

Universal Timer and Software

User's Instructions



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Getting Started

Installing Universal Timer Software

1. Double-click the Universal Timer Setup icon.
2. Click "Next"
3. Read and accept the License Agreement.
4. Click "Next"
5. Choose a different location for installation if desired. Click "Next" when ready.
6. Choose a different location for the Start Menu folder if desired, or check the box labeled "Don't create a Start Menu folder" if a start menu folder is not wanted.
7. Click "Next"
8. If a desktop icon is not desired, click the check box to remove the check. Click "Next" when ready.
9. Review the install settings and click "Install".
10. Click "Finish"

Uninstalling Universal Timer Software

1. Go to the Control Panel.
2. Select the following depending on your operating system:
 - Windows XP: "Add or Remove Programs"
 - Windows 7: "Programs and Features"
 - Windows 8: "Uninstall a Program" from the "Program" category
3. Select the Universal Timer program from the list.
4. Select the following depending on your operating system:
 - Windows XP: "Remove"
 - Windows 7: "Uninstall"
 - Windows 8: "Uninstall"

Uninstalling the software will not remove the current database from the computer. If it is necessary to remove all associated data from the system, the folder containing the database must be deleted manually. This folder is located in the AppData folder under the path Lafayette Instrument\Universal Timer. The location of the AppData folder is operating system dependent.

Opening Universal Timer Software

To launch Universal Timer, either double-click the associated desktop shortcut or utilize the start menu (Windows XP and Windows 7) in order to open the application. This shortcut can be found under Start > Programs > Lafayette Instrument > Universal Timer by default, however the user installing the software is able to choose a different location if desired.

General Use

Universal Timer is navigated using the mouse, and most selections can be made by clicking the desired item or window with the left mouse button. The right mouse button can be used within the **Analysis Tab** to bring up a list of extra functions that are available for selection. This is addressed in more detail within the section of this guide dedicated to that tab. Cell columns and the main window within Universal Timer can be resized by clicking the border of the object to be resized with the mouse and dragging the border to the desired location. Two menus are also available in the menu bar at the top of the Universal Timer window. They are labeled "File" and "Help".

File Menu

The file menu consists of three options. Selecting “Add Subject” brings up the dialog to add a new subject to the database. Selecting “Load Test” brings up the dialog for opening an existing test. Finally, selecting “Exit” closes the software.

Help Menu

The help menu consists of four options. Selecting “Contact Support” opens up a new window labeled “Contact Lafayette Support”. The user is able to enter the email address to which a reply should be sent, as well as an associated name and phone number, and the purpose for contacting support. In the “Comments” field, the problem can be described in depth, and applicable files may be attached to the submission if necessary. Once the form has been completed, the report or inquiry can be sent to Lafayette Instrument Company by clicking the “Submit” button in the lower-left of the window. A history of previous cases can also be viewed by clicking the “Check Existing Case” tab at the top of the window.

By selecting “Check for updates”, the user is able to ensure that the version of the software running is current. Upon selection, a dynamic message will appear in the upper-right corner of the main window informing the user of the progress of this check.

Selecting “Help” from the help menu opens this document for the user’s reference and assistance.

Selecting “About” from the help menu displays a new window that provides some basic information about Universal Timer such as the current version number.



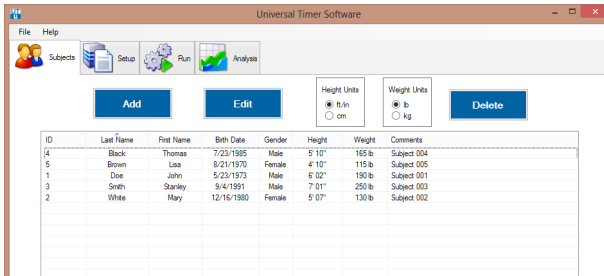
Tabs

Universal Timer is laid out in a window, with tabs located at the top for navigation. When Universal Timer is launched for the first time, the **Subjects Tab** will be active. From left to right, the other tabs are Setup, Run, and Analysis. Following are brief summaries of each of the tab’s functions.

- The **Subjects Tab** allows for the creation and management of subject data in the current database.
- The **Setup Tab** allows the user to define specific tests and test configurations to be run.
- The **Run Tab** is where tests are carried out. Simple tests and advanced tests with custom configurations can be used.
- The **Analysis Tab** allows the user to view the results of the tests that have been run. Columns used to report user defined categories of data may be added here, and will be viewable in a window immediately following a run. Therefore, it may be beneficial to specify these columns immediately after designing a test and prior to running the test. Data can also be exported into comma separated value (*.csv) files.

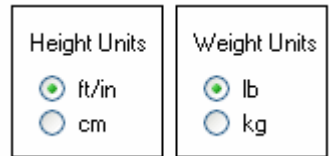
Subjects Tab

The subjects tab allows the user to view and modify the subject database. Before a test can be run, there must be at least one subject entered into the database. Subject data can be managed from this page, and unused entries may be deleted if necessary. However, once a subject has completed a test in Universal Timer, it may not be removed from the database.



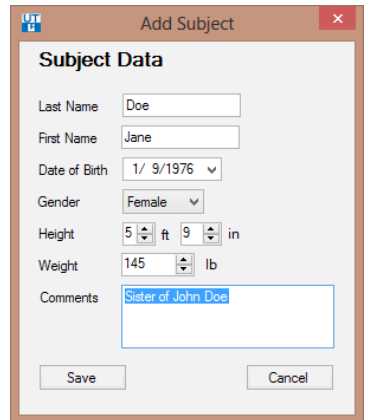
Converting Units for Height and Weight

Universal Timer allows the user to select between using standard and metric units when reporting information associated with subjects including height and weight. By clicking the desired unit in the box associated with either height or weight, the user is able to change how current subjects' attributes are displayed on the subjects tab as well as how new subject information will be entered into the database. Both height and weight can be reported using the same unit type, or each attribute can be reported using a different unit type.



Adding a New Subject

1. Click "Add" on the subjects tab to bring up a new window labeled "Add Subject".
2. Enter the subject's last and first names by clicking and typing them into the respective fields.
3. Select the subject's birthday by using the associated drop-down menu. Month and year can be selected individually and more rapidly by clicking the currently displayed month or year.
4. Select the subject's gender by clicking and utilizing the associated drop-down menu.
5. Input the subject's height and weight by utilizing the respective fields. These fields are dynamic based on whether the currently selected units are in standard or metric.
6. Add comments about the subject by clicking inside the associated field and entering any relevant information that has not been covered by the previous fields.
7. Click "Save" to add the new subject to the database.



Editing an Existing Subject

1. Select the subject whose information requires editing by clicking the associated row in the subjects table.
2. Click “Edit” on the subjects tab to bring up the “Modify Subject” window.
3. As this is the same window used to create a new subject, all of the previously entered information will be used to populate the appropriate fields. Click inside the desired field to edit the associated attribute.
4. If necessary, refer to *Adding a New Subject* for more information on the entry of subject information.
5. Click “Save” to apply the edits to the selected subject.

Removing a Subject from the Database

1. Select the subject whose information is to be removed from the database by clicking the row containing that subject’s information in the subjects table. **Note: If the selected subject has completed any tests, it cannot be removed.**
2. Click “Delete”. A dialog box will appear, asking the user to confirm the deletion of the selected subject.
3. Click “Yes” to proceed.
4. Any subject deleted in this way cannot be recovered except by adding a new subject with identical information.

Organizing the Table of Subjects

On the subjects tab, the table of subjects displayed can be organized by any of the attributes used to define a column. By clicking the column heading desired for the organization of the table, the entries will be sorted alphanumerically using the data in that column. For instance, the user can click the Height column heading to sort the entries in the table by height from shortest to tallest. A subsequent click in the same column heading will sort the entries in the inverse order. For this example, subjects will then be sorted from tallest to shortest. This technique can be extremely useful if the user would like apply a unique subject order since the comment column can be used to sort entries as well.

Setup Tab

Universal Timer allows for two types of setups based on the number of timers available, and the number of subjects to be tested simultaneously. If the user is to test a single subject at a time, using a single timer, a simple setup is adequate to accomplish what is required. However, if multiple subjects are to be tested simultaneously, or the user wishes to use more than a single timer, an advanced setup is required to accomplish this. Because of the complexity of an advanced setup in comparison to a simple setup, these two types will be covered separately in this guide.

Note: Once a setup has been started, it cannot be converted to the alternate setup type. Any simple setup can be accomplished using the advanced setup method, therefore if a setup that currently qualifies as a simple setup may ever need to be run as an advanced setup, it is recommended that the setup be created using advanced mode from the start.

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| | | | | | |
|--------|--------------|-----------|-----------|---------|---------------|
| Status | Open | Open | Open | Open | Flash LED |
| Input | 1 | 2 | 3 | 4 | Single Beep |
| Alias | Start Button | Event One | Event Two | Input 4 | Multiple Beep |

The Hardware Tester

1. The hardware tester, as shown above, can be used to test the connected device. Input channels will display “Open” or “Closed” based on the current status of the corresponding hardware. An input with no connected peripheral device will display “Open”. Each input can be tested using this display. The “Flash LED” button flashes the power indicator on the device multiple times. The “Single Beep” and “Multiple Beep” buttons can be used to test the auditory start and stop signals, respectively. When working properly, the device will emit the requested tone upon clicking these buttons.
2. While using a simple setup, the alias of each input can be renamed using the hardware tester as well. Click inside the alias field associated with the input to be renamed in order to edit the alias.
3. When using an advanced setup, multiple timers are supported. In order to change between the currently connected timers, use the drop-down list in the “Universal Timer” box in the lower-left portion of the window.
4. When using an advanced setup, the output triggers can be tested using the box in the lower-right portion of the window. Select whether the attached triggers are “Active High” or “Active Low” and then click the “Test All” button to send a 1 second pulse to each trigger. Be sure that the correct radio button (“Active High” or “Active Low”) is selected when inserting a trigger. If the wrong option is selected, the trigger will be continuously activated when plugged in.

Universal Timer

Alias [Serial Number]

box 1 [123456] ▼

Triggers

Test All

☒ Active High

☐ Active Low

Managing Setups

Changing Setup Mode

Two radio buttons in the upper-left corner of the Setup tab define whether the software is in Simple or Advanced setup mode. To switch the setup mode from Simple to Advanced or from Advanced to Simple:

1. Select the radio button near the upper-left corner corresponding to the desired mode. A dialog box will appear, making sure that a change of setup modes is actually desired. **Note: Be sure to save any previous work before beginning a new setup. Unsaved changes will be lost.**
2. Click “Yes” to proceed with the mode change. The dialog to name and save the newly created test will appear. Enter the desired name and click “Save”.

Creating a New Setup

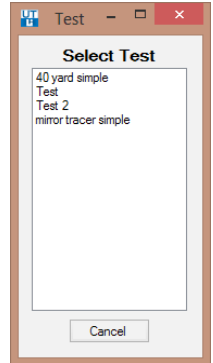
1. Click the “New” button near the top of the Setup tab.
2. A “Save Test” dialog will appear. Enter the name desired for the new test and click “Save”. Tests must be named before they can be produced. Note that the name of the test may be modified at a later time.

Saving a Setup

1. Click the “Save” button near the top of the Setup tab.
2. The “Save Test” dialog will appear. Modify the name if desired.
3. Click “Save” on the “Save Test” dialog.
4. **Once a test has been used in a run, it may not be edited under the same name.** However, an open test can be saved under another name at any time by clicking the “Save” button and entering a new name.

Loading and Editing a Setup

1. Click “Load” near the top of the Setup tab. If another setup is already open that has changes that have not been saved, the user will be asked if they would like to continue without saving. If the current setup changes do not need to be saved, click “Yes” to proceed.
2. A new window labeled “Test” will open.
3. Click the name of the desired test in the list to open it.
4. If an Advanced setup with more than 1 configuration is selected, a new window labeled “Configuration” will open. Select the desired configuration.
5. The settings of the chosen setup will populate the appropriate fields within the setup tab in the same format as a newly created setup.
6. All fields can be edited in the same way that they were initially created.
7. If a loaded setup has already been used in a run, it may not be edited and saved under the same name. In order to edit a used setup, first save it again using a different name.



Deleting a Setup

1. While an unwanted test setup is currently open, click the “Delete” button.
2. If the test setup has been used in a run, a message will pop up that reads, “[Setup] appears in the results table. Unable to delete.” **Note: Any setup used in a run cannot be removed from the database.**
3. If the setup can be removed, a window will pop up prompting the user to confirm the desire to proceed with the deletion.
4. Click “Yes” to remove the current test setup from the database.

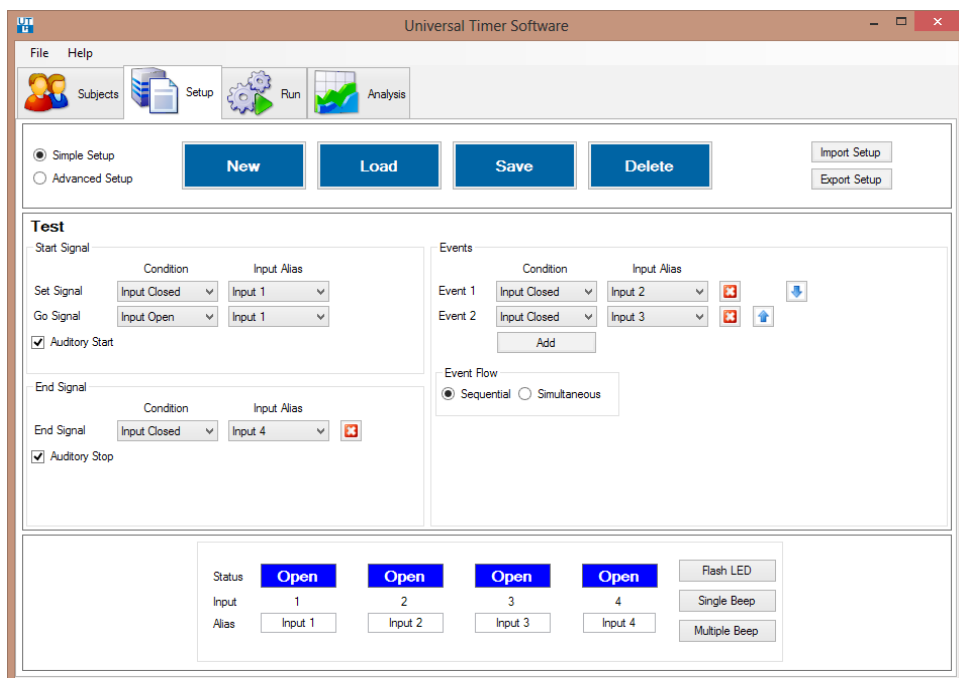
Exporting a Setup

1. Load or create a new test setup to be exported.
2. Click the “Export” button in the upper-right portion of the window.
3. The “Save As” window will appear. The user is able to designate the file name and location of the export. Setup files are exported using a *.xml extension.
4. Click “Save” when finished.

Importing a Setup

1. If another setup is currently open, make sure to save any work before opening another file.
2. Click the “Import” button in the upper-right portion of the window.
3. The “Open” window will appear. Navigate to the proper file location.
4. Setup files should appear in the list as *.xml files. Click the desired file to be imported into Universal Timer.
5. Click “Open” to import the file.
6. The user will be prompted to save imported files immediately upon opening. Type the desired name, and click “Save”.

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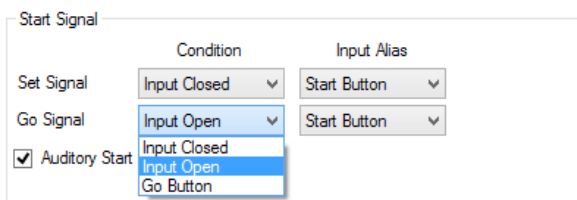


Designing a Simple Setup

A simple setup uses a single timing device to test one subject at a time.

Creating a Simple Setup

1. In the “Start Signal” box, the user is able to define the device input that will trigger the start of the test.
2. The “Go Signal” determines when the timer begins. In the “Condition” drop-down list, the user may choose between using an input on the device for this signal or using a button within the software, so that the user is able to control the start of the test. The user may choose the type of signal required from the device if a device controlled signal is desired. From the inputs available in the “Input Alias” drop-down list, the user is also able to select which input will be used to perform this function.
3. The “Set Signal” is a condition that must be true when the “Go Signal” is satisfied in order for the timer to actually begin. If the “Go Signal” occurs while the “Set Signal” is false, the user will be notified and the software will continue to wait for the “Go Signal”. In the “Condition” drop-down list, the user may choose between using an input on the device for this signal or having no set signal at all. The user may choose the type of signal required from the device if a device controlled signal is required. From the inputs available in the “Input Alias” drop-down list, the user is also able to select which input will be used to perform this function.



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4. If a beep is desired to accompany the start of the test, check the "Auditory Start" box.
5. In the "Events" box, the user is able to define multiple time-stamped events that take place within the test. To add a new event, click the "Add" button. To remove an event, click the red "X" icon associated with the unwanted event.



Events

| | Condition | Input Alias | | |
|----------------|--------------|-------------|--|--|
| Event 1 | Input Closed | Event One | | |
| Event 2 | Input Closed | Event Two | | |
| <div>Add</div> | | | | |

Event Flow


☒ Sequential ☐ Simultaneous

6. Once events have been added, they may be defined by the user. In the "Input Alias drop-down lists, the inputs used for a particular event can be chosen from those currently available. In the example above, the inputs were named accordingly, so that they would be easily associated with the proper events.
7. For each event, the "Condition" drop-down list can be used to choose between a closed or open status to designate the fulfillment of the event.
8. Once multiple events have been entered into the list, they can be organized by clicking the appropriate up and down icons associated with the event to be moved.
9. The "Event Flow" box contains two options that are used to determine the way that events are carried out. Sequential flow dictates that events must be completed in order, while simultaneous flow allows events to be completed in any order.
10. Select the desired flow type by clicking on its name in the "Event Flow" box.
11. An end signal can be used to mark the end of a test, and is required when using a simultaneous event flow. Any test must have at least one event or an end signal.
12. Click "Add" in the "End Signal" box.
13. To choose an end signal type, use the "Condition" drop-down list to pick from a list of five types. "Event Count" allows the completion of a specified event to designate the end of the test. "Elapsed Time" allows the subject to complete the events as many times as possible within a certain time limit. "Input Open" and "Input Closed" rely on the status of a specified input in order to signal the end of a test. "Stop Button" allows the user to end the test within the software.




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End Signal

| | Condition | Event | Repetitions | |
|---|--|---------|-------------|---|
| End Signal | Event Count | Event 1 | 1 |  |
| <input checked="" type="checkbox"/> Auditory Stop | Event Count Elapsed Time Input Closed Input Open Stop Button | | | |


- a. If “Event Count” is selected, the user will be required to designate which event will signal the end of the test within the “Event” drop-down list. The number of times this event should be completed before the test ends can be selected using the “Repetitions” field.

End Signal

| | Condition | Event | Repetitions | |
|---|-------------|---------|-------------|---|
| End Signal | Event Count | Event 1 | 5 |  |
| <input checked="" type="checkbox"/> Auditory Stop | | | | |


- b. If “Elapsed Time” is selected, the user will be required to set an end time for the test by using the “Time” field. Time is measured in seconds.

End Signal

| | Condition | Time (s) | |
|---|--------------|----------|---|
| End Signal | Elapsed Time | 7.000 |  |
| <input checked="" type="checkbox"/> Auditory Stop | | | |

- c. If either “Input Open” or “Input Closed” is selected, the user will be required to specify which input channel will be used to designate the end of the test. In the case of the example below, the alias of Input 4 was changed to “End Button” so that it would be more easily associated with the end signal.

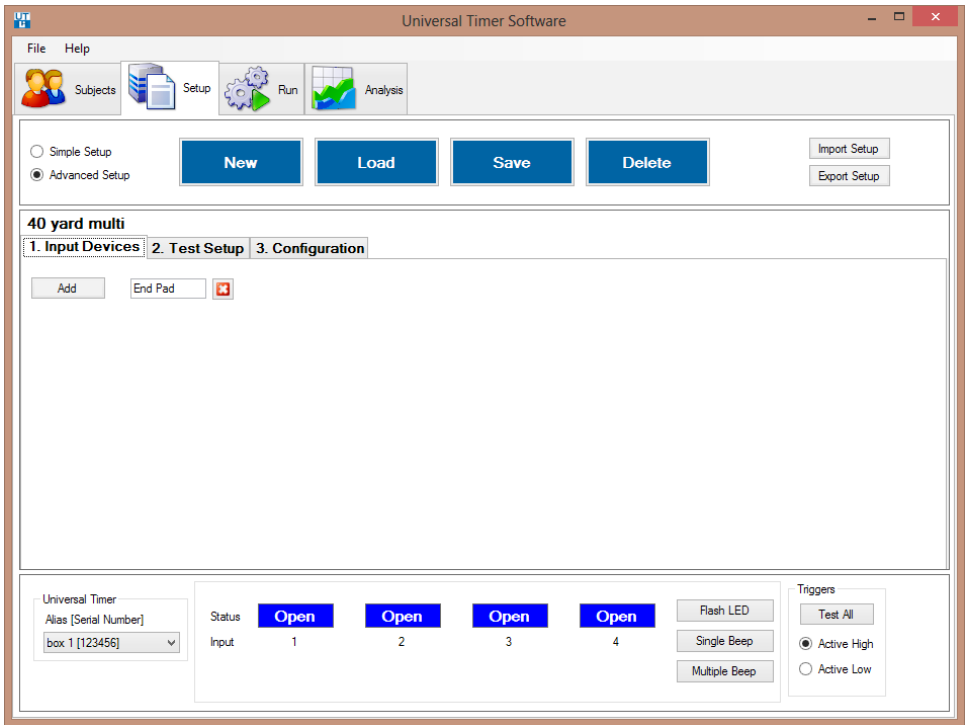
End Signal

| | Condition | Input Alias | |
|---|--------------|-------------|---|
| End Signal | Input Closed | End Button |  |
| <input checked="" type="checkbox"/> Auditory Stop | | | |

- d. If “Stop Button” is selected, no other action is required at this point. The user will be able to manually end the test using a button within the software.

14. If a beep is to accompany the end signal, check the “Auditory Stop” box.

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Designing an Advanced Setup

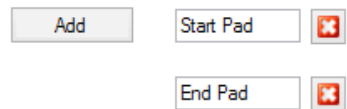
Designing an advanced setup is broken into 3 distinct stages:

1. Specification of input devices
2. Design of the test
3. Creating one or more configurations matching the input devices to the hardware

Each of these stages is represented by a tab in the software and is described below. For easiest setup, the stages should be followed in order, with each stage being completed before moving on to the next.

Specify Input Devices

1. An input device is any physical device that is plugged into the inputs on the Universal Timer. Examples of input devices include a switch mat and an IR beam.
 2. Go to the "Input Devices" sub-tab on the Setup tab.
 3. Click "Add".
 4. In the box that appears, type the name of the input device to add.
 5. Repeat steps 3 and 4 for each input device to be added.
- When more than one subject is to be tested at a time, enter only the input devices required by a single subject. For example, if 4 switch mats are being used to test 4 subjects at the same time, only create 1 input device called "switch mat". Do not create a separate input device for the switch mats being used by each subject. The individual switch mats will be assigned when creating the configuration.



Design the Test

1. Go to the “Test Setup” sub-tab on the Setup tab.
2. Follow the steps for “Designing a Simple Test” above, keeping the following in mind:
 - a. The test is designed for a single subject. Provision for testing multiple subjects will be added when designing the configuration.
 - b. The available Input Aliases are the items entered on the “Input Devices” tab.

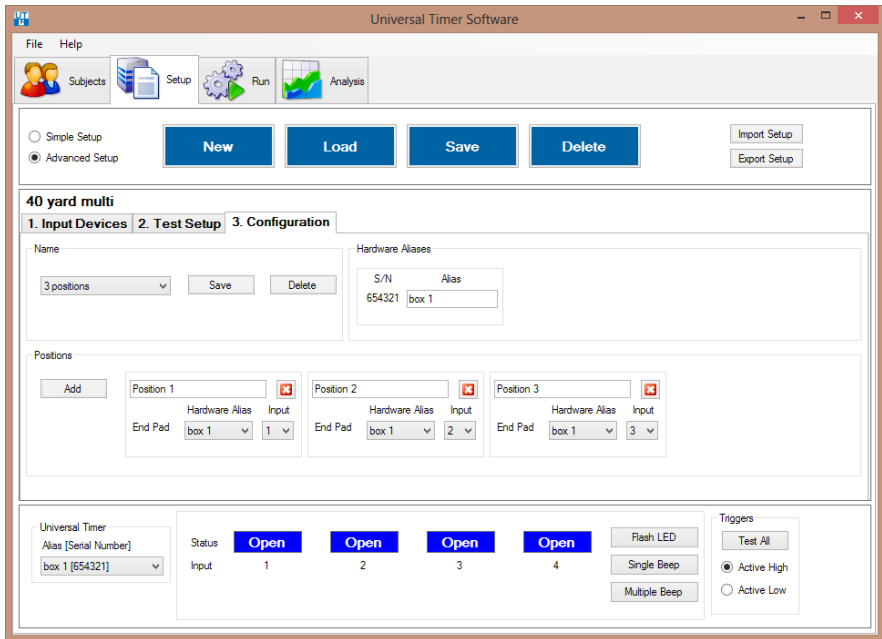
| Item | Trigger | Duration |
|------------|-----------|----------|
| Set Signal | None | 1.0 s |
| Go Signal | None | 1.0 s |
| Event 1 | Trigger 1 | 0.5 s |
| Event 2 | None | 1.0 s |
| Event 3 | Trigger 2 | 1.0 s |
| Event 4 | None | 1.0 s |
| End Signal | None | 1.0 s |

☒ Active High
☐ Active Low

Accept Cancel

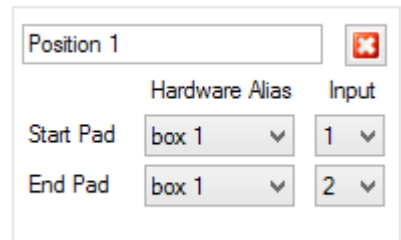
3. If needed, specify the trigger outputs to be used in the “Triggers” box located under the “End Signal” box. A trigger is a powered device plugged into the “Trig 1” or “Trig 2” ports that is activated in response to specified actions within the test. Before the triggers can be assigned, all items need to be assigned in the test.
 - a. Click the “Assign” button in the Triggers box. This brings up the “Assign Triggers” form.
 - b. By selecting from the “Trigger” and “Duration” drop-down menus, assign the desired trigger and trigger length to the Set Signal, Go Signal, Events, and End Signal.
 - c. Click the “Active High” or “Active Low” radio button in the lower-right corner of the form as appropriate.
 - d. Click on “Accept”.

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Design One or More Configurations

1. Go to the "Configuration" sub-tab on the Setup tab.
2. The "Hardware Aliases" box displays the currently connected Universal Timers. Each one can be identified by its unique serial number. In order to change the way a particular timer is referred to in the software, click inside the "Alias" field and edit the current name.
3. In the "Positions" box, click the "Add" button until the desired number of positions has been added. Each position represents a single subject to run the test at a given time. Positions are named, for example, "Position 1" by default. This name can be changed by clicking in the field and entering the desired name.
4. The items specified on the Input Devices tab will appear along the left side of the box for each position. For each item, specify the Universal Time (Hardware Alias) and input port to which the item is plugged. In this example, there are 3 positions; all 3 positions are started based on pressing a "Go" button and the 3 positions are ended using a different pad (plugged into box 1, inputs 1 through 3, respectively).
5. To remove a position, click on the delete button in the upper-right corner of the box for that position.
6. Additional configurations can be added at any time by following the instructions below under "Managing Configurations". Configurations will be tied to the test setup they are associated with upon creation. While configurations are limited to association with only one test setup, each test setup may have multiple configurations.



Managing Configurations

Creating a New Configuration

1. In the drop-down menu within the Name box on the Configuration sub-tab on the Setup tab, select “[New Configuration]”.
2. If changes to the currently loaded configuration have not been saved, an appropriate message will appear.
3. A “Save Configuration” dialog will appear. Enter a name for the configuration and click on “Save”.
4. Edit the configuration.

Saving a Configuration

1. Click on “Save” in the Name box.
2. A “Save Configuration” dialog will appear with the current name for the configuration already present.
3. Modify the name of the configuration if desired.
4. Press “Save”.
5. Saving a configuration also saves any changes to the underlying test setup.
6. An existing configuration can be duplicated and renamed by using this method as well.

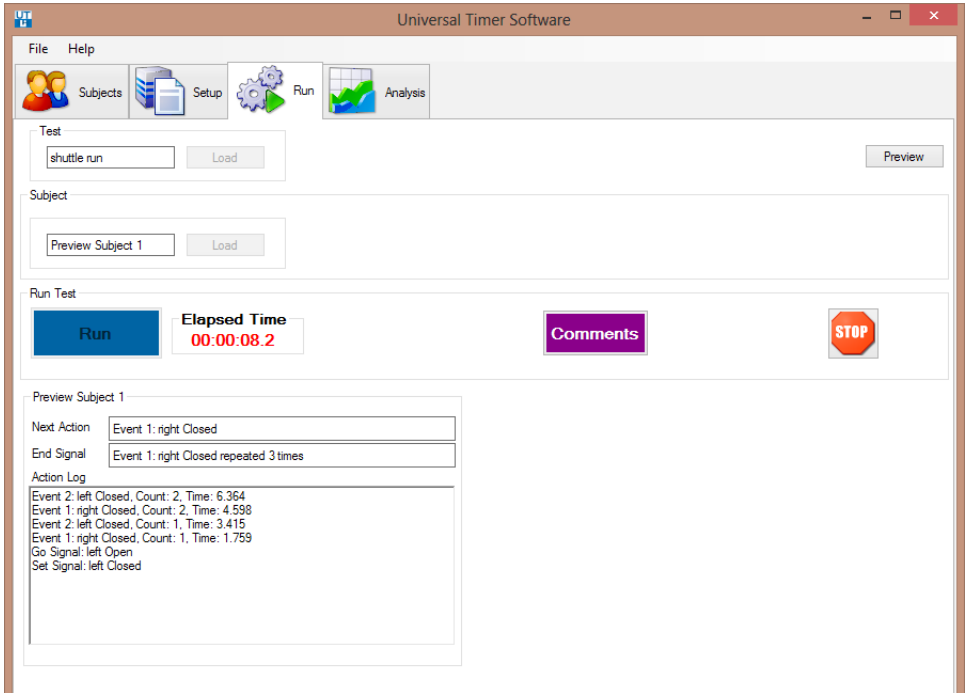
Loading and Editing a Configuration

1. Select the configuration to load from the drop-down at the left edge of the Name box. If unsaved changes have been made to the currently loaded configuration, the user will be asked if they would like to continue without saving. If the current configuration does not need to be saved, click “Yes” to proceed.
2. The settings of the chosen configuration will populate the appropriate fields within the configuration tab.
3. All fields can be edited in the same way that they were initially created.

Deleting a Setup

1. While an unwanted configuration is open, click the “Delete” button in at the right edge of the Name box on the Configuration sub-tab..
2. If the configuration has been used in a run, a message will pop up that reads, “[Setup] appears in the results table. Unable to delete.” **Note: Any configuration used in a run cannot be removed from the database.**
3. If the configuration can be removed, a window will pop up prompting the user to confirm the desire to proceed with the deletion.
4. Click “Yes” to remove the current configuration from the database.

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Run Tab


The run tab is used to preview and run tests by selecting the test to be performed, the proper configuration for advanced tests, and the subject(s) to perform the test.

Running a Simple Test

1. Click the "Load" button in the "Test" box. A window labeled "Test" will open, giving the user a list of tests available within the database.
2. Click the name of the simple test to be run. The window will close and the test name will appear in the "Test" box.
3. Click the "Load" button in the "Subject" box. A window labeled "Subject" will open, giving the user a list of subjects available within the database.
4. Click the name of subject who will be performing the test. The window will close and the subject name will appear in the "Subject" box.
5. If comments regarding the current subject are necessary, click the "Comments" button in the "Run Test" box. A window labeled "Edit Comments" will open.
6. Edit the comment regarding the current subject by clicking inside the "Comment" field.
7. Click "Save" when finished editing comments.
8. Click the "Run" button to begin the test.

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Run Test

| | | | | | |
|------------|-----------------------------------|-----------|-------------|-----------------|---|
| Run | Elapsed Time 00:00:00.0 | GO | STOP | Comments |  |
|------------|-----------------------------------|-----------|-------------|-----------------|---|

9. If the device was set up to signal the “Set” and “Go” signals, use it as per the test set up to start the timer when ready. Otherwise, click the “GO” button in the “Run Test” box to start the timer.
10. As the subject completes the required events, the device will record them as per the test setup.
11. If the device was set up to signal the end of the test, the test will end when appropriate. Otherwise, click the “STOP” button in the “Run Test” box to mark the end of the test.
12. The stop sign button can be used at any time as an emergency stop. The user will be given the option of whether or not to save the data from an aborted run.
13. A window labeled “Results” will pop up, giving information specific to the run. Three columns will be displayed for each subject by default: “Test Name”, “Subject Name”, and “Experiment Time”. User defined columns added using the **Analysis Tab** will also appear here.
14. If comments regarding the current subject are necessary, click the “Comments” button in the “Results” window. A window labeled “Edit Comments” will open.
15. Edit the comment regarding the current subject by clicking inside the “Comment” field.
16. Click “Save” when finished editing comments.
17. Click “OK” when finished viewing results.

| | |
|--|---|
| <p>Position 1 : Brown, Lisa</p> <p>Next Action <input type="text" value="TEST COMPLETE"/></p> <p>End Signal <input type="text" value="Event 1: End Pad Closed"/></p> <p>Action Log</p> <p>TEST COMPLETE End Signal: Event 1: End Pad Closed, Time: 4.585 Event 1: End Pad Closed, Count: 1, Time: 4.585 Go Signal: Press Go Button</p> | <p>Position 2 : Smith, Stanley</p> <p>Next Action <input type="text" value="TEST COMPLETE"/></p> <p>End Signal <input type="text" value="Event 1: End Pad Closed"/></p> <p>Action Log</p> <p>TEST COMPLETE End Signal: Event 1: End Pad Closed, Time: 5.825 Event 1: End Pad Closed, Count: 1, Time: 5.825 Go Signal: Press Go Button</p> |
| <p>Position 3 : White, Mary</p> <p>Next Action <input type="text" value="Event 1: End Pad Closed"/></p> <p>End Signal <input type="text" value="Event 1: End Pad Closed"/></p> <p>Action Log</p> <p>Go Signal: Press Go Button</p> | |

Running an Advanced Test

1. Click the “Load” button in the “Test” box. A window labeled “Test” will open, giving the user a list of tests available within the database.
2. Click the name of the advanced test to be run. The window will close and the test name will appear in the “Test” box.

Lafayette Instrument Universal Timer and Software

- Click the "Load" button in the "Configuration" box. A window labeled "Select Configuration" will open, giving the user a list of configurations associated with the currently selected test.
- Click the name of the configuration to be used. The window will close and the configuration name will appear in the "Configuration" box.
- For each individual subject to be tested in the run, perform STEPS 6-7. Positions may be left empty as well.
- Click the "Load" button associated with the desired position (in the example below, the 3 positions are labeled Sub1 – Sub3) in the "Subject" box. A window labeled "Subject" will open, giving the user a list of subjects available within the database.

Subjects

| Position 1 | Position 2 | Position 3 |
|--|--|--|
| <input type="text"/> <input type="button" value="Load"/> | <input type="text"/> <input type="button" value="Load"/> | <input type="text"/> <input type="button" value="Load"/> |

- Click the name of subject who will be performing the test. The window will close and the subject name will appear in the appropriate position within the "Subject" box.
- If comments regarding the current subjects are necessary, click the "Comments" button in the "Run Test" box. A window labeled "Edit Comments" will open.
- Edit the comment regarding each subject by clicking inside the associated position field.
- Edit an overall comment for the entire run by clicking inside the "Overall Comment" field.
- Click "Save" when finished editing comments.
- Click the "Run" button to begin the test.
- If the device was set up to signal the "Set" and "Go" signals, use it as per the test set up to start the timer when ready. Otherwise, click the "GO" button in the "Run Test" box to start the timer.

Run Test

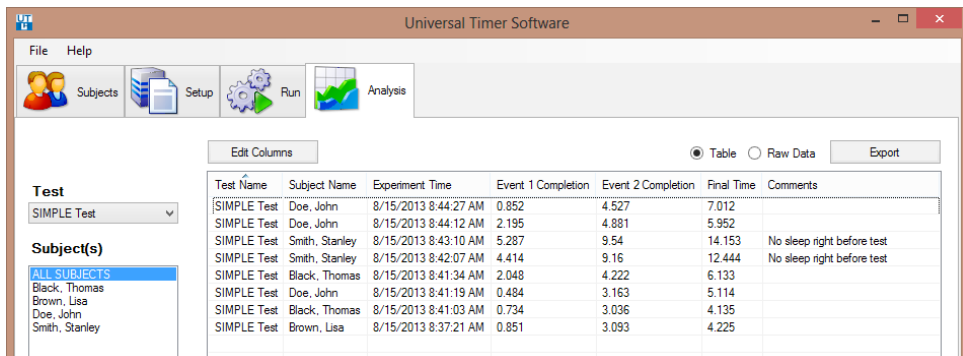
| | | | | | |
|------------------------------------|-----------------------------------|-----------------------------------|-------------------------------------|---|-------------------------------------|
| <input type="button" value="Run"/> | Elapsed Time 00:00:00.0 | <input type="button" value="GO"/> | <input type="button" value="STOP"/> | <input type="button" value="Comments"/> | <input type="button" value="STOP"/> |
|------------------------------------|-----------------------------------|-----------------------------------|-------------------------------------|---|-------------------------------------|

- As the subjects complete the required events, the device will record them as per the test setup.
- If the device was set up to signal the end of the test, the test will end when appropriate. Otherwise, click the "STOP" button in the "Run Test" box to mark the end of the test.
- The stop sign button can be used at any time as an emergency stop. The user will be given the option of whether or not to save the data from an aborted run.
- A window labeled "Results" will pop up, giving information specific to the run. Three columns will be displayed for each subject by default: "Test Name", "Subject Name", and "Experiment Time". User defined columns added using the **Analysis Tab** will also appear here.
- If comments regarding the current subjects are necessary, click the "Comments" button in the "Results" window. A window labeled "Edit Comments" will open.
- Edit the comment regarding each subject by clicking inside the associated position field.
- Edit an overall comment for the entire run by clicking inside the "Overall Comment" field.
- Click "Save" when finished editing comments.
- Click "OK" when finished viewing results.

Previewing a Test

The “Preview” button allows the user to run a test without saving the results to the database. This is useful for determining if the test has been properly designed.

1. Select the test to be previewed.
2. If this is an advanced setup, select the configuration to be previewed.
3. Press the “Preview” button (upper-right corner). This will populate the Subject(s) with preview subjects.
4. The test will run as if the “Run” button had been pressed.
5. The results will not be saved to the database.



Analysis Tab

The analysis tab is used to view information for subjects who have completed tests. Columns providing more information regarding test results may also be added on this tab. These columns will also appear in the results portion of the **Run Tab**. Once data has been properly organized, the user is also able to export the raw data from a test in its entirety. Specific sets of data based on selected subjects may also be exported.

Viewing Data

1. Select the name of the test to be viewed from the “Test” drop-down.
2. By default, data for all subjects who have completed the selected test will be shown. However, each subject may be looked at separately as well.
3. In the “Subjects” list, click the name of the subject for which data is to be viewed. All subjects associated with a test can be viewed again by clicking “ALL SUBJECTS” in this same list.
4. Any combination of subjects can be selected from the list by holding the “Ctrl” button on the keyboard while clicking the desired subjects’ names.
5. Data for the currently selected test and subjects will be displayed in the table. Three columns will be displayed by default: “Test Name”, “Subject Name”, and “Experiment Time”.

Adding Columns

1. Columns that are added by the user are specific to the test selected at the time of addition. Select the test for which columns are to be added by its name in the “Test” drop-down.
2. Click the button labeled “Edit Columns” just above the upper-right corner of the data display. The “Edit Columns” form will open.
3. Click “Add” to add columns to the list which can be edited to suit the user’s needs.

| Text Field | Dropdown | Icons |
|---------------------|------------------|----------------------|
| Test Name | Test Name | [Delete] [Up] [Down] |
| Subject Name | Subject Name | [Delete] [Up] [Down] |
| Experiment Time | Experiment Time | [Delete] [Up] [Down] |
| Final Time | End Time | [Delete] [Up] [Down] |
| Event 1 Count | Event Count | [Delete] [Up] [Down] |
| Event 1 Completion | Event Split Time | [Delete] [Up] [Down] |
| Input 1 Closed Time | Input Duration | [Delete] [Up] [Down] |
| Event 1 to Event 2 | Interval | [Delete] [Up] [Down] |
| Comments | Comments | [Delete] [Up] [Down] |

4. Columns can be defined based on six different types.
 - a. End Time: Displays the time when the test end signal was recorded.
 - b. Event Count: Displays the number of times that a specified event occurred. The event can be selected from the drop-down list that appears when this option is chosen.
 - c. Event Split Time: Displays the elapsed time at which a specified split occurred for a specified event. The event and split numbers can be selected from the appropriate drop-down lists that appear when this option is selected. The maximum split number is determined from the maximum number of times that any of the events occurs in the test.
 - d. Input Duration: Displays the length of time that the selected input was in a specified state. The input and state can be selected from the appropriate drop-down lists that appear when this option is selected.
 - e. Interval: Displays the time interval between two event splits. The two event splits can be selected from the drop-down lists that appear when this option is selected.
 - f. Comments: Displays applicable user comments.
5. Edit the heading of each column by clicking in the associated field on the left.
6. Delete any unwanted columns by clicking the delete icon.
7. Move columns up and down by clicking on the up and down arrows.
8. Click “Save” in the lower-right corner to apply the new columns and changes to existing columns to the database.



Model 35930 User Instructions

Exporting Viewed Data

1. Select the desired test from the “Test” drop-down.
2. Select the desired subjects from the “Subjects” list. Refer to *Viewing Data* for more information if necessary.
3. If necessary, select individual runs from the table (in case a single subject has runs that aren’t required, for instance) to be exported.

Test
SIMPLE Test

Subject(s)
ALL SUBJECTS
Black, Thomas
Brown, Lisa
Doe, John
Smith, Stanley

| Test Name | Subject Name | Experiment Time | Event 1 Completion | Final Time | Event 2 Completion | Comments |
|-------------|---------------|----------------------|--------------------|------------|--------------------|----------|
| SIMPLE Test | Doe, John | 8/15/2013 8:44:27 AM | 0.852 | 7.012 | 4.527 | NA |
| SIMPLE Test | Doe, John | 8/15/2013 8:44:12 AM | 2.195 | 5.952 | 4.881 | NA |
| SIMPLE Test | Black, Thomas | 8/15/2013 8:41:34 AM | 2.048 | 6.133 | 4.222 | NA |
| SIMPLE Test | Doe, John | 8/15/2013 8:41:19 AM | 0.484 | 5.114 | 3.163 | NA |
| SIMPLE Test | Black, Thomas | 8/15/2013 8:41:03 | | | 336 | NA |
| SIMPLE Test | Brown, Lisa | 8/15/2013 8:37:21 | | | 193 | NA |

Export Table to CSV

Export Selection to CSV

Copy Table

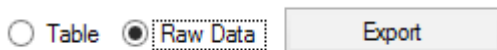
Copy Selection

Export Time Series to CSV

4. Right click in the table to bring up a list of options.
 - a. Export Table to CSV: Allows the user to export the entire table as is to a comma separated value (*.csv) file. The same result is obtained when selecting the “Table” radio button and clicking the “Export” button in the upper-right corner of the screen.
 - b. Export Selection to CSV: Allows the user to export the selection from the table to a comma separated value (*.csv) file.
 - c. Copy Table: Copies the entire table to the clipboard so that it can be pasted in another document, such as a Microsoft Word document.
 - d. Copy Selection: Copies the selection from the table to the clipboard so that it can be pasted in another document, such as a Microsoft Word document.
 - e. Export Time Series to CSV: Creates a comma separated value (*.csv) file containing a millisecond-resolution time series of the Event-determined open (indicated by 0) or closed (indicated by 1) status of each input used in the test. In order for this option to function correctly, the closing and opening of a single input need to be consecutive Events in the schedule.
5. When choosing to save data as a (*.csv) file, the “Save As” window will open. The user can then choose the file name and location for the exported file.
6. Click “Save” to create the file at the selected location.

Exporting Raw Data

1. Select the desired test from the “Test” drop-down.
2. Select the “Raw Data” radio button and click the “Export” button located in the upper-right corner. The “Save As” window will appear.
3. Choose the file name and location for the exported comma separated value (*.csv) file.
4. Click “Save” to save the raw data file in the indicated location.
5. The raw data file contains all recorded data for all the runs of the selected test.



Appendix A: Universal Timer Software Database Placement Override

The Universal Timer Software stores database and experiment setups in the user's Application Data folder. This limits access to the database and setups to the user who installed the software. If multiple users are required to have access to the same database and setups, the following process should be followed:

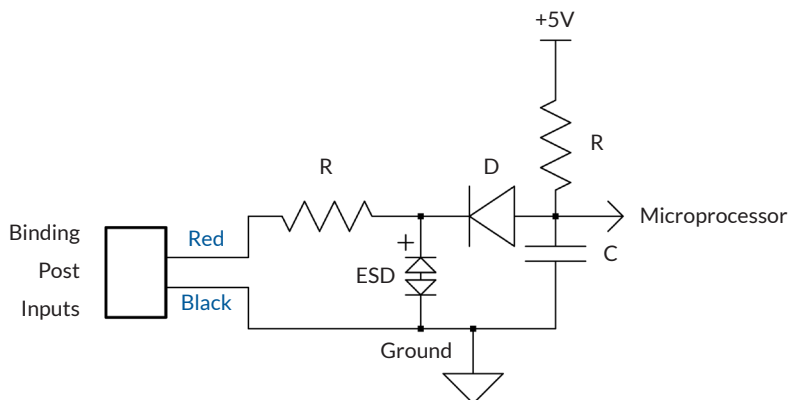
1. Close the Universal Timer software.
2. Using File Explorer, create the directory:
C:\ProgramData\Lafayette Instrument
3. Copy the below directory to the directory created in step 2.
C:\Users\[USERNAME]\AppData\Roaming\Lafayette Instrument\Universal Timer
4. Create an empty file named "override.dat" in the directory created in step 3. The full path to this file will be: C:\ProgramData\Lafayette Instrument\Universal Timer\override.dat

| This PC > Local Disk (C:) > ProgramData > Lafayette Instrument > Universal Timer | | | |
|--|--------------------|-------------|------|
| Name | Date modified | Type | Size |
| Database | 12/14/2016 1:37 PM | File folder | |
| ExperimentSetups | 12/14/2016 1:37 PM | File folder | |
| CurrentState.xml | 12/14/2016 1:38 PM | XML File | 1 KB |
| override.dat | 12/14/2016 2:08 PM | DAT File | 0 KB |

New Universal Timer Software Database Location

5. The directory and file structure should appear like the below image.
6. Start the Universal Timer software.

Appendix B: 39530 Universal Timer - Input Schematic



- Inputs are Active Low or shunt to Ground (Black Binding Post) diode protected inputs.
- Internally the Input is pulled to +5V through a resistor. Sink current is 0.5mA.
- Inputs are ESD protected.

Terms and Conditions

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Phone, Fax, Email or Mail-in Orders

All orders need to be accompanied by a hard copy of your purchase order. All orders must include the following information:

- Quantity
- Part Number
- Description
- Your purchase order number or method of pre-payment
- Your tax status (include tax-exempt numbers)
- Shipping address for this order
- Billing address for the invoice we'll mail when this order is shipped
- Signature and typed name of person authorized to order these products
- Your telephone number
- Your email address
- Your FAX number

Domestic Terms

There is a \$50 minimum order. Open accounts can be extended to most recognized businesses. Net amount due 30 days from the date of shipment unless otherwise specified by us. Enclose payment with the order; charge with VISA, MasterCard, American Express, or pay COD. We must have a hard copy of your purchase order by mail, E-mail or fax. Students, individuals and private companies may call for a credit application.

International Payment Information

There is a \$50 minimum order. Payment must be made in advance by: draft drawn on a major US bank; wire transfers to our account; charge with VISA, MasterCard, American Express, or confirmed irrevocable letter of credit. Proforma invoices will be provided upon request.

Exports

If ordering instrumentation for use outside the USA, please specify the country of ultimate destination, as well as the power requirements (110V/60Hz or 220V/50Hz). Some model numbers for 220V/50Hz will have a "C" suffix.

Quotations

Quotations are supplied upon request. Written quotations will include the price of goods, cost of shipping and handling, if requested, and estimated delivery time frame. Quotations are good for 30 days, unless otherwise noted. Following that time, prices are subject to change and will be re-quoted at your request.

Cancellations

Orders for custom products, custom assemblies or instruments built to customer specifications will be subject to a cancellation penalty of 100%. Payment for up to 100% of the invoice value of custom products may be required in advance. Cancellation for a standard Lafayette Instrument manufactured product once the product has been shipped will normally be assessed a charge of 25% of the invoice value, plus shipping charges. Resell items, like custom products, will be subject to a cancellation penalty of 100%.

Exchanges and Refunds

Please see the cancellation penalty as described above. No item may be returned without prior authorization of Lafayette Instrument Company and a Return Goods Authorization (RGA#) number which must be affixed to the shipping label of the returned goods. The merchandise should be packed well, insured for the full value and returned along with a cover letter explaining the reason for return. Unopened merchandise may be returned prepaid within thirty (30) days after receipt of the item and in the original shipping carton. Collect shipments will not be accepted. Product must be returned in saleable condition, and credit is subject to inspection of the merchandise.

Repairs

Instrumentation may not be returned without first receiving a Return Goods Authorization Number (RGA). When returning instrumentation for service, please call Lafayette Instrument to receive a RGA number. Your RGA number will be good for 30 days. Address the shipment to:

Lafayette Instrument Company
3700 Sagamore Parkway North
Lafayette, IN 47904, USA.

Shipments cannot be received at the PO Box. The items should be packed well, insured for full value, and returned along with a cover letter explaining the malfunction. An estimate of repair will be given prior to completion ONLY if requested in your enclosed cover letter. We must have a hard copy of your purchase order by mail or fax, or repair work cannot commence for non-warranty repairs.

Damaged Goods

Damaged instrumentation should not be returned to Lafayette Instrument prior to a thorough inspection. If a shipment arrives damaged, note damage on delivery bill and have the driver sign it to acknowledge the damage. Contact the delivery service, and they will file an insurance claim. If damage is not detected at the time of delivery, contact the carrier/shipper and request an inspection within 10 days of the original delivery. Please call the Lafayette Instrument Customer Service Department for repair or replacement of the damaged merchandise.

Limited Warranty

Lafayette Instrument Company warrants equipment manufactured by the company to be free of defects in material and workmanship for a period of one year from the date of shipment, except as provided hereinafter. The original manufacturer's warranty will be honored by Lafayette Instrument for items not manufactured by Lafayette Instrument Company, i.e. resell items. This assumes normal usage under commonly accepted operating parameters and excludes consumable products.

Warranty period for repairs or used instrumentation purchased from Lafayette Instrument is 90 days. Lafayette Instrument Company agrees either to repair or replace, at its sole option and free of part charges to the customer, instrumentation which, under proper and normal conditions of use, proves to be defective within the warranty period. Warranty for any parts of such repaired or replaced instrumentation shall be covered under the same limited warranty and shall have a warranty period of 90 days from the date of shipment or the remainder of the original warranty period whichever is greater. This warranty and remedy are given expressly and in lieu of all other warranties, expressed or implied, of merchantability or fitness for a particular purpose and constitutes the only warranty made by Lafayette Instrument Company.

Lafayette Instrument Company neither assumes nor authorizes any person to assume for it any other liability in connection with the sale, installation, service or use of its instrumentation. Lafayette Instrument Company shall have no liability whatsoever for special, consequential, or punitive damages of any kind from any cause arising out of the sale, installation, service or use of its instrumentation. All products manufactured by Lafayette Instrument Company are tested and inspected prior to shipment. Upon prompt notification by the Customer, Lafayette Instrument Company will correct any defect in warranted equipment of its manufacture either, at its option, by return of the item to the factory, or shipment of a repaired or replacement part. Lafayette Instrument Company will not be obliged, however, to replace or repair any piece of equipment, which has been abused, improperly installed, altered, damaged, or repaired by others. Defects in equipment do not include decomposition, wear, or damage by chemical action or corrosion, or damage incurred during shipment.

Limited Obligations Covered by this Warranty

1. In the case of instruments not of Lafayette Instrument Company manufacture, the original manufacturer's warranty applies.
2. Shipping charges under warranty are covered only in one direction. The customer is responsible for shipping charges to the factory if return of the part is required.
3. This warranty does not cover damage to components due to improper installation by the customer.
4. Consumable and/or expendable items, including but not limited to electrodes, lights, batteries, fuses, O-rings, gaskets, and tubing, are excluded from warranty.
5. Failure by the customer to perform normal and reasonable maintenance on instruments will void warranty claims.
6. If the original invoice for the instrument is issued to a company that is not the company of the end user, and not an authorized Lafayette Instrument Company distributor, then all requests for warranty must be processed through the company that sold the product to the end user, and not directly to Lafayette Instrument Company.

Export License

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