Portable Carrier Configuration Tool (PCCT)

User Guide

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About This Guide

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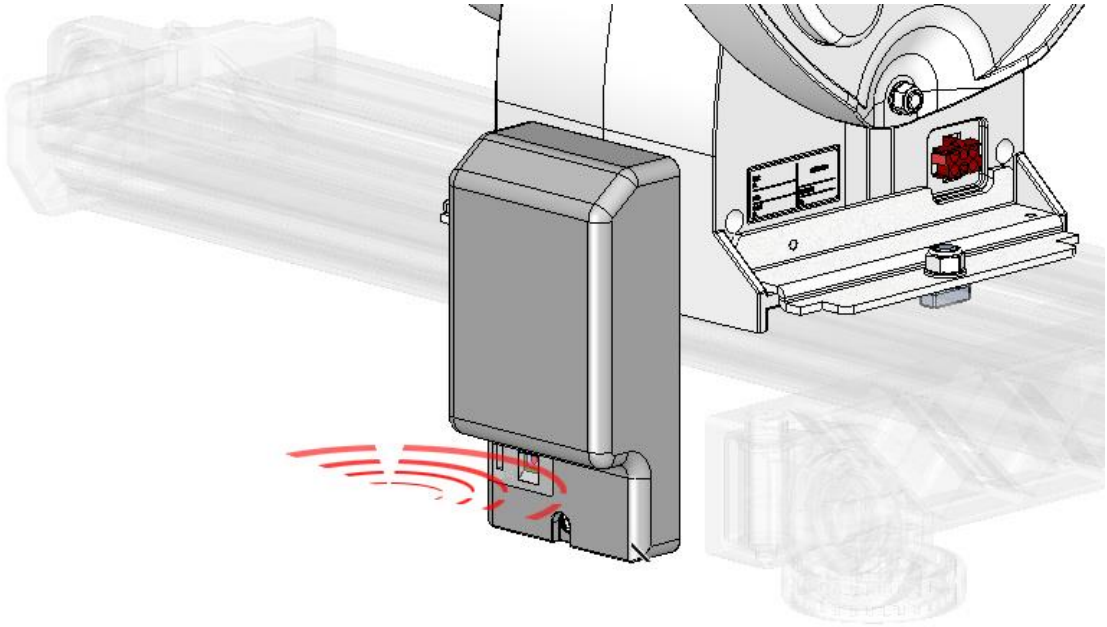
1.1 Introduction

This manual describes how to use the Portable Carrier Configuration Tool (PCCT). The PCCT tool is used to interact with the micro-controller boards that control the carriers of IntelliSort® 3000E Tilt-Tray, IntelliSort 3000 Cross-Belt, IntelliSort 4000 Tilt-Tray, and IntelliSort Cross-Belt sorters.

The carriers of the IntelliSort Tilt-Tray or Cross-Belt sorters contain micro-controller boards (or motor control boards) that control and supervise the activation of trays or belts. The behaviors of the boards are governed by a number of configurable parameters. If a micro-controller board is replaced with a board from the factory, ensure that you load the project-specific parameters into the board before the carrier is placed back into production. The Carrier Configuration Tool (CCT) allows you to configure these parameters.

The micro controller boards for Tilt-Tray sorters are referred to as TCBs - Tilt Control Boards. The micro controller boards for Cross-Belt sorters are referred to as MCBs – Motor Control Boards.

Figure 1-1 Tilt-Tray Activation Unit with a TCB Controller Board



The Carrier Configuration Tool provides the following functions:

- Issue test commands to the controller to tilt, bank, roll belt, etc., to facilitate troubleshooting
- Read and change configuration parameters of the micro controller that control things such as tilt cascade, delay, pitch size, position sensor offset, etc.
- Activate tilt-tray controller (TCB) calibration sequence to center the tray
- Reset the controller (hard/soft)
- Download firmware to the micro controller board

This tool replaces previous Windows CE and Palm Pilot versions. It is a PC-based application that runs on a laptop.

It requires a compatible USB attached infrared transceiver. If you already have the Windows CE / HP iPAQ version of the configuration tool, the ACTiSYS infrared transceiver delivered with the iPAQ device will work and you just need the

application to load onto the laptop. Intelligrated will provide a compatible USB attached infrared transceiver device, if required.

1.2 Notes, Tips, and Important Information

The following callouts and icons are used to highlight information throughout this guide:

Note or Tip: A Note highlights related information or information that is tangential to the topic being discussed. A Tip highlights useful information that can be used to simplify the tasks that are being discussed.

Important: Important callouts are used to highlight information of great significance or value that the reader should be certain to know before proceeding.

Notes, Tips, and Important callouts are used to call attention to useful information and are not safety notices.

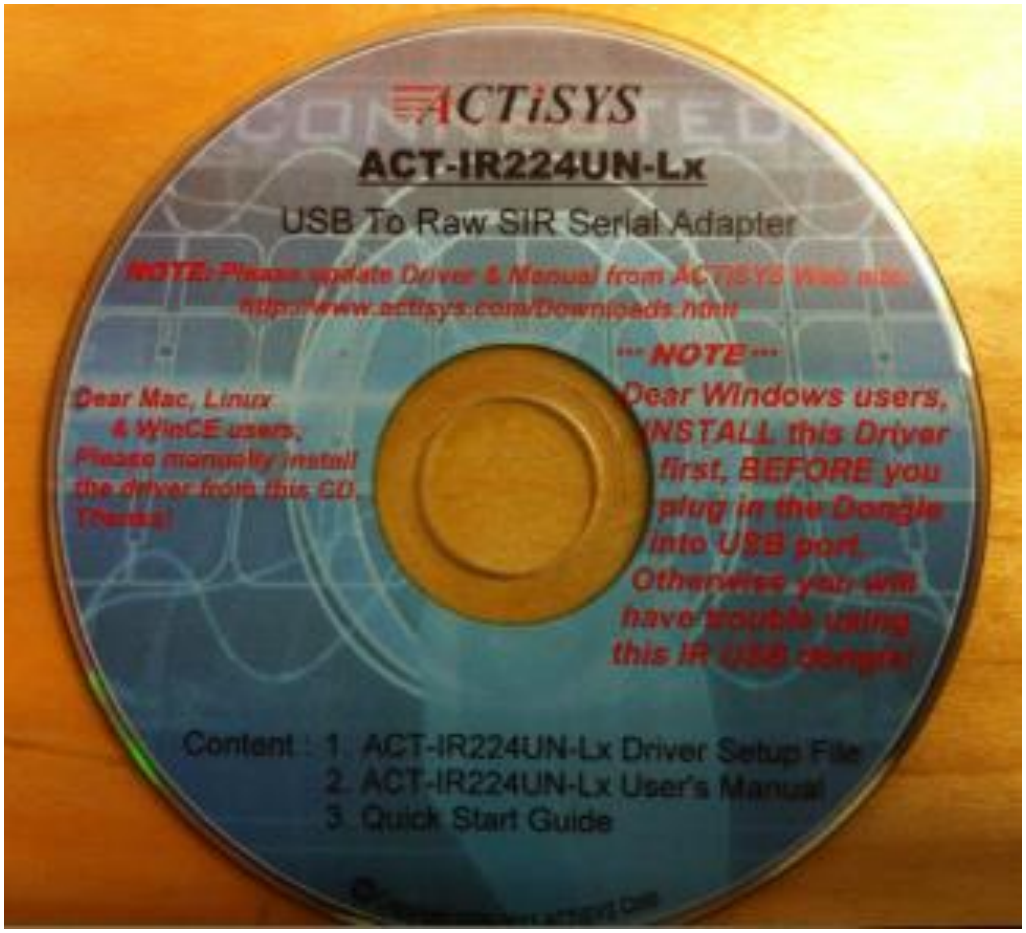
Installation

2

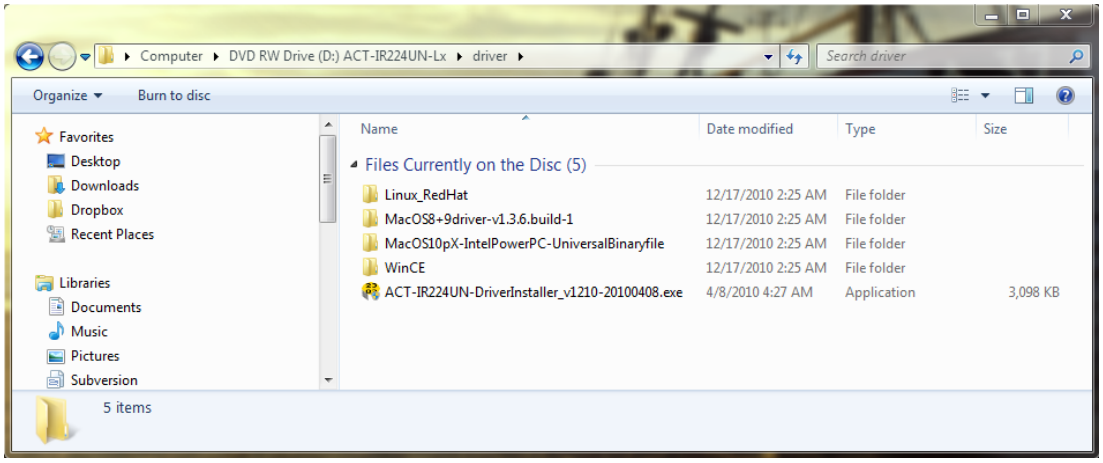
This chapter describes the software installation procedures.

2.1 ACTiSYS Driver Installation

The driver can be obtained from either the ACTiSYS website (see below) or the installation CD that came with the ACTiSYS infrared transceiver.

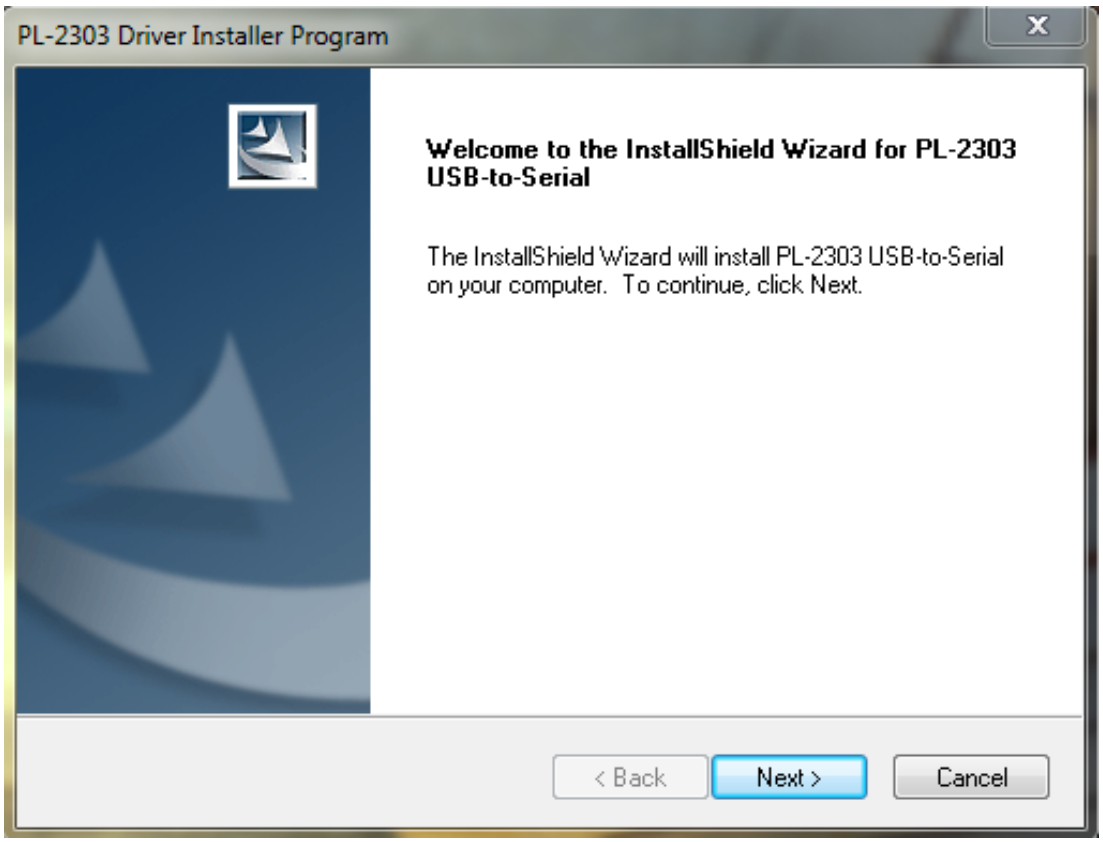


The driver is located in the Driver folder on the CD-ROM.

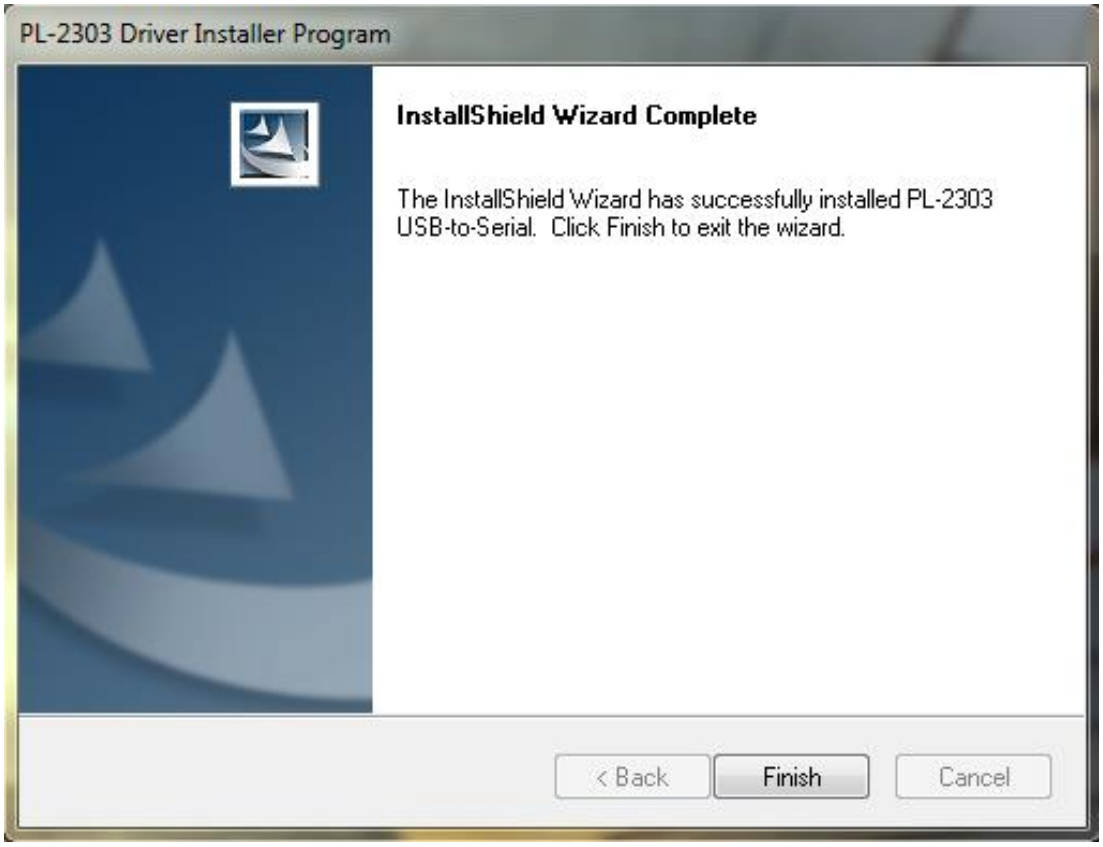


Alternatively, the driver can be obtained from the ACTiSYS website (www.actisys.com/Downloads.html).

1. Double-click on the driver (IR224UN-DriverInstaller) that is appropriate for your operating system. The following dialog box will appear.



2. Click **Next**.



3. Click **Finish**. The ACTiSYS driver has now been installed.

2.2 ACTiSYS Driver Issues

Numerous driver issues have been encountered with legacy ACTiSYS infrared transceiver devices, particularly on Windows 8 and Windows 10 operating systems.

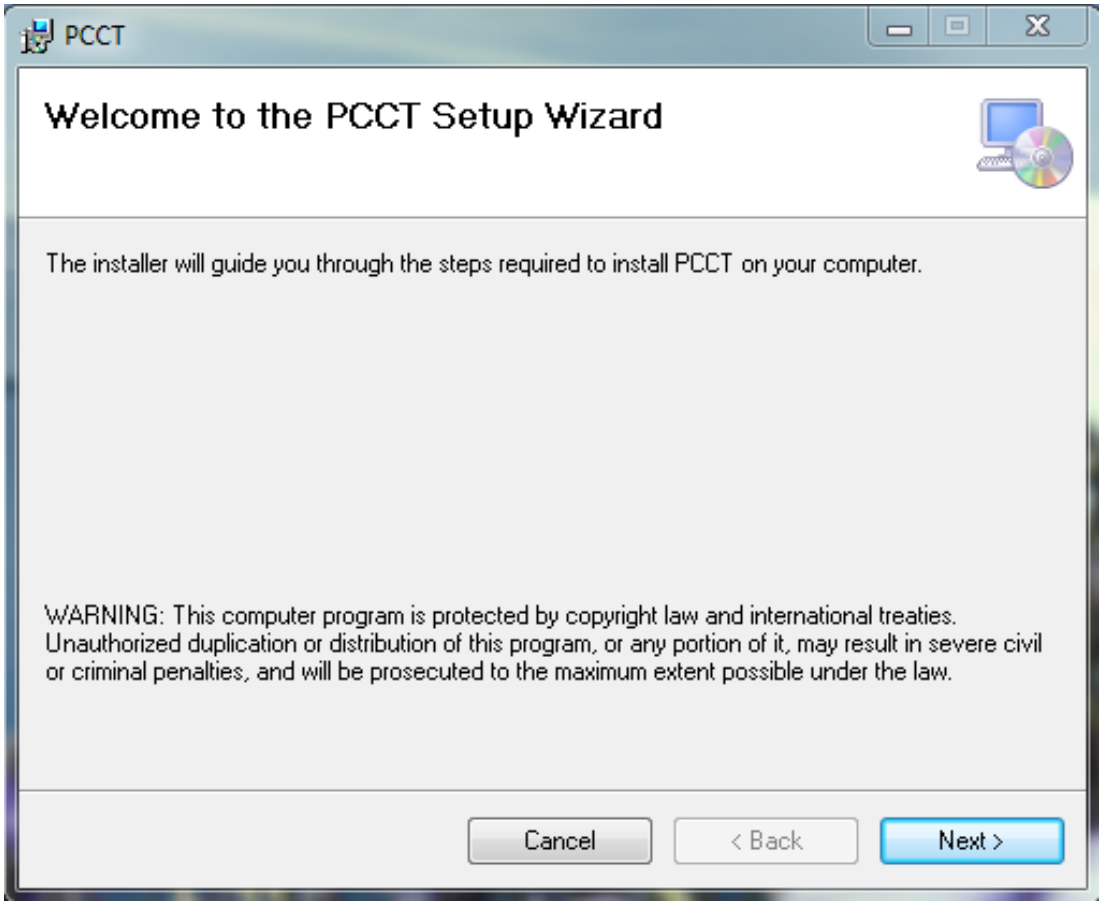
The following website contains instructions on how to install an older driver version and how to ensure that the operating system does not automatically update to a newer, non-functioning driver.

Follow the instructions in the “Windows 64-bit Fix” section:

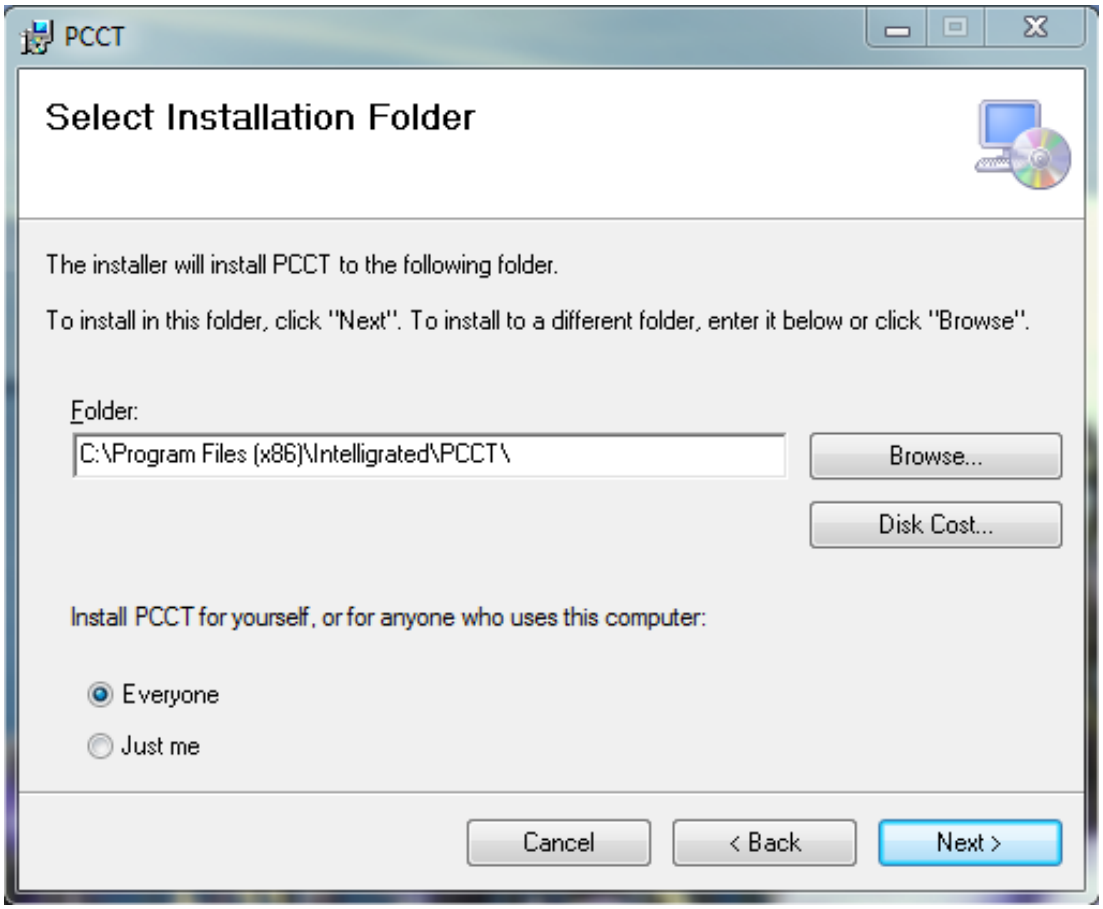
http://www.ifamilysoftware.com/news37.html

2.3 PCCT Installation

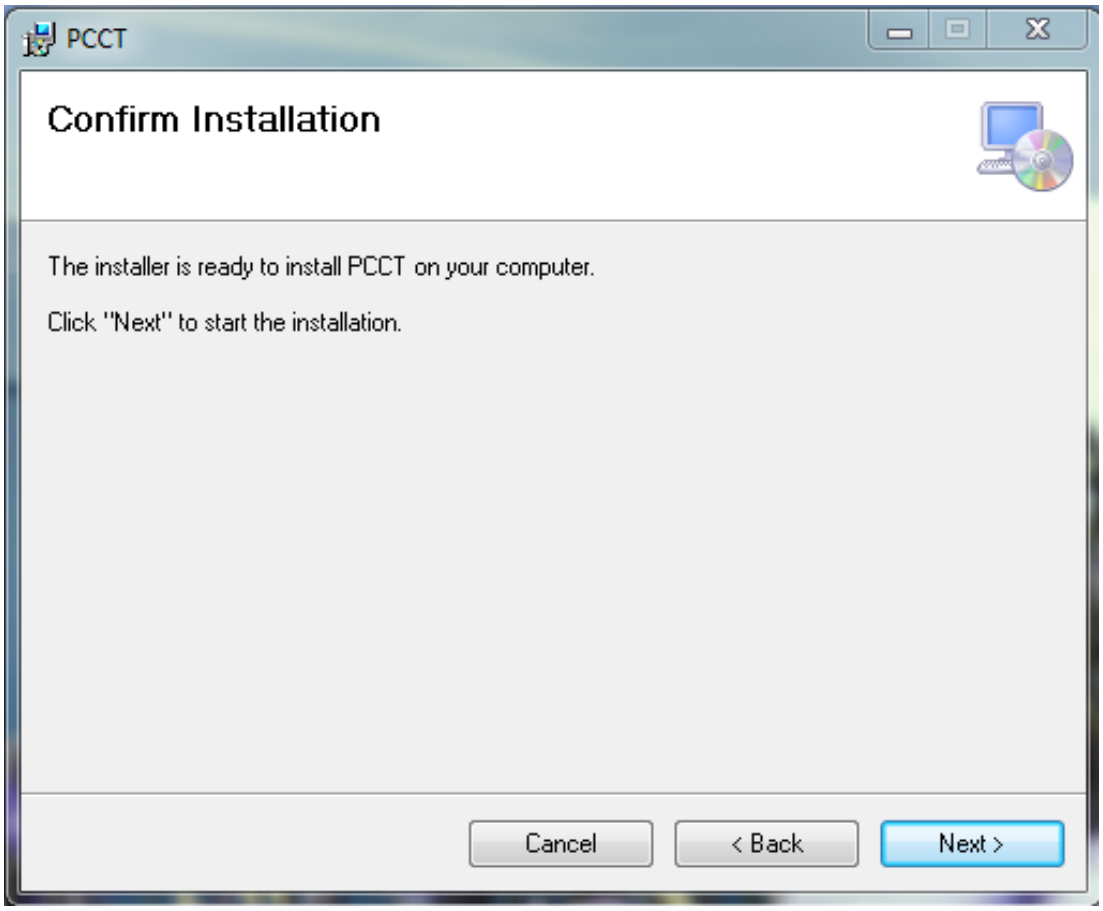
1. Insert the PCCT installation CD into the CD-ROM drive.
2. If the setup program does not start automatically, navigate to the CD-ROM drive and double-click the Setup.exe file.



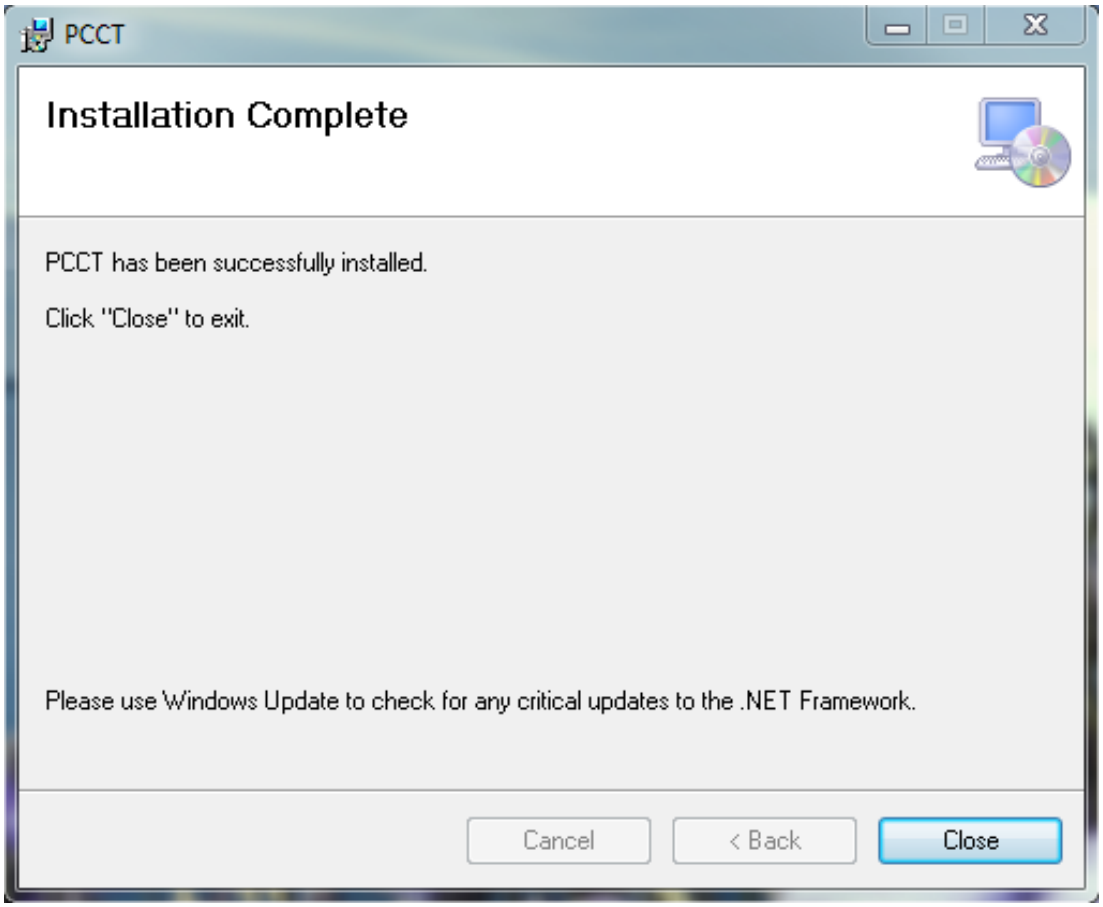
3. Click **Next**.



4. Change the installation folder and options if desired, and then click **Next**.

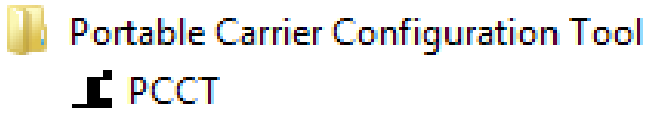

PCCT
Confirm Installation
The installer is ready to install PCCT on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

5. Click **Next**.



6. The PCCT tool has now been installed. Click **Close**.

   The PCCT link should now be under **Portable Carrier Configuration Tool** in the **Start** menu.



   The PCCT icon should also be on your Desktop.

7. Click on either the link or the icon to start the application.

How to Download Parameters to New Board

3

This chapter describes how to transfer the site-specific parameters to a motor control board (MCB). Motor control boards received from the Intelligrated factory will only contain the factory default parameters. Your site-specific parameters must be downloaded and saved to the MCB prior to placing the board into service.

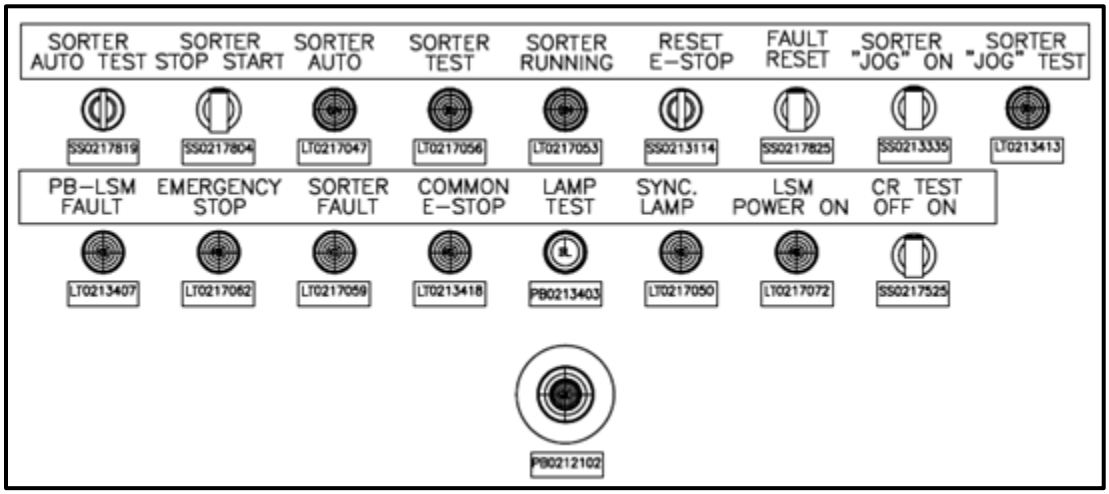
Refer to other sections in this document for detailed information on how to operate each screen.

Note: If the sorter is equipped with infrared transceiver arrays (Carrier Configuration Arrays) insider the sorter track, these will automatically download parameters to boards detected with factory default settings.

3.1 Preparing the Sorter

Using the controls on the PLC Panel, prepare the sorter for using the PCCT application to download site-specific parameters to an MCB.

Figure 3-1 PLC Panel Operations Panel



1. **Place the sorter in Test mode:**

   a. From the PLC Panel, turn the key in the switch marked SORTER AUTO TEST to the TEST position.

2. **Position the carrier:**

   a. Position the carrier under maintenance at the service section or in a location where the motor control board is easily accessible.

3. **Stop the sorter:**

   a. From the PLC Panel, turn the SORTER STOP START switch to the stop STOP position.

⚠WARNING

Set the closest local motor switch on the LSM Power Panel (DCP-LSM) to the OFF position. Lock the switch with your personal padlock to ensure the sorter cannot be started accidentally.

4. **Restore the conductor rail power:**

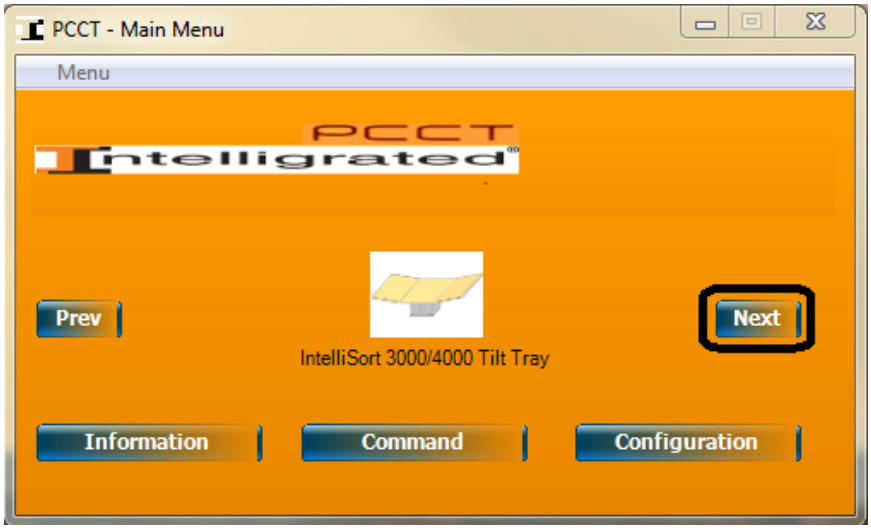
   a. From the PLC Panel, turn the CR TEST switch to the ON position.

b. Check that the green LED light on the MCB turns ON solid (refer to Figure 1-1 in the companion document).

3.2 Preparing the PCCT Application

Note: Before you start the PCCT application, connect the IrDA serial dongle device to a USB port on your personal computer. It is helpful if you always use the same USB port since it is likely that Windows will assign the IrDA device to the same USB port and will associate it with the same COM port each time.

1. Start the PCCT application.
2. On the **PCCT - Main Menu**, click the **Next** button until the sorter type is displayed.



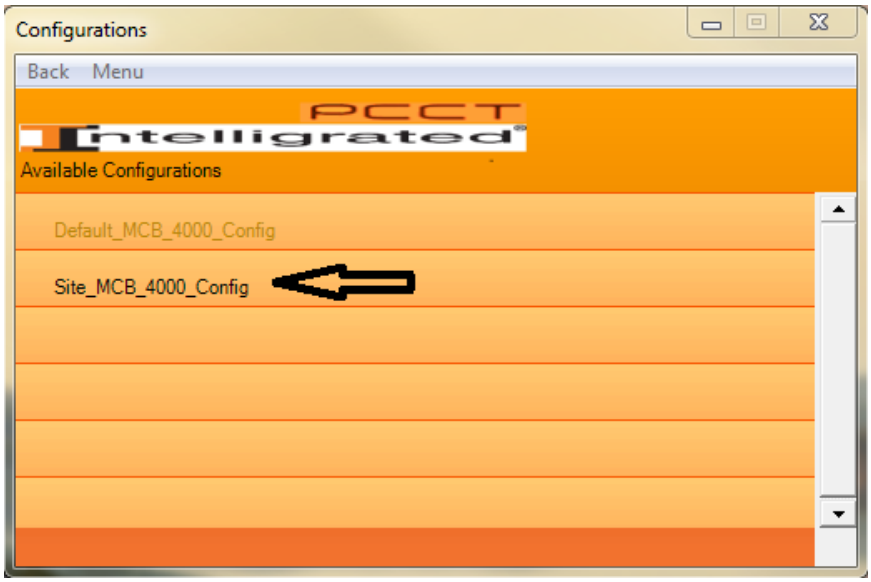
3. On the **PCCT - Main Menu**, click **Configuration**.

If there are no other configurations saved, the default configurations for your sorter type will be loaded.

- IntelliSort 3000 or 4000 Tilt-Tray: Default_TCB_Config
- IntelliSort 3000 Cross-Belt: Default_MCB_3000_Config
- IntelliSort 4000 Cross-Belt: Default_MCB_4000_Config

The default configurations define the parameters that need to be transferred. On the default parameters have been loaded, go to the "Transferring Parameters from Existing Board" section below.

If there are previously saved parameters for the desired sorter, click the **Change** button, then load the previously saved parameters and proceed with the "Download Previously Saved Parameters to New Board" section below.



3.3 Transferring Parameters from Existing Board

1. Place the infrared dongle so that it is pointed directly toward the infrared transceiver on the MCB or TCB board to transfer from, and then click **Read** on the PCCT.

2. Wait for the read process to finish.

3. Double-click on the label next to **Configuration** at the top of the screen and store the configuration values just read with a new name.

This allows you to skip this step in the future.

4. Proceed with the "Download Previously Saved Parameters to New Board" section below.

3.4 Download Previously Saved Parameters to New Board

1. Go to the desired carrier to program and place the infrared dongle so that it is pointed directly toward the infrared transceiver on the MCB or TCB board.

2. Navigate to the **Reset Commands** screen, and click **Hard Reset** to send a hard reset command to the board.

3. Check that the green LED light on the MCB or TCB turns OFF for approximately two (2) seconds and then turns back ON solid. This indicates that the hard reset has been received by the board.

Note: The hard reset command restores the parameters on the MCB or TCB back to factory default settings. Any site-specific changes will be lost.

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4. Go to the **Configuration** screen, and then click **Write**.

5. Wait for the write process to finish.

6. Go to the **Reset Commands** screen.

   If the sorter is a tilt-tray sorter, do the following:

   a. Click **Soft Reset** to send a soft reset command to the board.

b. Check that the green LED light on the MCB or TCB turns OFF for approximately one (1) second and then turns back ON solid. This indicates that the soft reset has been received by the board.

c. Click **Calibrate** to send a calibrate command to the board.

⚠WARNING

The tray will move in response to these commands. Only trained and qualified personnel must execute these commands. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

If the sorter is a cross-belt sorter, do the following:

a. Click **Sorter Reset** to send a sorter reset command to the board.

b. Check that the red LED light on the MCB flashes ON momentarily, then both the red and green LED lights turn OFF for approximately two (2) seconds, and then

the green LED light turns back ON solid. This indicates that the reset command has been received and processed by the board. The board is now ready for use.

3.5 Restarting the Sorter

Using the controls on the PLC Panel (see Figure 3-1), restore the sorter to normal operation (that is, automatic mode).

1. From the PLC Panel, turn the CR TEST switch to the OFF position.
2. Set the closest local motor switch on the LSM Power Panel (DCP-LSM) to the ON position and remove your personal padlock.
3. From the PLC Panel, turn the key in the switch marked SORTER AUTO TEST to the AUTO position.
4. Start the sorter. From the PLC Panel, turn the SORTER STOP START switch to START.

Portable Carrier Configuration Tool (CCT) Screens

4

This chapter describes each of the Portable Carrier Configuration Tool (PCCT) screens.

4.1 Main Menu

The **Main Menu** allows you to select the type of sorter you are working on. The protocols and configuration options vary for each sorter type. The selection affects the commands and configuration options available on other screens.

Figure 4-1 Main Menu

The tool supports the following sorter types:

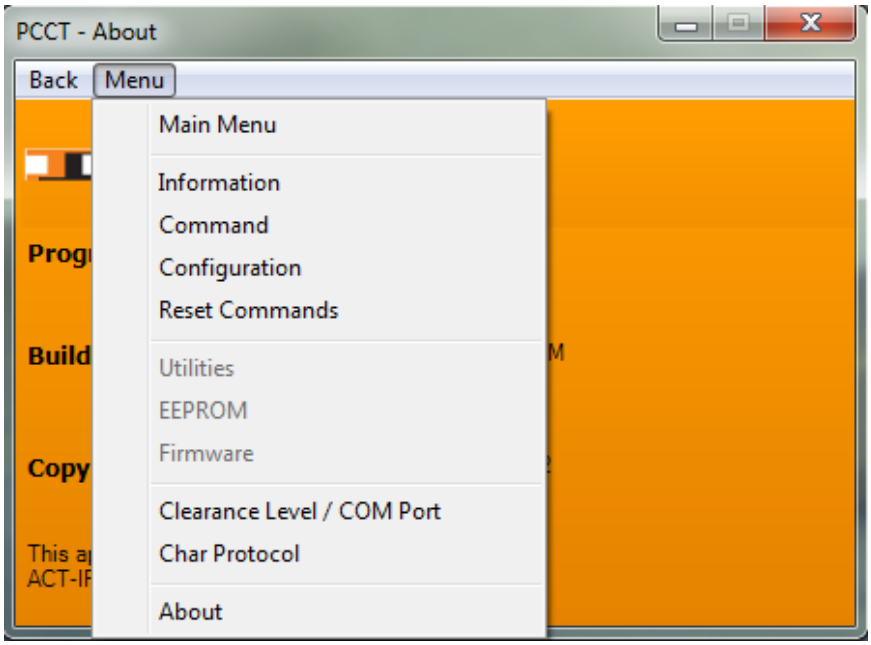
- IntelliSort 4000 Cross-Belt
- IntelliSort 3000 Cross-Belt
- IntelliSort 3000/4000 Tilt-Tray

1. Click **Prev** and **Next** to toggle between the available sorter types.
2. Once the correct sorter type is selected, either click **Information**, **Command**, or **Configuration**, or click **Menu** to navigate to other screens.

4.2 Menu

The **Menu** allows you to navigate to all the other screens.

Figure 4-2 Menu



The following options are available from **Menu**:

- Main Menu

- Information
- Command
- Configuration
- Reset Commands
- Utilities
- EEPROM
- Firmware
- Clearance Level / COM Port
- Char Protocol
- About

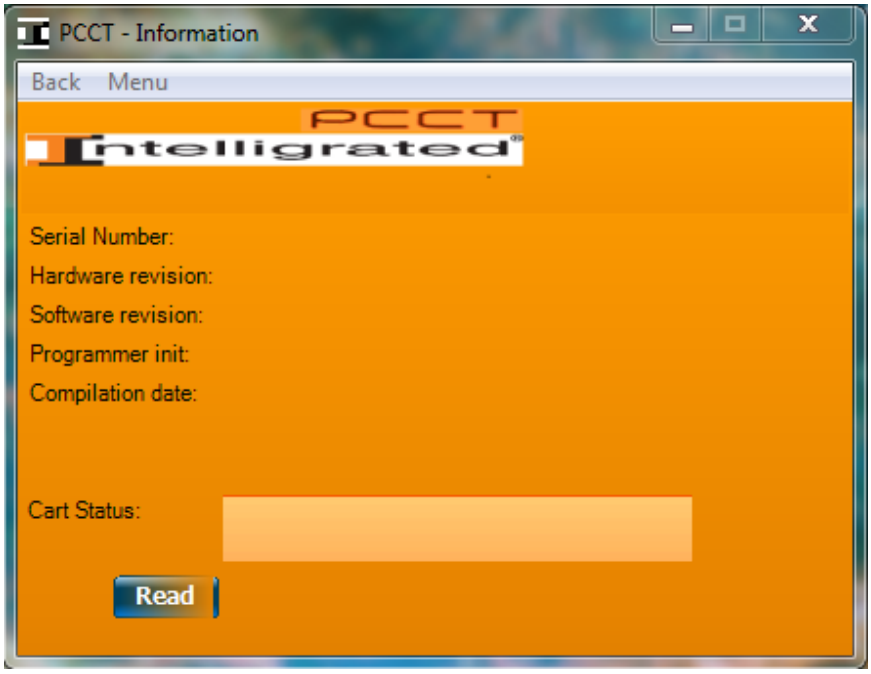
If the **Char Protocol** option is selected, a check mark is visible next to it.

The **Menu** options that are available are based on your clearance level. Refer to Table 4-1 for details.

4.3 Information

The **Information** screen allows you to query the MCB for information.

Figure 4-3 Information Screen



Click **Read**. The following information is presented about the MCB:

Item	Information
Serial Number	The unique serial number of the MCB.
Hardware revision	The revision of the MCB hardware.
Software revision	The revision of the MCB firmware.
Programmer init	Initials of the programmer who compiled the MCB firmware.
Compilation date	Date on which the firmware was complete.
Cart Status	Response received from MCB after a command has been executed.

4.4 Command

The **Command** screen allows you to send various commands to the MCB or TCB.

Figure 4-4 Command Screen

The **Cart Status** field will display the response received from the TCB after a command has been executed. If <FAIL> is shown in the **Cart Status** field, it indicates that no response was received.

If **Char Protocol** is selected from the **Menu**, the character-based protocol is used to transmit left and right commands. All others use the standard DLE (delimited) protocol regardless of the **Char Protocol** setting.

Click **Repeat** and then any command to continuously repeat the command. Click **Repeat** again to cancel the continuous operation.

The following Tilt-Tray sorter commands are available:

Item	Information
Tilt Left	Tilts the tray to the left.
Tilt Right	Tilts the tray to the right.
Bank Left	Banks the tray to the left.
Bank Right	Banks the tray to the right.
Bank Off	Cancels any banking and centers the tray.

Item	Information
Item Size	Click 0, 1, 2, or 3 to set the item size. • 0 lets the board know that it is empty • 1 lets the board know that it is occupied with a single-tray item • 2 or 3 lets the board know that it is the second or third tray with an item spanning multiple trays; the board will adjust its tilting delay accordingly

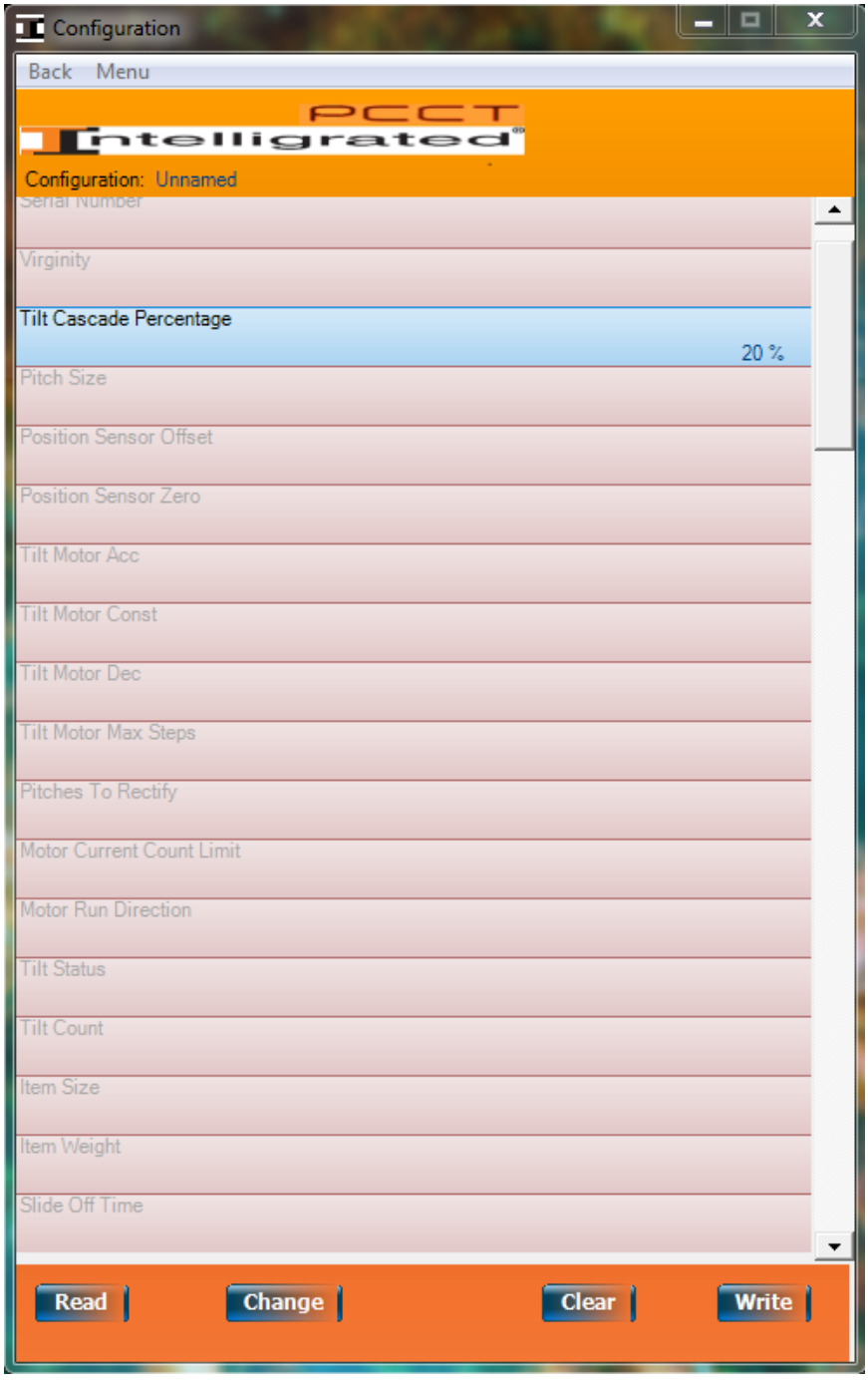
The following Cross-Belt sorter commands are available:

Item	Information
Roll Left	Rolls the belt to the left.
Roll Right	Rolls the belt to the right.

4.5 Configuration

The **Configuration** screen allows you to read and write configuration parameters to the MCB.

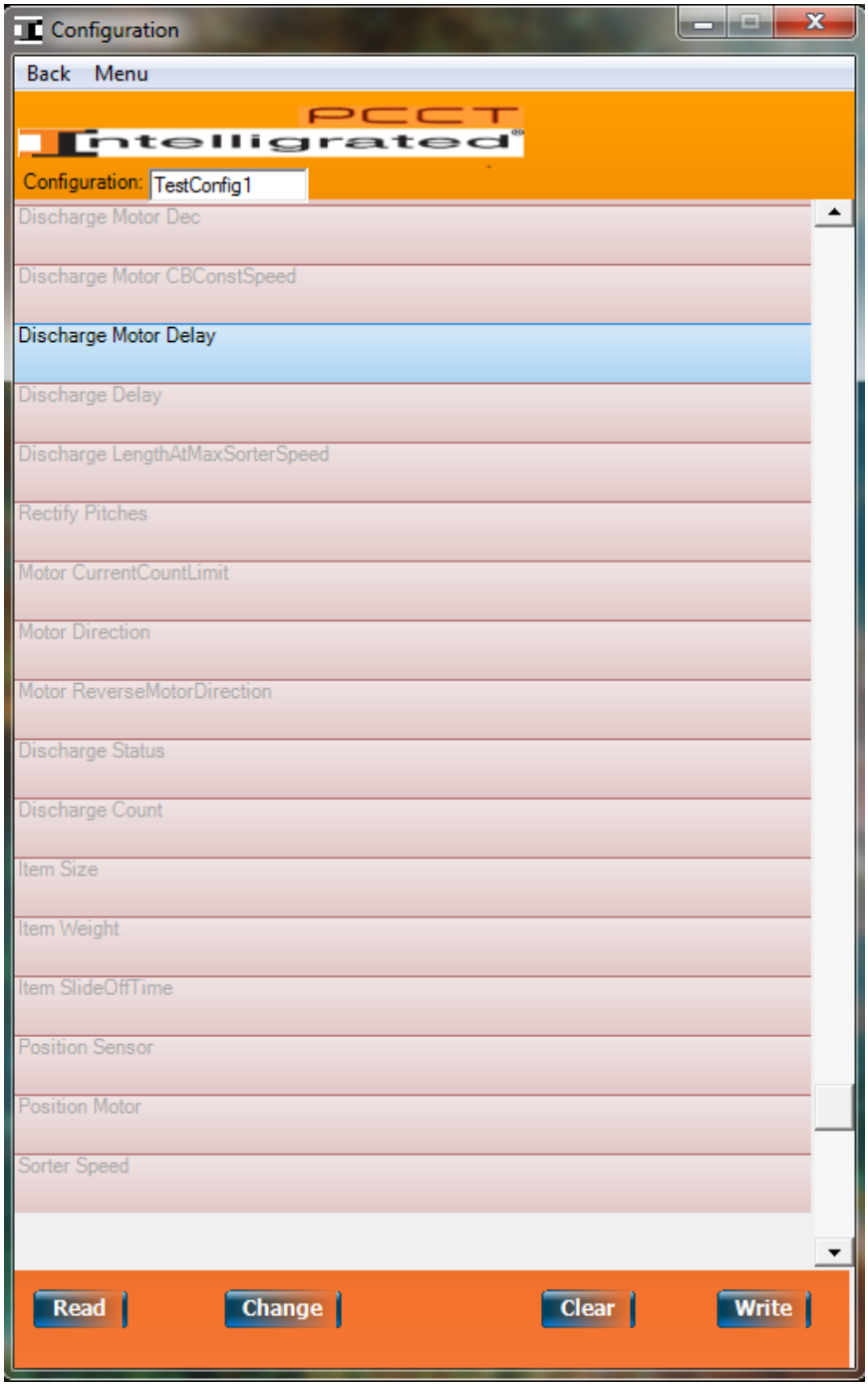
Figure 4-5 Configuration Screen



The configuration parameters displayed will vary based on the sorter type selected on the **Main Menu** screen.

- To read parameters, click **Change** to first load an already defined parameter set (see next section for details). When you click **Read**, all parameters with a blue background will be read from the MCB. A bar appears to indicate progress.

Figure 4-6 Configuration Screen - Saving Config



- After reading parameters from the board, you can save the parameter set for easy retrieval later. To save parameters, click on the configuration name in the **Configuration:** text box. After entering a name for the configuration, click Enter to save.

- To write parameters, click **Write**. All parameters with a blue background will be written to the board. A bar will appear to indicate progress.

If <FAIL> appears in a parameter field, the PCCT was unable to read or write the value from/to the board.

Note: The functions described below are only available under the Full clearance level.

- To read parameters, click **Read**. All parameters with a blue background will be read from the board. To read a particular parameter, click on the row, and the background color of the row will change from red to blue.

- To write parameters, click **Write**. All parameters with a blue background will be written to the board. To write a particular parameter value, double-click on a row, and the background color of the row will change to blue and a text field will appear where you can enter the value to write.

- Click **Clear** to cancel the selection of all parameters (red).

- To invert all current selections, click on the **Configuration** label in the top left corner of the screen.

- To select or cancel the selection of all parameters, double-click the **Configuration** label in the top left corner of the screen.

4.6 Change Configuration

The **Change Configuration** screen allows you to load, copy, or erase previously saved configurations. Up to 25 configuration sets can be stored.

Figure 4-7 Change Configuration Screen

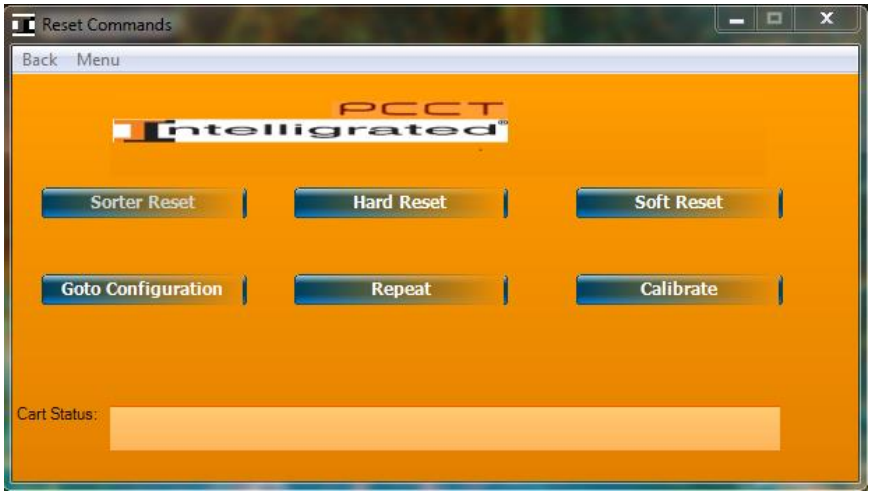
The name of the currently active configuration is marked in black; the non-active configurations are marked with a gold color.

- To select a configuration, click the name. The stored values will load, and the **Configuration** screen will appear.
  - To copy a configuration, click **Copy** (requires Full clearance level).
  - To erase a configuration, click **Erase** (requires Full clearance level).
  - To change the name of the configuration, click the name. The **Configuration** screen appears where you can edit the name.

4.7 Reset Commands

The **Reset Commands** screen allows you to send a variety of reset commands to the MCB or TCB.

Figure 4-8 Reset Commands Screen



The following commands are available:

Item	Information
Sorter Reset	Resets the MCB and initializes settings read out of the EEPROM; recalculates all internal variables based on the new configuration values. Only available for IntelliSort 4000 Cross-Belt sorters.
Hard Reset	Resets the MCB with factory default settings and persists them to EEPROM.
Soft Reset	Resets the MCB and initializes with settings read out of the EEPROM.
Calibrate	Activates a calibration sequence where the TCB centers the tray. All internal variables will be recalculated. Only available for IntelliSort Tilt-Tray sorters.

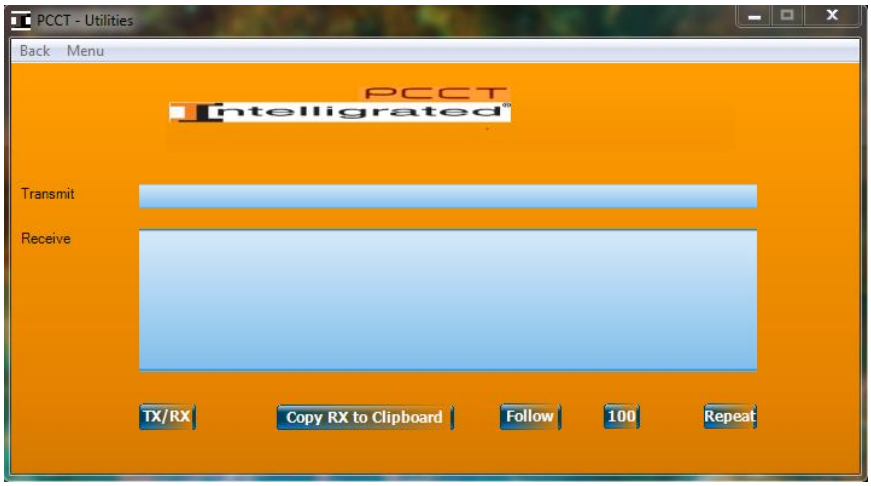
The **Cart Status** field indicates whether the command was successfully transmitted.

- Click **Goto Configuration** to navigate to the **Configuration** screen.
- Click **Repeat** and then a command to continuously repeat that command.

4.8 Utilities

The **Utilities** screen allows you to send and receive low-level protocol commands to the MCB. This screen requires Full clearance level.

Figure 4-9 Utilities Screen

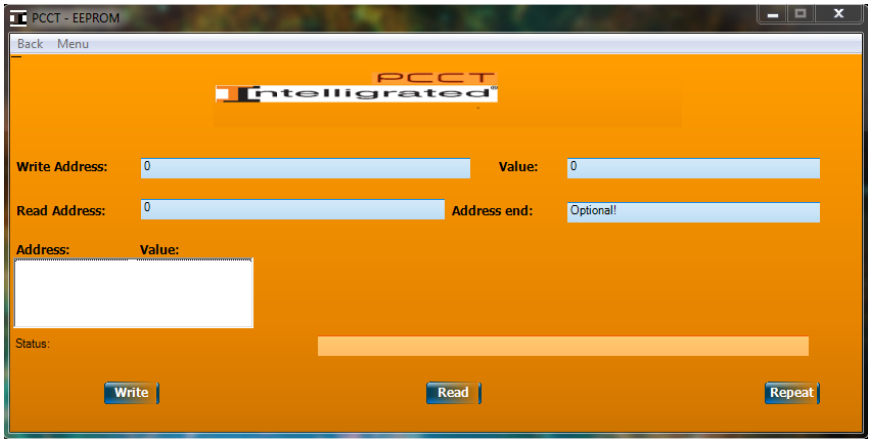


- To transmit data, in the **Transmit** field, type the hexadecimal bytes either continuously or with a space between each pair of digits.
  - Click **TX/RX** to transmit the data entered in the **Transmit** field and display any data received in the **Receive** field. If the **Transmit** field is left blank, no data is transmitted but data is still received.
- To transmit data continuously, click **Repeat**, and then click **TX/RX**.
- To transmit the data 100 times, click **100**, and then click **TX/RX**.
- To copy data in the **Receive** field to the Clipboard, click **Copy RX to Clipboard**.
- To follow the end of the text output in the **Receive** field, click **Follow**.

4.9 EEPROM

The **EEPROM** screen allows you to read and write values from/to specific addresses in the EEPROM (Electrically Erasable Programmable Read-Only Memory) in the MCB. This screen requires Full clearance level.

Figure 4-10 EEPROM Screen

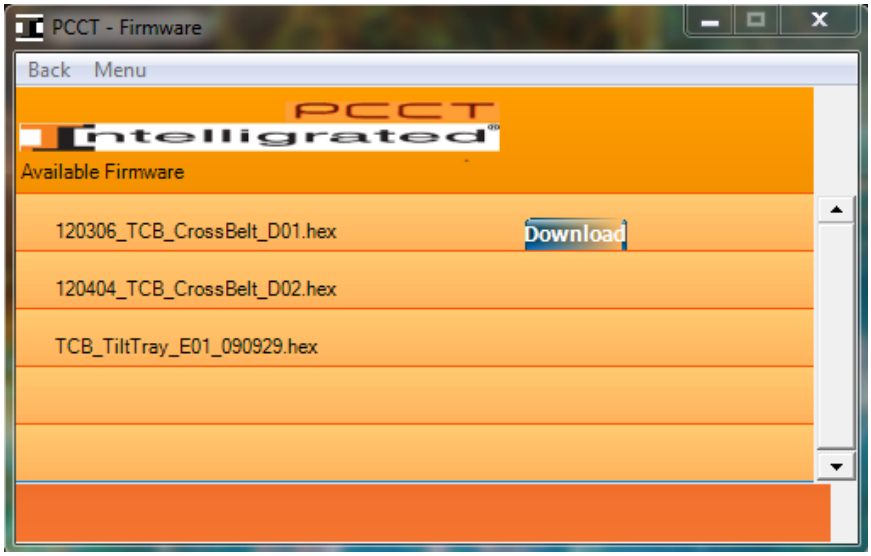


- To write a value, type the address in the **Write Address** field and the value to be written in the **Value** field. Click **Write**. The **Status** field will indicate whether the operation was successful.
- To read a value, type the address in the **Read Address** field. Click **Read**. The address and corresponding value read from the board will appear in the **Address:** and **Value:** text box. The **Status** field will indicate whether the operation was successful.
- To read multiple values, type the start address in the **Read Address** field and the end address in the **Address End** field. All address value pairs are displayed in the **Address:** and **Value:** text box. The **Status** field will indicate whether the operation was successful.
- To continuously execute the read or write command, click **Repeat**.

4.10 Firmware

The **Firmware** screen allows you to download firmware to the MCB. This screen requires Full clearance level.

Figure 4-11 Firmware Screen



As many as 25 firmware files can be displayed.

- To download firmware, click on the firmware name and then click **Download**. A status bar will appear to indicate progress.

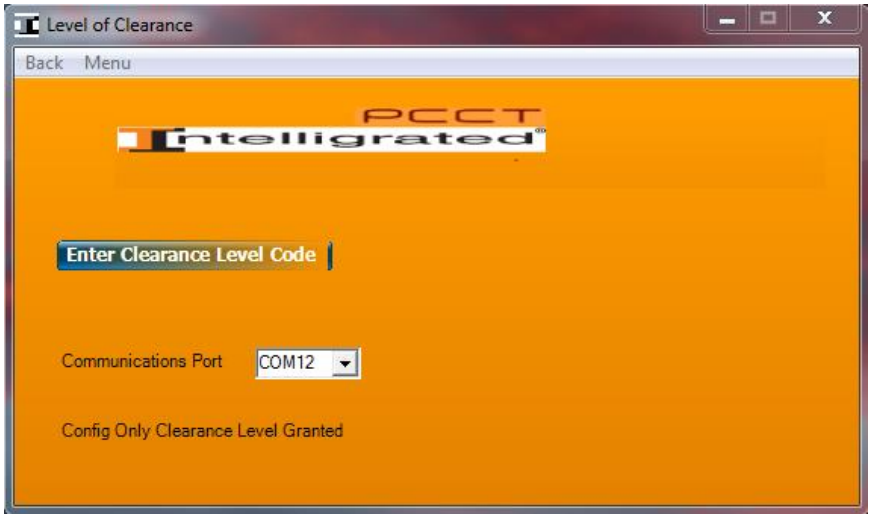
  If the download failed, a red error graphic is displayed.

  - The firmware .hex file must be placed in the program folder where the PCCT executable is located. The default file location is C:\Program Files (x86)\Intelligrated\PCCT.
  - After the .hex files are placed in the directory, close and reload the PCCT application.

4.11 Clearance Level / COM Port

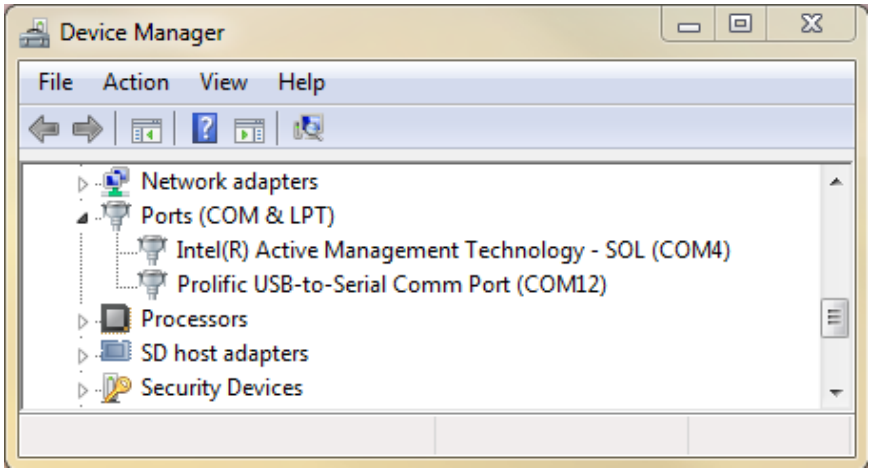
The **Level of Clearance** screen allows you to configure the communications port for the infrared transceiver dongle and enter a clearance code.

Figure 4-12 Level of Clearance Screen (Clearance Level / COM Port)



The infrared dongle must be plugged in when the PCCT application is started.

- Configure the communications port to the same port as listed under Device Manager for the **Prolific USB to Serial Comm Port (COMXX)** option.



The PCCT application allows you to perform operations that change the behavior of the MCB and can potentially damage the board.

The default Config level allows you to download a full set of configurations to the device and execute test and reset commands.

The Full clearance level gives you access to all functionality.

Based on your access level (Config or Full), the following menu options are available.

Table 4-1 Menu Options Available per Access Level

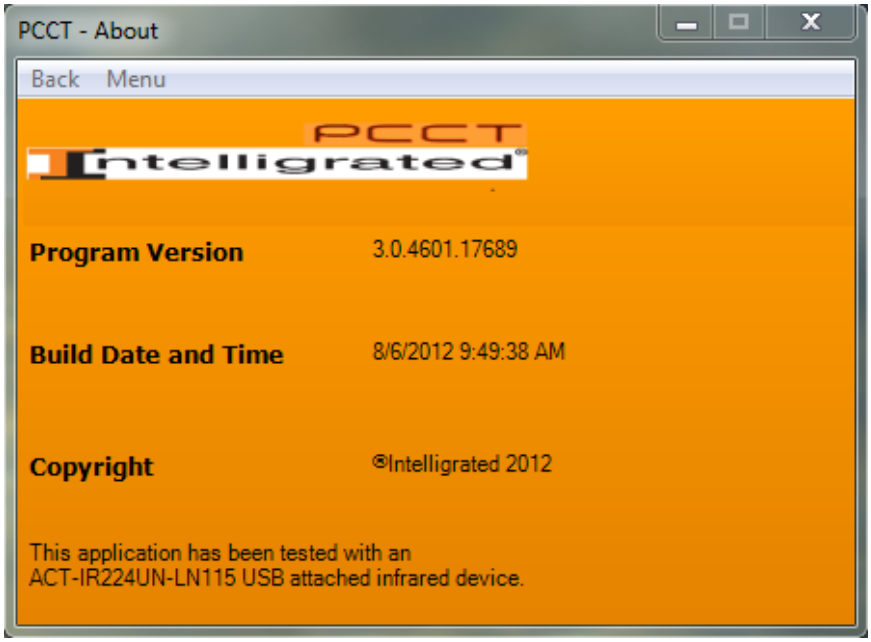
Menu	Config	Full
Main Menu	X	X
Information	X	X
Command	X	X
Configuration	X	X
Reset Commands	X	X
Utilities		X
EEPROM		X
Firmware		X
Clearance Level / COM Port	X	X
Char Protocol	X	X
About	X	X

- To change the Config clearance level password, type "1:" and then type the new password. You must have Full clearance level to change the password.

4.12 About

The **About** screen displays information about the version of the PCCT program you are running.

Figure 4-13 About Screen



The following information is presented about the MCB:

Item	Information
Program Version	Version number of the PCCT program.
Build Date and Time	Date and time the PCCT program was released.

Troubleshooting

5

5.1 Infrared Dongle Not Recognized

If the green LED light on the infrared dongle does not light up briefly when a command is sent, the PCCT application is not communicating with the dongle.

Ensure that the COM port settings are correct. Refer to the "Clearance Level / COM Port" for details.

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