

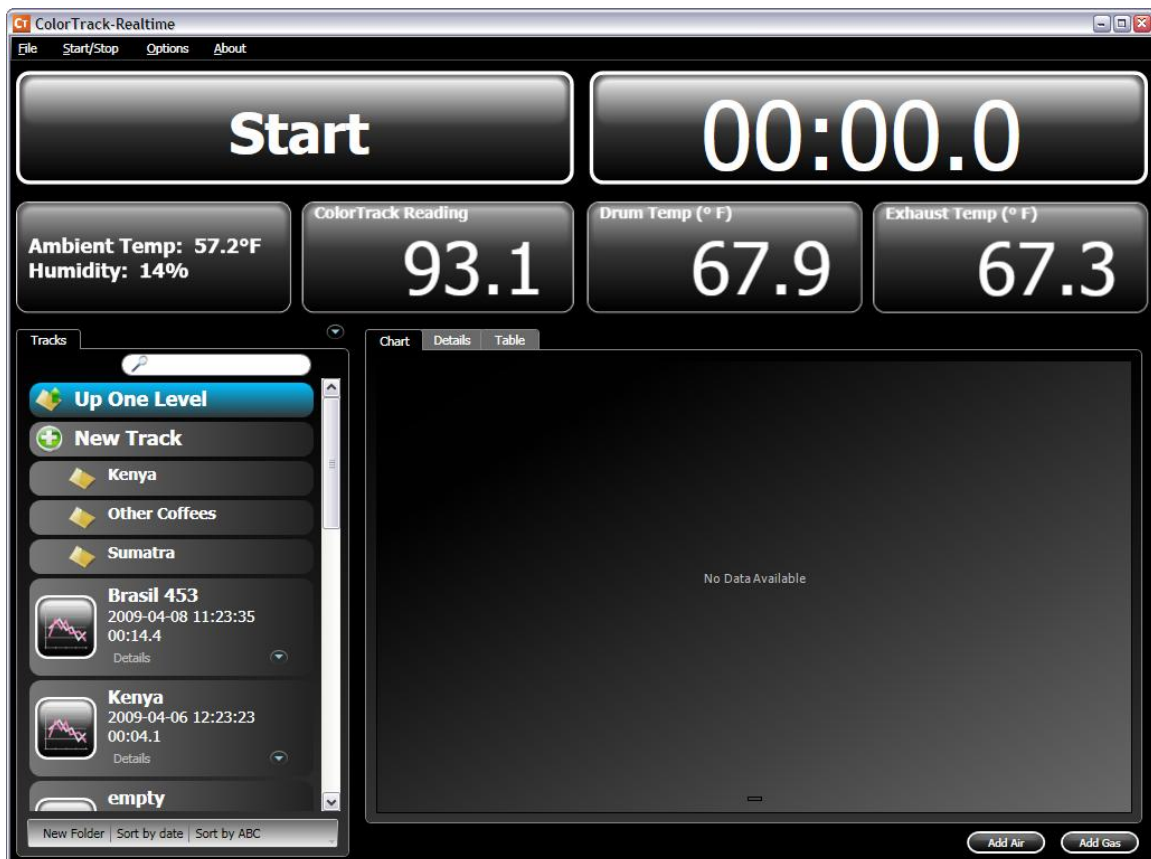


Color Track – Realtime Quick Start Guide

Version 1.0

1. Introduction

The Color Track – Realtime application was made to monitor and record the realtime data which is generated during a coffee roast. It collects information from a various sensors (Color Track Laser, Thermocouples, Temperture and humidity sensors, etc.) This information is displayed in easy to read form using both graph and table views. Also, each roast's data is saved in an individual file which can be easily accessed through the Tracks panel. This system provides a very user friendly interface for quick and easy navigation.



2. Setup and Startup

To install the program simply double click on the **setup.exe** file and the program will automatically install onto your system.

The program will then be installed into the Start menu where it can be accessed. Once the program is running it will immediately begin reading data from the probes as displayed in the second row of panels below the “Start” button. These values are simply for display and will not be recorded until the user begins a roast.

3. Opening a File



To open a file double-click on the panel with the small graph icon in the Tracks panel. That file will then be highlighted. It will quickly load the file and all its details into the system. The “Start” button will turn red and show the roast time of the roast.

To navigate through the systems directory structure the user can click the “Up One Level” button to change the directory up one level. Also the user can choose

to click a directory in order to open a specific directory. We recommend organizing your roasts into a directory structure to improve the performance of the system.

Search

The user may also type a few characters into the search field and the system will attempt to match that text from the roast information displayed in the panels.

4. Starting a Roast



The process to start a roast is as follows:

- Click new Track to create a new track
- Fill out information in the details section as described below

- c. Click the Start button (it will turn red with a time of 0:00.0). The system will now be waiting for the beans to drop into the roaster. The system detects this by reading the color of the beans. Once the color of the beans drops below a preset value (default ColorTrack reading of 80).
- d. Drop the beans into the roaster. This will begin the clock as the roasting process begins.
- e. When the beans are finished roasting and have been dropped from the roaster the system will detect the corresponding change in color and stop recording the roast. The system will then automatically save the roast with the name of the roast from the details section and also the current date/time information.
- f. (Optional) The user may choose to click the timer on the right side which the customer may choose to time the crack length. Clicking on the button again stops the timer. Right-clicking resets the timer.

5. Adding Gas/Air during a Roast

The user may choose to add gas and air values to be recorded during a roast. If the user has a manual gas or manual airflow controls, the user may also choose to record these values into the roast. This information is optional and will not affect the system if they are not added. The user can click the “Add Air” and “Add Gas” buttons at the bottom of the screen to add these values. Once the button has been clicked a screen will popup showing the current time of the roast. If the user types in a value, then that value will be entered corresponding to the time that is displayed.

For example, if the user clicks the “Add Gas” button at time 5:30 of the roast a screen the popup screen will show 5:30 as the time. Once the user adds a value for the gas and hits enter that value will be reflected in the Chart showing the gas was added at time 5:30 at the value the user entered.

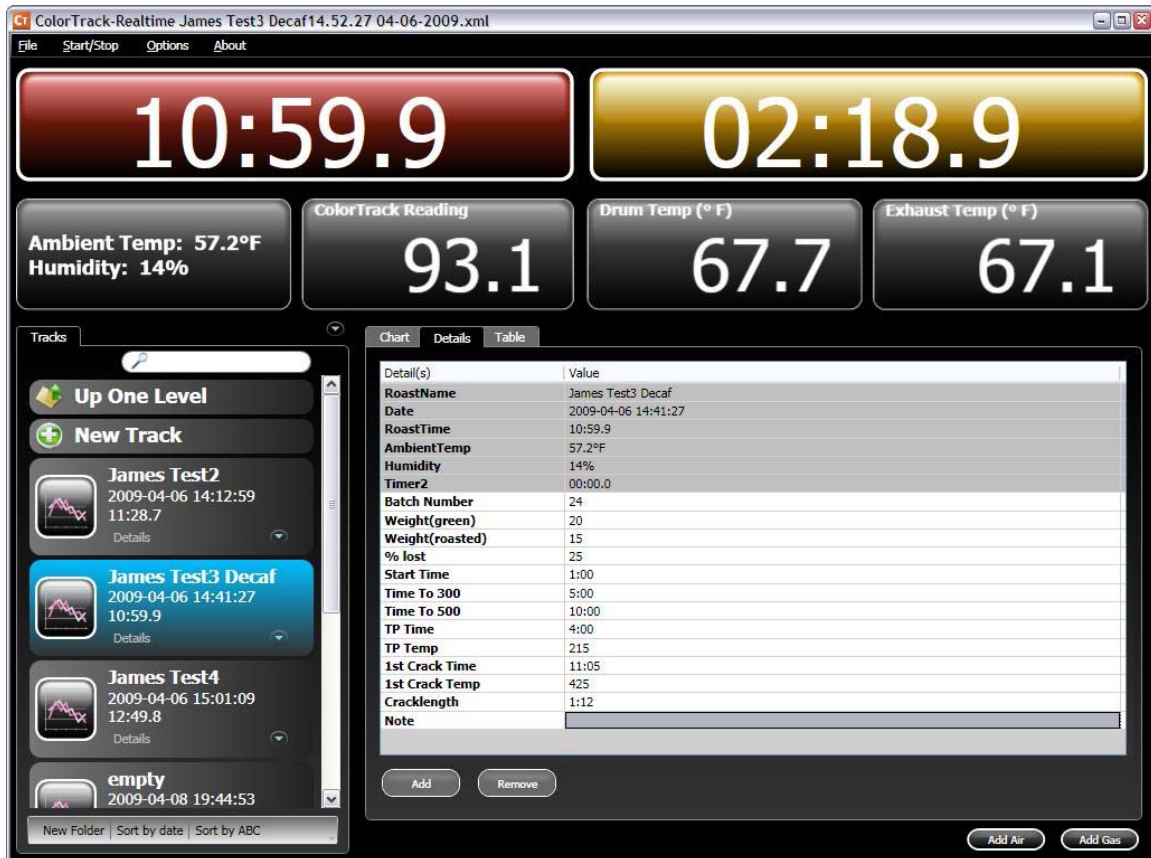
Changing previously added Gas/Air values during the roast can also be done. The user can choose to change the time value in the popup window and the system will go back and replace all the values which corresponded to a particular time and value.

For example, if the user had added 50 units of gas from time 1:00 to 2:00, then the user may type in 1:00 as the time and 60 units of gas. When the user hits the enter button the system will go back to 1:00 and change it's value to 60. It will do the same for 1:01, 1:02, 1:03, etc until it sees a change in gas value which happens at 2:00. Therefore, all the values of 50 between 1:00 and 2:00 will be changed to 60.

The image shows a dialog box titled "CT Add Gas". It features a title bar with a close button (X), a maximize button, and a minimize button. The main content area contains the following elements:

- A "Time:" label followed by two input boxes. The first box is labeled "min" and contains the value "0". The second box is labeled "sec" and also contains the value "0".
- A "Gas:" label followed by a single empty input box.
- At the bottom, there are two buttons: "Ok" and "Cancel".

6. Changing Details

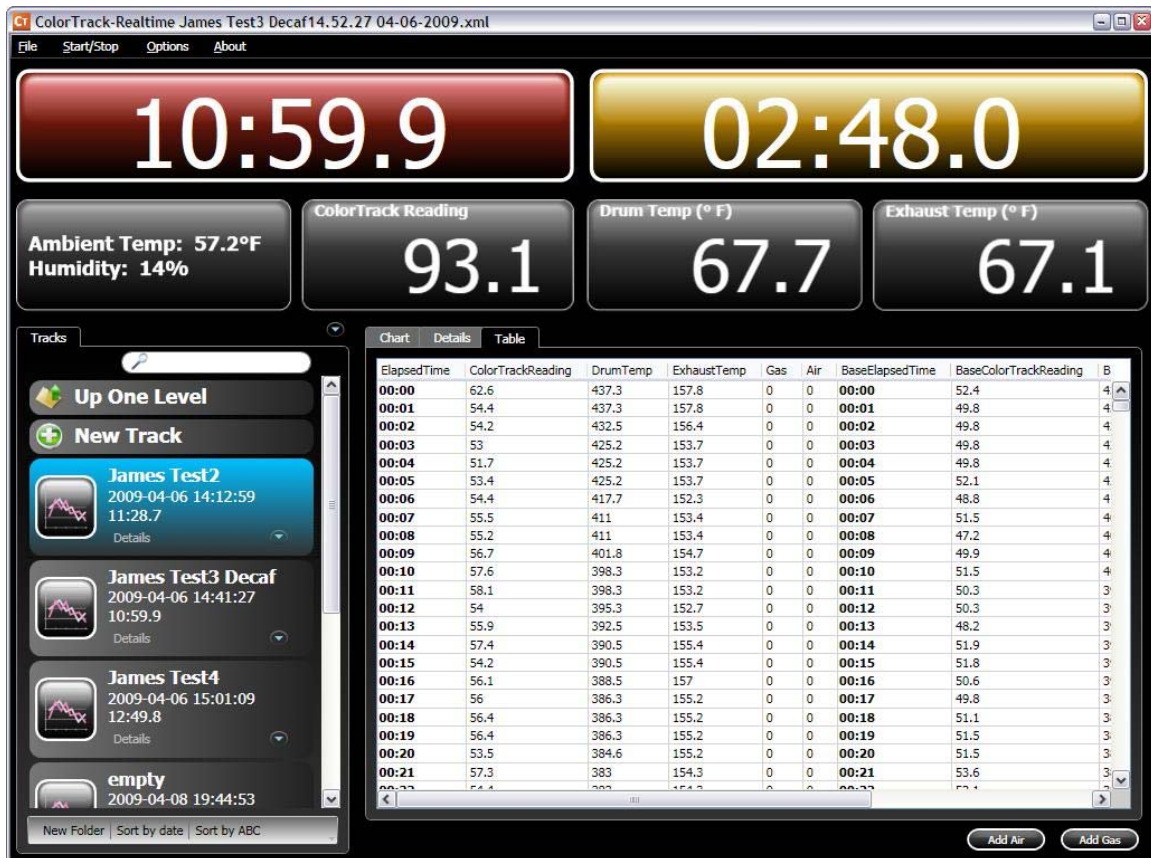


The user can change any of the details as shown in the screenshot above. The “RoastName” will be used as the name of the file along with the current date/time.

(Example: Kenya2009-04 12:12:59.xml). The user may also click on the detail name and change the name of the detail itself. For example, the user can click on “Batch Number” and change the name to “My Batch” with the exception of any field who’s background is gray.

Also, the user may choose to add new rows to the details section if the currently set details are not sufficient for recording all the information required by the user. Bu clicking the “Add” button the user can add new rows and populate them with new information. The user may also choose to remove rows by clicking the “Remove” button.

7. The Table View



When the user clicks on the Table tab, the user will be able to see the graph in tabular format. If the user chooses to add a baseline roast, the system will display the standard recording columns on the left of the table but it will also display the baseline columns on the right side of the table.

8. Changing the Laser Settings

The screenshot shows the ColorTrack-Realtime software interface. A "Laser Settings" dialog box is open in the center, allowing the user to adjust the laser calibration. The dialog box contains the following fields and options:

- Actual Light Reading: 0
- Desired Light Reading: 0
- Actual Dark Reading: 100
- Desired Dark Reading: 100
- Start roast when below
- Start roast when above
- Start/Stop Trigger: 80
- Buttons: Save, Cancel

The background interface displays a large digital clock at 10:59.9, a timer at 02:48.0, ambient temperature at 57.2°F, humidity at 14%, and exhaust temperature at 67.1°F. A table of sensor data is visible at the bottom right:

mp	Gas	Air	BaseElapsedTime	BaseColorTrackReading	B			
0	0	0	00:00	52.4	4			
0	0	0	00:01	49.8	4			
0	0	0	00:02	49.8	4			
0	0	0	00:03	49.8	4			
0	0	0	00:04	49.8	4			
0	0	0	00:05	52.1	4			
0	0	0	00:06	48.8	4			
0	0	0	00:07	51.5	4			
0	0	0	00:08	47.2	4			
00:09	56.7	401.8	154.7	0	0	00:09	49.9	4
00:10	57.6	398.3	153.2	0	0	00:10	51.5	4
00:11	58.1	398.3	153.2	0	0	00:11	50.3	3
00:12	54	395.3	152.7	0	0	00:12	50.3	3
00:13	55.9	392.5	153.5	0	0	00:13	48.2	3
00:14	57.4	390.5	155.4	0	0	00:14	51.9	3
00:15	54.2	390.5	155.4	0	0	00:15	51.8	3
00:16	56.1	388.5	157	0	0	00:16	50.6	3
00:17	56	386.3	155.2	0	0	00:17	49.8	3
00:18	56.4	386.3	155.2	0	0	00:18	51.1	3
00:19	56.4	386.3	155.2	0	0	00:19	51.5	3
00:20	53.5	384.6	155.2	0	0	00:20	51.5	3
00:21	57.3	383	154.3	0	0	00:21	53.6	3

To change the laser calibration settings the user may choose to replace the default values. The Desired values will be used to change the actual readings that are taken by the Color Track laser.

The "Start/Stop Trigger" is the ColorTrack laser value at which the system will begin and end the roast.

9. Changing the Thermocouple Settings

The screenshot displays the ColorTrack-Realtime software interface. A 'Thermocouple Options' dialog box is open, allowing users to configure the temperature measurement settings. The dialog has two main sections: 'Units' and 'Devices'.

Units:

- Fahrenheit (°F)
- Celsius (°C)

Devices:

- National Instruments Thermocouple NI 9211
- EXTECH Instruments EasyView 15

The COM PORT is set to COM1.

The background interface shows a dashboard with the following elements:

- A large digital display showing '10' and '48.0'.
- A section for 'Ambient Temp: 5' and 'Humidity: 14%'.
- A section for 'Exhaust Temp (°F)' showing '67.1'.
- A table with columns 'BaseElapsedTime', 'BaseColorTrackReading', and 'B'.
- A list of tracks including 'James Test3', 'James Test4', and 'empty'.

BaseElapsedTime	BaseColorTrackReading	B
00:00	52.4	4
00:01	49.8	4
00:02	49.8	4
00:03	49.8	4
00:04	49.8	4
00:05	52.1	4
00:06	48.8	4
00:07	51.5	4
00:08	47.2	4
00:09	49.9	4
00:10	51.5	4
00:11	50.3	3
00:12	50.3	3
00:13	48.2	3
00:14	51.9	3
00:15	51.8	3
00:16	50.6	3
00:17	49.8	3
00:18	51.1	3
00:19	51.5	3
00:20	51.5	3
00:21	53.6	3

To change the units of the system from Fahrenheit to Celsius simply click the desired units in the window. The user may also click the type of thermocouple device they are using to read temperature data.