



CI-602

■ Narrow Gauge Root Imager

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INTRODUCTION

Root development and function are vitally important for plant adaptation to an environment. The CI-602 In-Situ Root Imager helps examine root activity and health, which are critical indicators of plant or crop performance. The CI-602 leads the fine root-imaging field by capturing non-destructive, high resolution, digital images to observe the development and function of a plant's root system. The images collected by the CI-602 can be imported and analyzed with CI-690 RootSnap! root image analysis software.

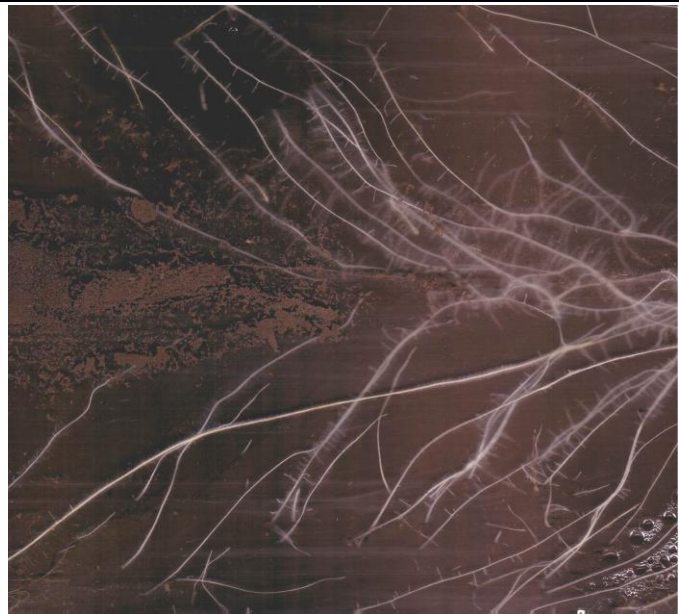
The CI-602 has the following features and specifications:

- Linear scanning with no distortion
- Very portable and quick operation
- USB interface for tablet computer image storage
- Super high-resolution image up to 86.9 million pixels
- Each scan provides a 360-degree image (21.59 × 18.03cm)
- Allows observing root growth and behavior during an entire growing season or longer



The CI-602 provides an underground, high resolution, color image of the living roots in the soil. This enables the observation of root growth and behavior over time. It is easily operated using a tablet or laptop and CI-602 Software. The CI-602 is specifically designed for long-term root studies on living plants in the field. The root tubes should be installed in the field prior to the growing season. When the plant begins to build a network of roots,

images of the structure and behavior of the roots can be recorded, such as in the root image to the right, courtesy of Dr. Dylan Fischer at The Evergreen State College, Washington, USA.



Unpacking

The CI-602 Root Growth Monitoring System includes the components listed below:

- 1 Scanner
 - The CI-602 Root Scanner hardware
- 1 Tablet computer
 - The tablet computer powers the root scanner, runs the software, and saves root images
- 3 Soil tubes (105cm)
 - You may receive different quantities and lengths based on your order
- 1 Calibration tube
- 1 Electronics case with magnetic connect point
 - Connections on electronics case for 15mm conductor cable and USB cable
- 1 USB cable
 - This cable is used to connect the tablet to the electronics case
- 1 15mm conductor cable
 - Connects from the root scanner to the electronics case
- 1 Collapsible slider rod
 - This is used to lower, raise, and hold the CI-602 in the root tube
- 1 Root tube cap with cutouts for slider rod and 15mm conductor cable
- 1 Software CD or USB thumb drive
 - This contains the CI-602 Root Scanner software and CI-690 RootSnap! Root image analysis software. See the Software/Driver Installation section of this document for information on using this software.
- 1 Carrying case

DURING UNPACKING IF ANY OF THESE ITEMS ARE NOT PRESENT PLEASE CONTACT CID IMMEDIATELY.

Recommended PC Specs

The CI-602 software arrives pre-installed on a tablet computer. The CI-602 software can be installed on another computer, either for field use or to analyze images later. The specifications below must be met for the CI-602 software to run properly. See page 12 for details on software download and driver installation.

Tech specs	
Display resolution	2736 x 1824 (267 PPI)
CPU	Core i5 (Intel) 2.40 GHz
RAM	4GB
Operating system	Windows 10 recommended

HARDWARE ASSEMBLY

Please follow these important instructions on how to setup the CI-602 hardware.

1. Insert the 15mm conductor cable through the large cutout in the tube cap. When the tube cap is not in use it can be slid into the electronics case for storing.



2. Insert the collapsible slider rod through the smaller cutout in the tube cap and connect the collapsible slider rod and 15mm conductor cable to the scanner body.



3. Affix the end cap to your root tube.



4. Attach sections of the Collapsible Slider Rod by twisting or screwing each section into the others. The black knob is intended to be at the top of the collapsible slider rod for safety reasons and to be used as a hand grip when inserting and removing the instrument from the root tube.



Note: It is recommended to **include overlap between scans** to ensure all roots are fully imaged. The slider rod is set up to take scans at about 20.32 cm intervals for an overlap of about 1.27 cm. Overlap can easily be removed using the CI-690 RootSnap! analysis software.

5. To use your CI-602 and tablet, make sure your 15mm conductor cable is connected between your scanner body and electronics case. Your USB cable should be attached to the opposite end of the electronics case and to your tablet or PC. The tablet is held in place on the electronics case by a magnet.



Scanner Home Position

The CI-602 begins a scan by rotating the scanner body to the “home” position and then initiating the scan. This is referred to as the scanner “returning to home.” If the instrument is already in the home position, it will not need to rotate before starting to scan. Ensuring that the instrument is in the home position before scanning can eliminate scanning unintended areas and save time. When calibrating the CI-602 in the white calibration tube, the home position location is of importance. **Make sure to insert the scanner in the calibration tube properly.**

Procedure to Return the CI-602 to Home

- Hold the scanner by the top and rotate the rest of the scanner clockwise until you the white circles line up on the scanner body.
Note: Do not force or overturn the scanner body!
- Return the CI-602 to Home **prior to sliding the scanner in a root tube and beginning a scanning sequence** in order to have images start at the same point for each window. This will help when lining up root images to envision the entire root tube.
- It may be helpful to label a point on each root tube that is the “Home” or “Start” position for all scans done in that tube.

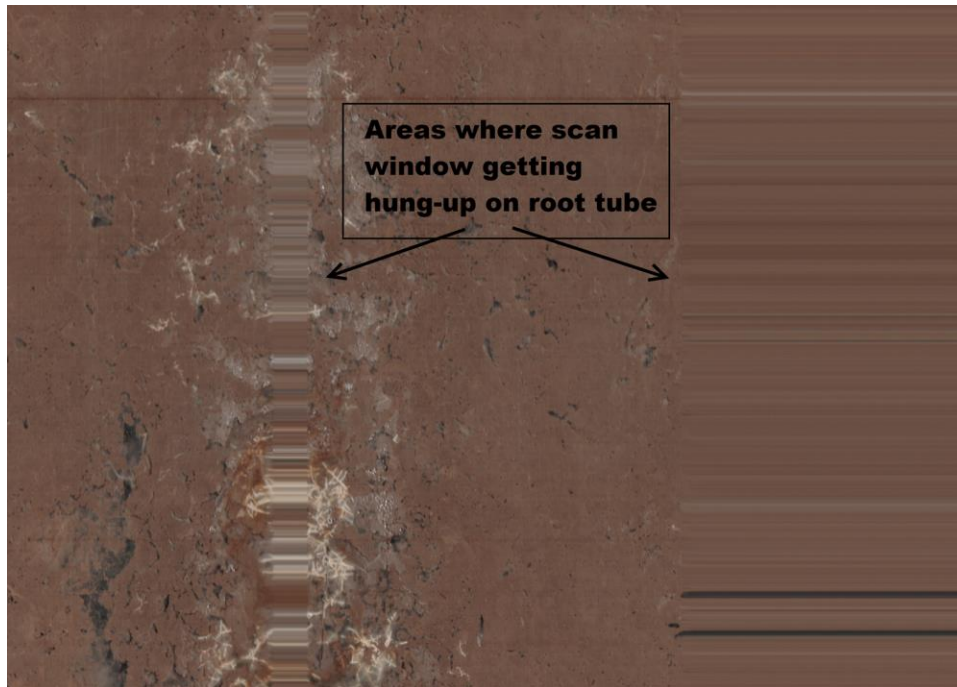


CI-602 Adjustable Scan Head

The CI-602 root scanner has an adjustable scan head so that the user can change the position of the scan head to focus the image. The user should adjust to the maximum extension that will not get caught-up on the tube when the scanner rotates. This could provide better clarity in different types of root images, but is intended to alleviate problems with imperfections in root tubes or areas where the scanner will not smoothly pass through a rotation.

DO NOT ADJUST THE SCAN HEAD UNLESS THERE IS A PROBLEM WITH YOUR SCANNER GETTING STUCK OR HUNG UP.

The CI-602 scan head is carefully set at the factory to provide the maximum focal length and best quality image, without having the scan head get caught on the inside of the root tube as it rotates. Below is an example of an image where you can see the scan head got caught twice during rotation. This scan head should be lowered slightly and re-tested to see if it passes.

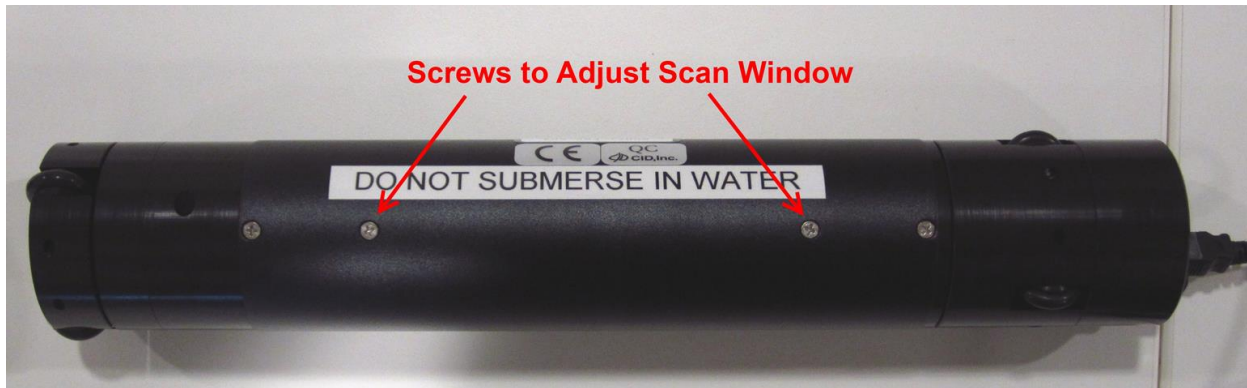


To adjust the scan head:

1. Use a #1 Phillips screw-driver to slowly turn the two inner screws on the opposite side of the CI-602 as the scan head. Turn the screw clockwise to lower the scan head which will give more clearance to avoid having the scan head touch the tube wall. Each screw will raise and lower that end of the scan head.
2. After you adjust the scan head, put the CI-602 in the calibration tube and take a test scan. Carefully watch the scan head during the rotation.
3. If the scan head appears to be catching on the calibration tube, remove the CI-602 and lower the scan head.

4. Repeat the test scan in the calibration tube to ensure that the scan head will not get hung up on the wall of the root tube.

There are four screws along the bottom of the CI-602 housing. The inner two screws adjust the scan head. The outer screws attach the upper and lower pieces to the scanner body. Use a screw-driver to raise or lower the scan head, one end at a time.



Please make sure the scan head is not catching on the tube when the scanner rotates. *This could cause damage to the scan head and gear assembly of the unit.*

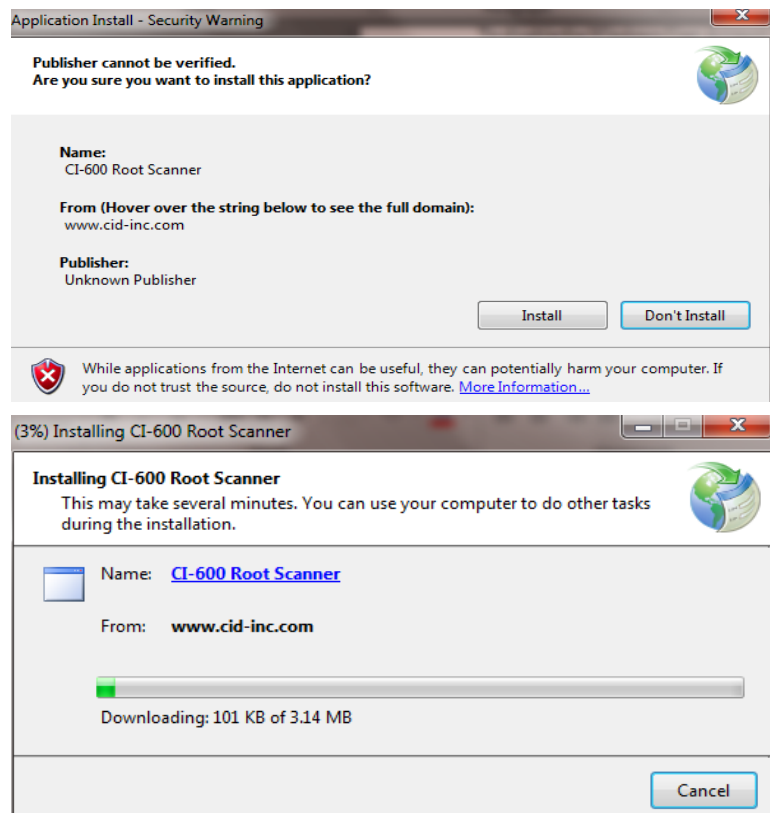
SOFTWARE/DRIVER INSTALLATION

The following steps to download and install the software and driver should be carried out on each computer used with the CI-602 Root Scanner. Version 4 software and driver is compatible with Windows 10 (64 bit only).

Software Installation

Note: The software should be pre-installed on the tablet computer that came with the instrument.

- This application requires the Microsoft .NET Framework. If this has not been installed on the computer it should automatically install with the CI-602 software.
- Navigate to <http://www.cid-inc.com/support/CI-602/software/>
- Download or install the latest version by clicking setup.exe
- Choose to “run” or “install” the software anyways if a security warning appears indicating the publisher cannot be verified.
- When the application has finished installing, it will automatically open.
- A shortcut to the CI-602 software should be pinned to the taskbar or desktop.

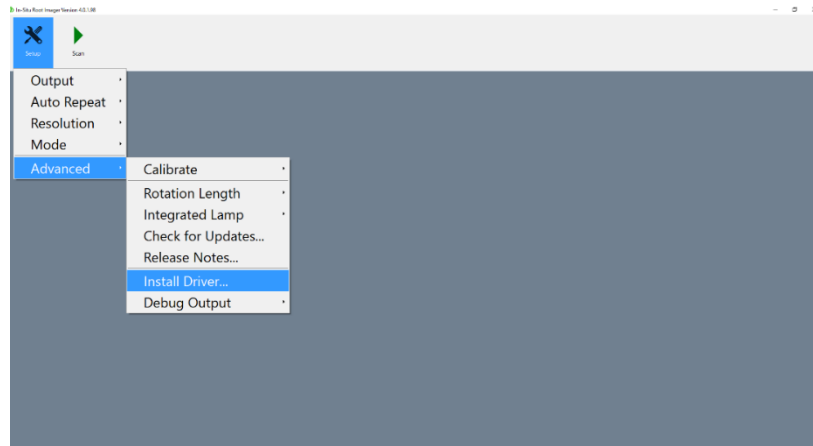


Driver Installation

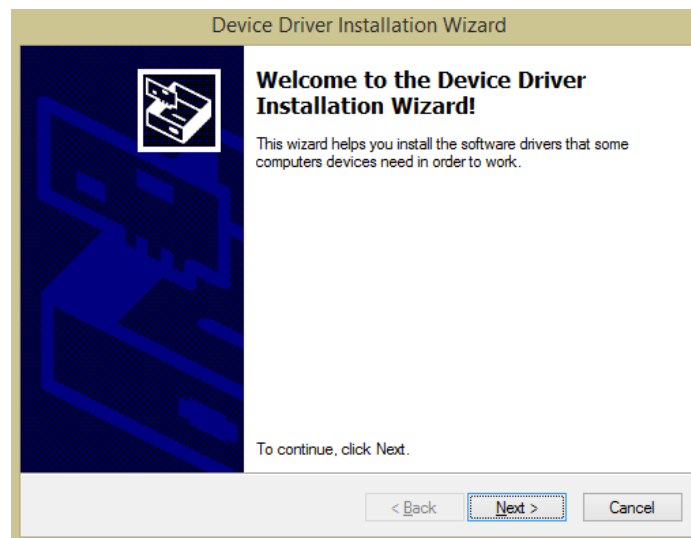
To install the driver for the CI-602, first install the CI-602 In Situ Root Imager software. Then follow the steps below.

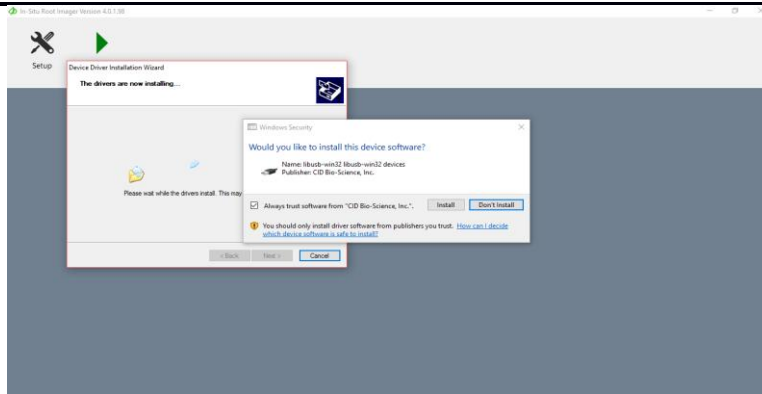
Note: The software and driver should be pre-installed on the tablet computer that came with the instrument.

1. Open the software with the CI-602 connected to the PC via USB.
2. Click on Setup in the tool bar.
3. Click Advanced and Install Driver.

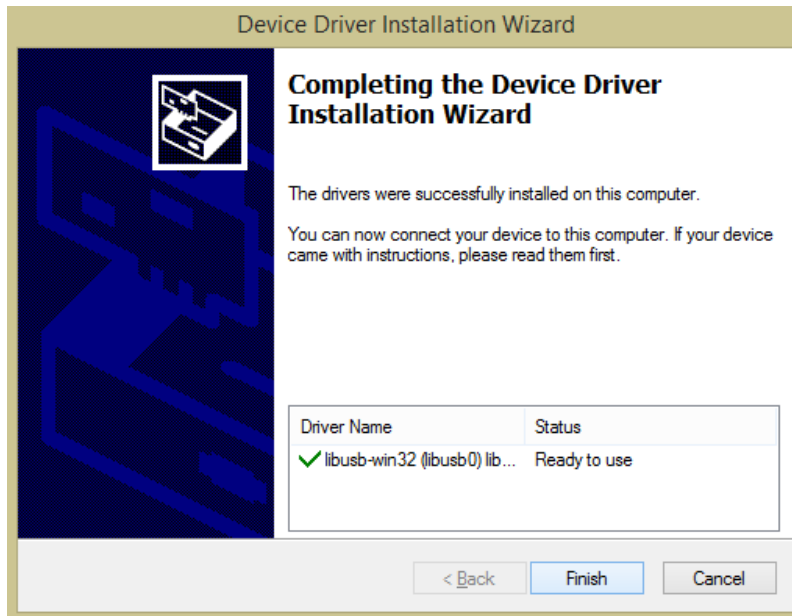


4. The **Device Driver Installation Wizard** tool (pictured below) will appear.



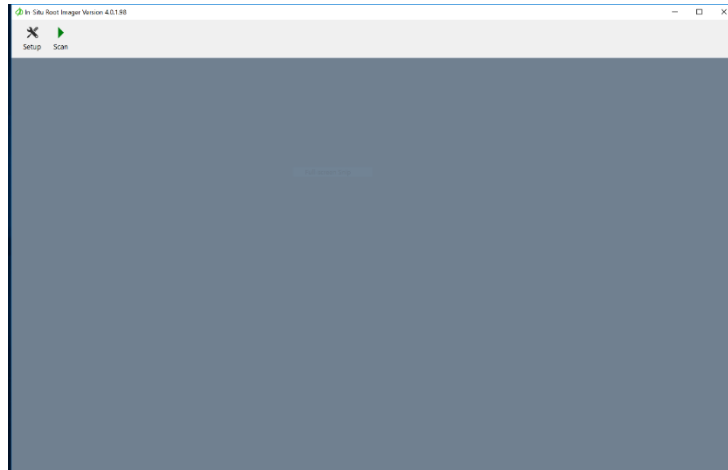


5. Complete the CI-602 driver installation using the device driver installation wizard and click finish.



OPERATING THE CI-602 SOFTWARE

To open the CI-602 software, click on the **Start** button, and select **CI-602 Root Scanner** from the **CID Bio-Science** folder. Or, click the icon on the desktop or taskbar. The screen below will appear.



To begin using the CI-602 scanner:

- Setup the hardware (See the Hardware Assembly section of this manual).
- Install the software and driver
- Connect the CI-602 to the computer
- Open the CI-602 software
- Calibrate the instrument once at each resolution (100, 300, 600, and 1200 DPI) using the white calibration tube
- Set the image parameters and scan

Calibration

Calibrating the CI-602 root imager is required after the software and driver are initially installed. Calibration is necessary at each resolution (100, 300, 600, and 1200 DPI) using the white calibration tube. Prior to each scan, the CI-602 software will verify the calibration data, eliminating the need to re-calibrate the root imager frequently in the field.

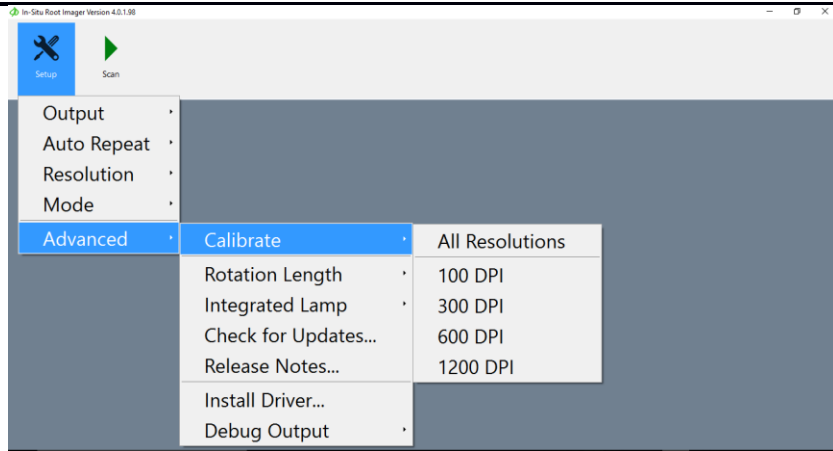
Calibration may also be necessary if the software prompts, asking you to insert the CI-602 in the white calibration tube and calibrate. All calibrations **MUST** be made in the CI-602 white calibration tube.

Note: Calibration was performed on included tablet. If you're working at very cold or hot temperatures, it is recommended to calibrate at those temperatures to get better image quality.

1. Install the CI-602 software and driver.
2. Attach the CI-602 Root Scanner's USB cable to the USB slot.
3. Place the CI-602 Root Scanner in the white Calibration Tube with the scanner lined up at the **Home Position**.

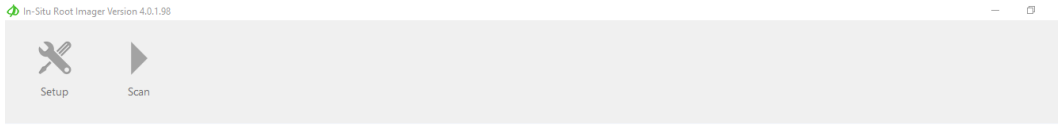


4. Open the CI-602 software.
5. Click on the Setup tool. Select advanced.



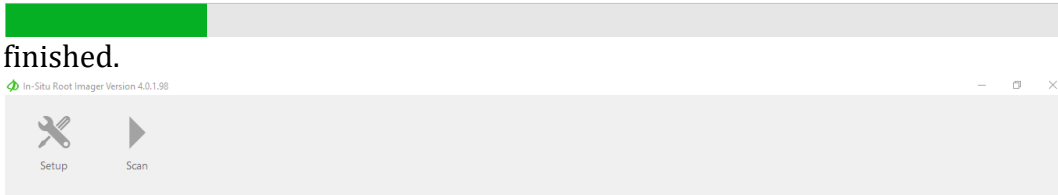
6. Select Calibrate>All resolutions.

7. The screen will display the resolution that the scanner is being calibrated at. It will indicate when it is getting ready to calibrate and then the number of scans completed at that resolution. Once all scans have been completed, the calibration is



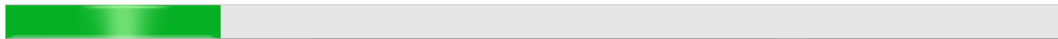
Calibrating @ 600 DPI

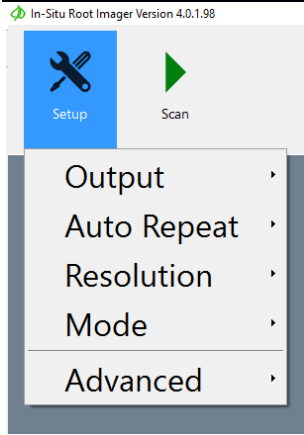
Getting ready...



Calibrating @ 600 DPI

Scan 6 of 24...





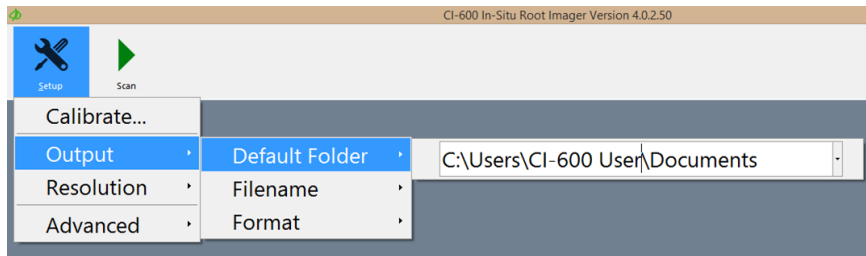
Setup Menu

The CI-602 software is designed to be easy to operate with three buttons: setup, scan, save and zoom options (save and zoom options seen after an image is taken). The Setup Menu features user changeable parameters, such as where the image file is saved on the computer or the resolution of the scan.

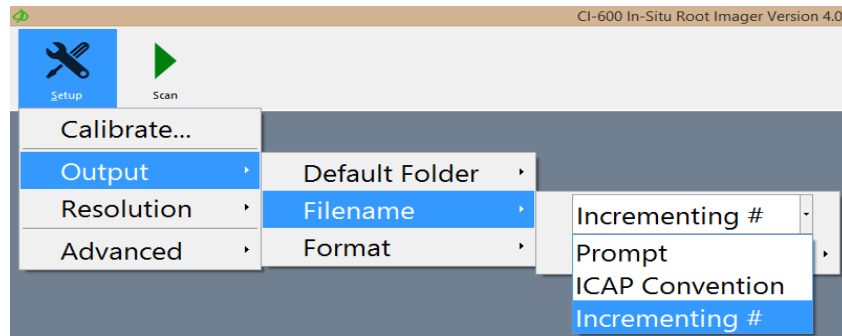
Setup>Output

The Setup>Output menu houses parameters that can be changed regarding the folder where images are saved (default folder), filename and file type.

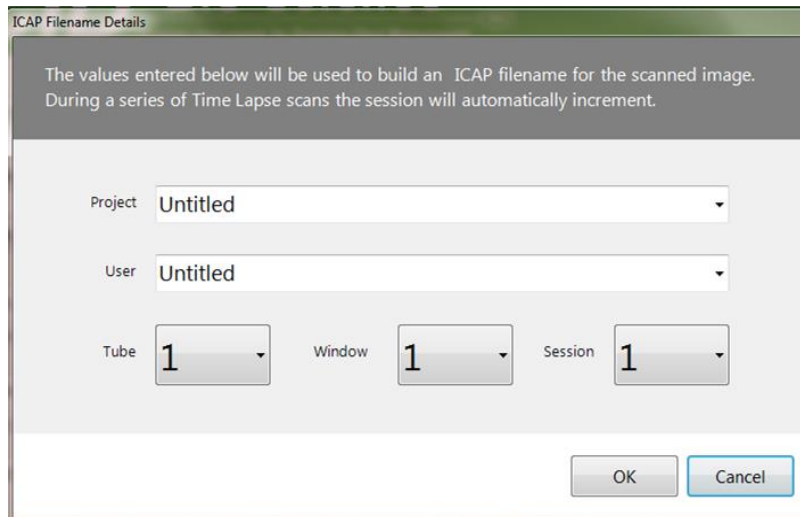
Setup>Output>Default Folder is where the folder on the hard drive to which images are saved can be designated. Type in the folder location or use browse to navigate to the folder on the PC.



Setup>Output>Filename is where the assigned filename of the image can be changed. **Prompt** will open up the computer library and prompt the user to manually enter a filename each time the “Save” button is pressed.

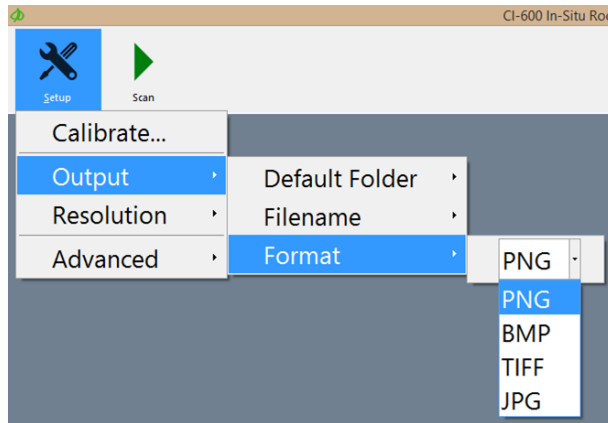


The **ICAP Convention** file name is used to designate the Root Tube number, Window height and Session number, as well as the project and user. Using this filename convention will make images easier to import into RootSnap! for later analysis.



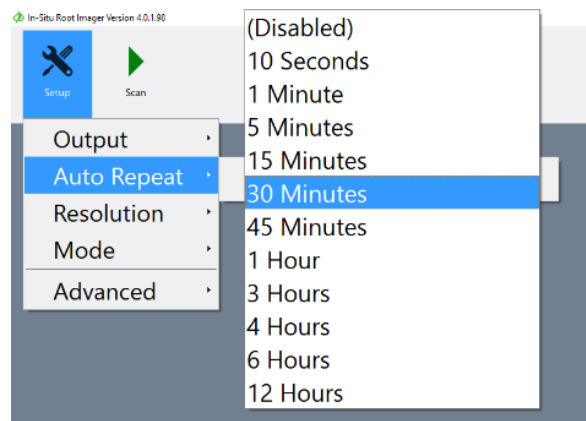
Selecting **Incrementing #** will assign each filename the prefix designated, followed by incrementing numbers. For example, if the prefix entered is Pineapple Root, the first filename will be Pineapple Root01.png.

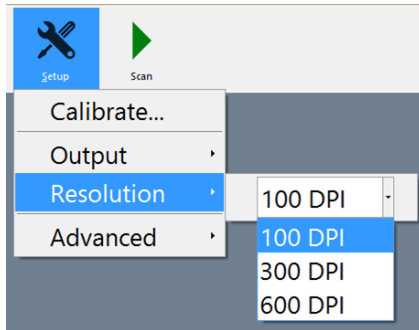
Setup>Output>Format is where the file type of the saved image can be set. Options for .png (recommended), .bmp, .tiff or .jpg are available.



Setup>Auto Repeat

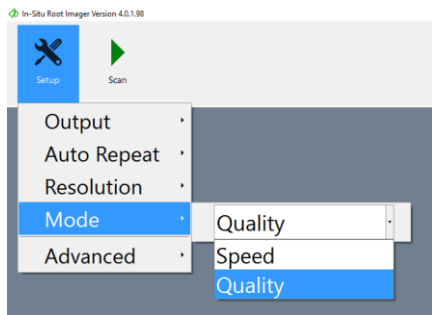
This option allows a user to set up a timeframe for automatic repeated scans. Options range from 10 second intervals to 12 hour intervals.





Setup>Resolution

Select the resolution of the image. Available options are 100, 300, 600 and 1200 DPI (dots per inch). The higher the DPI, the longer the scan will take to complete. The mode chosen will also influence the speed of the scan. A 300 DPI scan in speed mode takes 6 seconds, while a 600 DPI scan in speed mode will take 24 seconds.



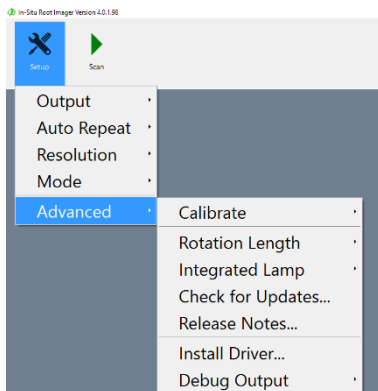
Setup>Mode

The CI-602 allows the user to choose between quality or speed mode. Choosing quality mode will prioritize the quality of the image produced over the speed of the scan. The quality of the scan will increase by increasing the number of pixels incorporated into the dimensions of the image. File size will generally increase with a quality scan. Speed mode will prioritize the speed of the scan over the quality. For example, a scan at 600 DPI in speed mode will

be faster than a scan at 600 DPI in quality mode, but the resulting image will have lower resolution.

Setup>Advanced

The Setup>Advanced menu houses options for calibration, rotation length, integrated lamp on or off, and information on software updates, installation of the CI-602 driver, and debug output enablement.



Setup>Advanced>Calibrate allows the user to calibrate the CI-602 at each resolution level.

Setup>Advanced>Rotation Length is the length in inches around the tube or the path length of the scanner. Typically this value should stay at the default value to maintain an approximate 360 degree image, but can be shortened if desired.

Setup>Advanced>Check for updates will check the CI-602 webpage for any available software updates and prompt the user to download and install.

Setup>Advanced>Release Notes contains the notes from the programmers last update to the CI-602 software and any known software bugs.

Setup>Advanced>Install Driver will open the Device Driver Installation Wizard to install the CI-602 driver.

Setup>Advanced>Debug Output Enabling the debug output will save the images from the calibration. This can be a useful tool if troubleshooting calibration problems, but should typically stay in the default mode of 'disabled'.

DEPLOYING ROOT TUBES

- Make sure the inside of the tube is clean (see the Cleaning & Maintenance section).
- The slider rod connected to the scanner, can be used as a measuring rod, which each section of the collapsible scanner being the equivalent of the scan head length with some overlap. Using these marks, lower the scanner to the desired depth.
- The soil tube is typically installed at an angle (45-60°) to maximize root contact with the outer surface of the tube. The soil tubes may be installed in an upright vertical position as well as horizontal and/or various angular positions. To prevent water from getting inside of the tube, install the tube at an angle if there is a chance of standing water collecting around the tubes.
- Make sure the tubes are water tight at the bottom, which have plug on the bottom made by the manufacturer. Some amount of condensation is common on the tubes and will fluctuate. The condensation on the outside of the tube is much less of an issue if the tube is almost completely underground (only about 1-cm above the ground surface) and if the tube is filled with some sort of insulating material between measurements (e.g. pipe insulator). Also, if noticeable condensation is forming on the inside of the root tube, consider putting a desiccant pack in the root tube.
- In colder weather, freezing of condensation in the tubes can be avoided by putting good insulation in the tubes and leaving only a few centimeters above the ground surface. A similar problem can arise in the summer months where warm air gets into the tube and warms colder soil at depth. Insulating the tubes works well in this case, as well.
- The soil tube is made with Plexiglas clear material with two end caps. The end of the tube with the plug should be inserted into the soil. The other end, with a removable cap, should be about 5 to 8 cm. above the ground. The removable cap should be on at all times when you are not taking samples to avoid dirt, water/precipitation and other objects from getting into the tube. The tube(s) inner surface should be kept clean to protect the scanner head and for optimum image capturing.
- The soil tube should be inserted into the soil before crops are planted if you want to study root growth. More tubes should be used in different locations of your experimental plot, depending on the purpose of your research.
- In order to capture root images, the outer surface of the tube should be no greater than 8.0mm from the desired object being scanned. If the desired object

is greater than 8.0mm from the outer surface of the tube, the image will be blurred or there will be a black image. This is the result of the image being beyond the scanner's focal range. In the case of the black image, the light from the scanner is not properly being reflected back to the scanner.

WARNING: ALWAYS PLACE THE CI-602 BACK INTO THE CARRYING CASE AFTER USE. DO NOT LEAVE THE UNIT IN TUBES, AS THIS WILL FLATTEN THE ROLLERS ON THE UNIT, CAUSING POSSIBLE MALFUNCTION.

Note: You may want to take extra precautions to make sure the tubes are water tight if your special applications require this, such as by using the water-tight bottom tube plug.

Temperature fluctuations may cause a normal amount of expansion and contraction in the tubes and caps.

Auger Usage

To create the hole for inserting the soil tube into the ground, use a gasoline powered auger, such as the Earthquake Auger sourced by CID Bio-Science, Inc. Use the auger to remove just enough soil to slide the CI-602 root tube into the ground. Minimizing the soil disturbance directly around the root tube will decrease the length of time necessary to wait for soil and roots to grow around the tube.

Upon request, CID Bio-Science, Inc. can provide you with the source for purchasing an auger, or information about additional soil tubes.

CLEANING AND MAINTENANCE

To keep your CI-602 Root Scanner and computer clean, wipe the exterior with a slightly damp cloth. A mild detergent may be used if necessary. Do not use solvents of any kind. Clean the lens with a soft, non-abrasive cloth, using a small amount of commercial lens cleaning fluid if necessary.

WARNING: KEEP LIQUID, INCLUDING CLEANING FLUID, OUT OF THE LAPTOP COMPUTER'S KEYBOARD, SPEAKER GRILL, AND OTHER OPENINGS. NEVER SPRAY CLEANER DIRECTLY ONTO THE CI-602. NEVER USE HARSH OR CAUSTIC CHEMICAL PRODUCTS TO CLEAN THE CI-602.

PROTECT THE CI-602 BY AVOIDING THE FOLLOWING ENVIRONMENTAL HAZARDS:

- Dust and moisture
- Liquids and corrosive chemicals
- Equipment that generates a strong electromagnetic field, such as stereo speakers (other than speakers you have connected to the computer) or speakerphones
- Rapid changes in temperature or humidity and sources of temperature changes such as air conditioner vents or heaters
- Extreme heat, cold or humidity

Root Tube Cleaning and Drying Accessory

The root tube should be dried of any condensation or moisture before the CI-602 root scanner is lowered into the tube. Clean and dry the tube using a microfiber cloth and the accessory attachment for the collapsible rod.

1. Twist the swab holder to the end of the collapsible slider rod.
2. Insert the cloth into the slot of the swab holder.
3. Lower the rod and cloth into the tube, ensuring that all sides of the tube are clean and dry.
4. Use as many sections of the rod as necessary to prevent any moisture from coming into contact with the CI-602.



USING THE CI-602 FOR CI-690 ROOTSNAP!

RootSnap!, is a separate software program created at CID Bio-Science for root image analysis. It includes a revolutionary user interface that employs a combination of advanced image analysis and a multi-touch LCD screen, which allows users to more quickly and easily trace roots using their fingers. Root tracing enhancements, such as the “Snap-to-Root” feature that “snaps” root tracing points to the center of the root automatically, removes hours of tedious point-by-point outlining of roots.

When the CI-602 is used to acquire images being analyzed with CI-690 RootSnap!, there are several features that, if used, make the importing and analysis process easier and faster. First, always use the ICAP file-naming feature to save images. The ICAP naming system allows the user to scan, save and name images in any order and be organized for future analysis. Designating the root tube, window and session only takes a few seconds and automatically increased the session number when using the time lapse feature.

It is often asked whether to start taking root images at the top or the bottom of a root tube. It is recommended to start at the top of the root tube when taking images. First of all, this will allow the user to make the fewest possible scans while imaging to the lowest depth of the roots. Also, when images are imported into RootSnap, Window 1 is along the top layer of soil.

Make sure to always check the bottom of root tubes for standing water that could damage the CI-602 if lowered into it.

It is recommended to include overlap between scans to ensure all roots are fully imaged. Overlap can easily be removed using the CI-690 RootSnap! analysis software. If using the collapsible indexing handle and tube cap to position the scanner depth, overlap will be included in images.

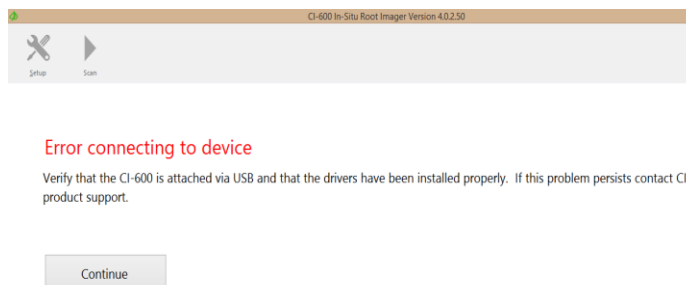
TROUBLESHOOTING

Common Error Messages

The most common error message that appears after hitting the scan button is that the instrument cannot be detected by the computer.

To fix this error message:

1. Disconnect and reconnect the CI-602.
2. If the error appears again, re-start the computer.
3. Check the USB cable and connection of the instrument. Try a different USB port of the computer. **Try a new USB cable.**
4. Check that the software and driver are up-to-date and properly installed.



Technical Support

If you have a question about the CI-602 features or functions, first look in the CI-602 Operation Manual. There is also online support available for the CI-602 at <http://www.cid-inc.com/support/CI-602/>. If you cannot find the answer, you can contact a Technical Support Representative located in your country. CID Bio-Science, Inc. is committed to provide customers with high quality, timely technical support. Technical support representatives are to answer your technical questions by phone or by e-mail at support@cid-inc.com.

CID Bio-Science, Inc.'s contact information:

CID Bio-Science, Inc.
1554 NE 3rd Ave
Camas, WA 98607 USA

Phone: 800-767-0119 (U.S. and Canada)
360-833-8835
Fax: 360-833-1914

Internet: <http://www.cid-inc.com>

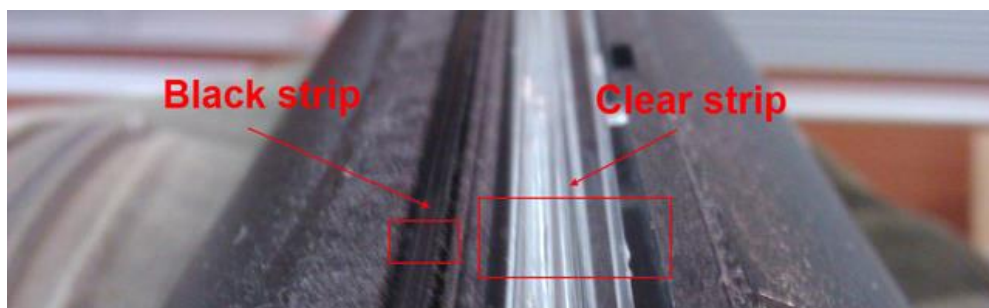
Customer Service

Customer Service Representatives answer questions about specifications and pricing, and sell all of the CID Bio-Science, Inc. products. Customers sometimes find that they need CID Bio-Science, Inc. to upgrade, recalibrate or repair their system. In order for CID Bio-Science, Inc. to offer these services, the customer must first contact us and obtain a Return Merchandise Authorization (RMA) number. Please contact a customer service representative for specific instructions when returning a product.

Frequently Asked Questions

If there are any questions about the CI-602, please check the Frequently Asked Questions below, as well as the CID Bio-Science support webpage at <http://cid-inc.com/support/CI-602/>

1. Where do I download the most current version of CI-602 software?
 - a. The latest version of software and the driver can be downloaded at <http://cid-inc.com/support/CI-602/software>. Click the “Install” button to start the download. If prompted that the publisher is not verified, click Run or Install to continue the setup. Next, connect the CI-602 to the computer and install the driver in Setup>Advanced>Install Drivers.
2. Where do I find a CI-602 64 bit driver?
 - a. The CI-602 driver is part of the software download.
3. Should the root tubes be installed vertically, horizontally or at an angle?
 - a. The angle the root tubes are installed will depend on the species, type of study (i.e. agriculture, forestry). Often, root tubes are installed at a 45° angle, especially when looking at fine root growth. However, a study by Villordon et al. (2011), found vertically installed root tubes gave the best estimate of root growth and storage roots development in sweet potato, *Ipomoea batatas*.
4. What are the blurry lines in the root image?
 - a. Consistent image artifacts, such as blur lines, which do not disappear after calibration, are caused by physical artifacts. The scan head, including the black strip, should be carefully cleaned using a cloth and can of air.



5. How often should I calibrate the CI-602?
 - a. The CI-602 requires calibration at least every 500 scans. However, it is recommended to calibrate the CI-602 using the white calibration tube if there is a noticeable change in image quality. The CI-602 should always be

calibrated in the white calibration tube after installing the software on a computer.

6. How do I check the calibration?
 - a. After calibrating the scanner in the white calibration tube, take a scan of the calibration tube. The white should be white and the black should be black with no blurred sections or undesired lines.
7. Is it alright to move the CI-602 while it is scanning or calibrating?
 - a. It is NOT recommended to move the scanner ever when it is scanning, calibrating or when the motor is making noise. Always wait until the scanner is settled or completely done with the scan and has rotated to its original Home position before moving the CI-602.
8. How do I prevent root tube cracks or condensation?
 - a. A suggestion to protect the CI-602 tubes from cracking is to insulate them between scans. This will decrease the temperature difference between the soil and the air trapped inside the tube, which will decrease condensation build-up and cracks. Insulation should slide easily into the tube, especially the part exposed above ground level. Make sure that the insulation material does not scratch the root tube.
9. Could I use the CI-602 to image root nodules?
 - a. The ability to quantify nodulation rate would depend on the size of the nodules. As long as they are at least the size of fine roots, 1-2 mm, there shouldn't be a problem with using the CI-602. Since the CI-602 images roots in direct contact with the root tube, the same would be true for nodules. The color contrast between roots, nodules and background soil will also affect the quality of images.
10. Could I cut the root tubes to my own custom length?
 - a. Be aware that to create a proper cut, you will need to have the tube cut using an electric miter saw. Hand cutting is not recommended, it results in cracks in the tubes. Cracks can allow moisture into the tube which can harm the 600 and cracks will also affect your picture quality. Further, after proper cutting, at CID we use hand tools to clean up the ends of the tubes, to smooth out the edges and allow for a proper seating of the end caps.
11. How do I access the log files for the CI-602 software?

- a. To access the Log Files:
 - 1) Start the CI-602 software.
 - 2) Press Control + Escape at the same time (this launches the Task Manager).
 - 3) From the Task Manager, click on the Processes tab.
 - 4) Right click on CID.CI602.exe and select Open File Location (this launches the file browser)
 - 5) You should see several ApplicationLog and ErrorLog files.

12. How do I get my scans to line up in the tube?

- a. Mark a home position on the tube and align your scanner to the "HOME" position each time it is inserted in the root tube. The CI-602 begins a scan by rotating the scanner body to the "Home" position and then initiating the scan. If the instrument is already in the home position, it will not need to rotate before starting to scan. Ensuring that the instrument is in the Home position before scanning can eliminate scanning unintended areas and save time. When calibrating the CI-602 in the white calibration tube, the Home position location is of importance. Make sure to insert the scanner in the calibration tube properly.

13. What does it mean when I get an error with the error summary message in the .txt file: "The requested operation requires elevation"?

- a. Any errors with "The requested operation requires elevation" message in them means the user needs to turn off UAC. This is a work-around for a bug in the way the ClickOnce technology handles the requirement for administrator privileges. To do this:
 1. Press Start and type UAC in the search bar.
 2. Select "Change User Access Control Settings" and move the slider bar to the bottom (Never Notify).
 3. Re-start the computer.

14. Where can I find the CI-602 driver?

The CI-602 driver is part of the software download for version 4. If you have a Canon Driver installed, you will need to remove it with using the CanoScan utility at <http://www.cid-inc.com/Software/CI-600/DelDrv.exe>. You should choose Run and LiDE 220 when prompted.

15. Does the CI-602 take 1200 DPI images?

- a. A single scan at 1200 DPI can take about 12 minutes to complete. Make sure the computer's power settings allow for it to sit idle this long without turning off.

16. What does the “release the lock switch” error indicate?
 - a. If you receive an error asking you to release the lock switch, you should update the software and driver of the CI-602. This error does not exist in new software and with new driver and calibration, the unit should function properly.
17. Where can I find a list of published articles referencing the CI-600/CI-602?
 - a. <http://cid-inc.com/publications/CI-600-publications>
18. If my CI-602 breaks, does CID Bio-Science provide loaner units during repair?
 - a. If you are located within the United States, CID Bio-Science would be happy to provide a loaner CI-602 for use during any necessary repair. Please contact support@cid-inc.com for repair and loaner unit information. International loaner units will be provided on a case by case basis, depending on shipping costs and customs regulations.

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Warranty Information

Seller's Warranty and Liability:

CID Bio-Science warrants new equipment of its own manufacturing against defective workmanship and materials for a period of one year from date of sale. The results of ordinary wear and tear, neglect, misuse, accident and excessive deterioration due to corrosion from any cause is not to be considered a defect.

CID Bio-Science's liability for repairing or replacing defective parts during the warranty period is contingent on examination by a CID Bio-Science authorized representative. Felix Instruments liability will not extend beyond repairing or replacing parts from the factory where they were originally manufactured. Repair or alteration by an unauthorized technician voids warranty.

Material and equipment which is not manufactured by CID Bio-Science is to be covered only by the warranty of its manufacturer. CID Bio-Science will not be liable to the Buyer for loss, damage, or injury to persons or to property by the use of equipment manufactured by other companies.

Buyer accepts the terms of warranty through use of this instrument and any accessory equipment. There are no understandings, representations, or warranties of any kind, express, implied, statutory, or otherwise (including, but without limitation, the implied warranties of merchantability and fitness for a particular purpose), not expressly set forth herein.

All instrument repairs or replacement covered under warranty require a Returned Material Authorization (RMA) number. Please contact CID Bio-Science technical support department at support@cid-inc.com to obtain an RMA number before shipping instrument to CID Bio-Science, Inc.

Buyer is responsible for shipping charges to CID Bio-Science headquarters:

1554 NE 3rd Ave.
Camas, WA 98607
USA

CID Bio-Science is responsible for return shipping charges on repairs and/or replacement covered by warranty.

PRODUCT TEST CHECK SHEET

CI-602 Serial Number:
RMA #
Computer Serial Number:
Computer Model No:
Windows Version:

Testing Function	Final
Clear Image Scanned	
Image Size Set: 8.5 x 7.1	
USB Cable Tested	
Scan Head Clean	

CI-602 Scanner Software Version:	Verified By:
Final Test Date:	Tested By:

Comments

WARRANTY REGISTRATION CARD



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PRODUCT REGISTRATION CARD

Please complete and return this form to CID within 30 days to
 validate your Warranty on Parts and Labor.

Registration Information:

Your Name: _____ Title: _____
 Company/University: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Country: _____ Email: _____
 Phone: _____ Fax: _____
 CID Serial Number(s): _____
 Purchase Date: _____ Purchase Price: _____

FOLD ON DOTTED LINE

Your opinions will help improve our service. Please answer the following questions.

1. What was the basis of your product selection?

- | | |
|--|---|
| <input type="checkbox"/> Representative Recommendation | <input type="checkbox"/> Price |
| <input type="checkbox"/> Product Features | <input type="checkbox"/> Product Design |
| <input type="checkbox"/> Technical Specifications | <input type="checkbox"/> Brand Name |
| <input type="checkbox"/> Warranty | <input type="checkbox"/> Service |
| <input type="checkbox"/> Other _____ | |

2. What other competing brands did you consider? _____

3. Where did you first learn of this product?

- | | |
|---|---|
| <input type="checkbox"/> Advertisement in _____ | <input type="checkbox"/> Representative |
| <input type="checkbox"/> Friend/Colleague | <input type="checkbox"/> Exhibit |
| <input type="checkbox"/> Other _____ | |

4. Who selected this product?

- | | |
|--|---|
| <input type="checkbox"/> I did | <input type="checkbox"/> Research Group |
| <input type="checkbox"/> University Department | <input type="checkbox"/> Purchasing |
| <input type="checkbox"/> Other _____ | |

5. Comments/Suggestions:

