 10%, the symbol turns red and alerts the operator.

Cleaning and Maintenance Process

For sensor versions daily clean the system using the air duster and maintenance port as shown.
(Note the maintenance port is concealed beneath the rugged cover.)
Regularly wipe the tape blade with a non-solvent cleaner.
Replace the tape when tape is worn and yellow particles appear.

Parceltools Pty Ltd
Parceltools USA LLC
Parceltools Europe BV

Cubetape and ScanTape Firmware Upgrade process

To upgrade Cubetape or ScanTape firmware:

- Put ScanTape/Cubetape into firmware upgrade mode by holding the down arrow and powering on, or selecting Firmware upgrade from the Settings menu. Device will make 3 long beeps, but screen will be off
- Connect to PC by USB cable
- Run CubeTapeLoader.exe or ScanTapeLoader.exe and follow the prompts.
- Cubetape or ScanTape firmware will be updated.

Process requires Cubetape firmware V1.12C and above.

Prior to firmware version V2.02.14, Bluetooth serial connections on the host PC could interfere with the automated device detection process used in the firmware upgrade. If the Loader program is not able to connect to the Cubetape/ScanTape device, remove any Bluetooth serial connections using Device Manager. This will allow the upgrade process to complete. The issue is resolved with V2.02.14 and above.

SE965 Setup Barcodes for C190PRO – May 2019

Set Factory Defaults	
Disable adaptive Scanning	
Enable M2of5	
M2of5 length within range 01 and 04	
0	
1	
0	
4	
Write to PT Defaults