Software Installation and Hardware Manual for Monkey CANTAB Intellistation

![Monkey CANTAB Intellistation device]

Lafayette Instrument
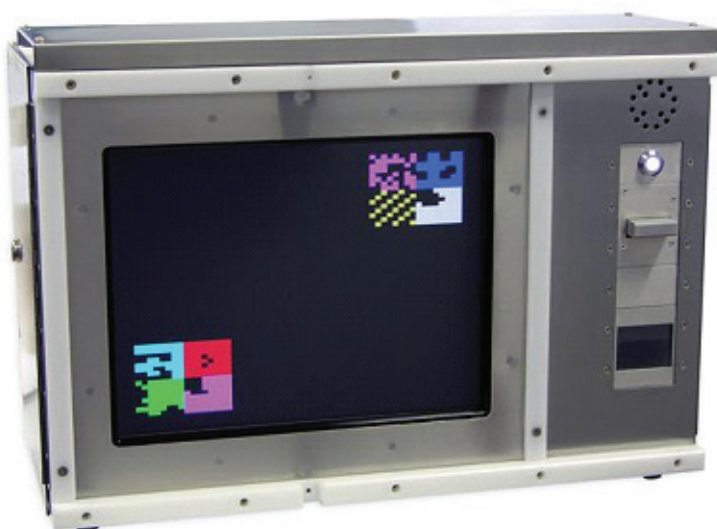
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1.   Hardware

This document is to be used as a software and hardware instruction manual for the CANTAB Intellistation supplied by Lafayette Instrument Company, Inc. for use with WhiskerServer Control Software.

1.1.   Intellistation Hardware

Specifications
- Power: 100-240 Vac 50/60 Hz (5 A fuse @ 110 Vac, 2.5 A fuse @ 220 Vac)
- Overall Dimensions (inches): 16" x 22" x 12" (H x W x D)
- Weight: approx 50 lbs (22.68 kg)
- Screen: IR toucharray, tempered glass with protected safety film

Hardware included in the CANTAB Intellistation

Qty	Description	Details
1	CANTAB Intellistation enclosure	Stainless Steel ruggedized case
1	PC	Windows Embedded Standard OS
1	Touchscreen Monitor	IR or otherwise noted
1	Control PCB	I/O Control, PC comm, audio, lickometer circuit
1	Virtual monitor	Emulates 2nd monitor, utilized for remoting software
3	External USB ports	USB2.0
1	LAN port	10/100/1000 Mbps RJ45 (cable not included)
1	External DVI-D connector	For an external DVI-D monitor (cable not included)
1	Lickometer Sensitivity Adjustment	Potentiometer used to fine tune the lickometer
1	Mains status LED	Indicates power to the Control PCB
1	Safety Relay (SR) status LED	Indicates that both Safety Relays are active
1	I/O status LED	Indicates that I/O are ready for testing
1	Fan	Maintains internal case temperature
1	Speaker	Reproduces PC audio to the subject
1	IEC Power inlet	100-240Vac 50-60Hz compatible, cable supplied

1.1.1 Status LED's

Located on the back panel of the CANTAB Intellistation, the status LED's can help to indicate hardware problems or the active status of the system.

1.1.1.1 Mains LED

1. If the LED is on, the control PCB, Touchscreen monitor, and Embedded PC have power applied.
2. If the LED is off, power is not applied.
3. If the IEC inlet is switched on and the LED is off, then the IEC inlet fuse or the internal board mounted fuse may be blown. Contact Lafayette Instrument Company for further troubleshooting.

1.1.1.2 Safety Relay (SR) LED

1. The Mains LED must be turned on in order for the SR LED to be active.
2. The SR LED will turn on upon entering the WhiskerServer (Ctrl+Alt+S). The WhiskerServer is set to turn on upon entering windows. Thus, communication to the Embedded PC has been established.
3. If the SR LED does not turn on when trying to enter WhiskerServer, there is a problem with communication to the control PCB. Contact Lafayette Instrument Company for further instructions.
4. If the LED is off, communication with the Embedded PC has ended, and no power will be applied to any internal or external accessories.

1.1.1.3 I/O LED

1. The Mains and SR LED's must be turned on in order for the I/O LED to be active.
2. The I/O LED will turn on upon entering WhiskerServer, if all connected I/O are working properly.
3. If the I/O LED does not turn on, one or more I/O accessories has a potential short, thus causing a control PCB fuse to trip.
4. Exit the WhiskerServer, remove all accessories from their respective connections, replace one of the accessories and enter WhiskerServer again.
5. Repeat step 4, continuing to connect accessories until the I/O LED does not turn on. This will indicate where the problem resides. Contact Lafayette Instrument Company for further troubleshooting.

1.1.2   Lickometer Sensitivity Adjustment (if supplied)

The lickometer sensitivity adjustment (located on the back panel of the CANTAB Intellistation) can be used to fine tune any type of Lafayette Instrument Company lickometer. By adjusting the sensitivity, the necessary distance from the tip of the lickometer sensor to the subject's tongue can be changed. Use a small flat-headed screwdriver to turn the potentiometer to the desired sensitivity.

1.1.3   Speaker

Located on the front panel of the CANTAB Intellistation, the speaker is used to reproduce audio cues to the subject. Rated at 90 dB+ @ 1 m the audio is internally fused to prevent damage to the speaker and audio circuit. The speaker will only make sound when the SR and I/O LEDs are working properly. Thus, audio will only be heard when WhiskerServer is running.

1.1.4   Virtual Monitor

The Virtual Monitor board is used to emulate a second monitor so that when using the CANTAB Communicator software to remotely control the Intellistation, one display can be presented to the subject while another display can be used for configuring CANTAB software.

If a physical second monitor is not attached, the Virtual Monitor is enabled. Windows will recognize the Virtual Monitor as a secondary monitor so that a second desktop can be enabled.

If a physical second monitor is attached, the Virtual Monitor is disabled, and a second desktop can be enabled and shown on the secondary monitor.

1.2   System Configurations

The CANTAB Intellistation can be configured as a stand-alone single station with external monitor, a networked single station, or a multiple station within a networked configuration. Since each CANTAB Intellistation contains its' own embedded PC. The three most fundamental configurations will be explained.

Note: DVI-D monitors are solely supported as external monitors. Keyboard, Mouse, DVI-D and LAN cables and DVI-D monitors are not included

1.2.1 Single Station Configuration

Operating the CANTAB Intellistation as a stand-alone test chamber can be easily done by connecting a local monitor to the DVI-D port, a USB keyboard, and a USB mouse to the CANTAB Intellistation. If internet access is required, connect a standard RJ45 LAN cable to the rear of the Intellistation. Testing can commence by following the standard CANTAB and WhiskerServer operating procedures.

1.2.2   Network Configuration Single Station

Operating the CANTAB Intellistation can be done using a Remote PC application or the included CANTAB Communicator* program. A remote PC can either run CANTAB as a client server or use a remote application to look into the Intellistation and administer CANTAB and WhiskerServer for all testing needs. In such a configuration an external monitor should not be needed, except as a potential clone of the subject's monitor.

* Refer to the CANTAB Communicator section 5.1 for more information on the operation of the CANTAB communicator program.

1.2.3 Network Configuration Multiple Stations

Operating a multiple CANTAB Intellistation configuration can be done using a Remote PC application or the CANTAB Communicator* program. In this configuration one or more CANTAB Intellistations are used. Each CANTAB Intellistation is connected to a router or similar networking device, which is connected to the remote PC. For each Intellistation, an external monitor should not be needed, except as a potential clone of the subjects monitor. The remote PC can either run CANTAB as a client server, or use a remote application to look into each Intellistation and administer CANTAB and WhiskerServer for all testing needs.

* Refer to the CANTAB Communicator section 5.1 for more information on the operation of the CANTAB communicator program.
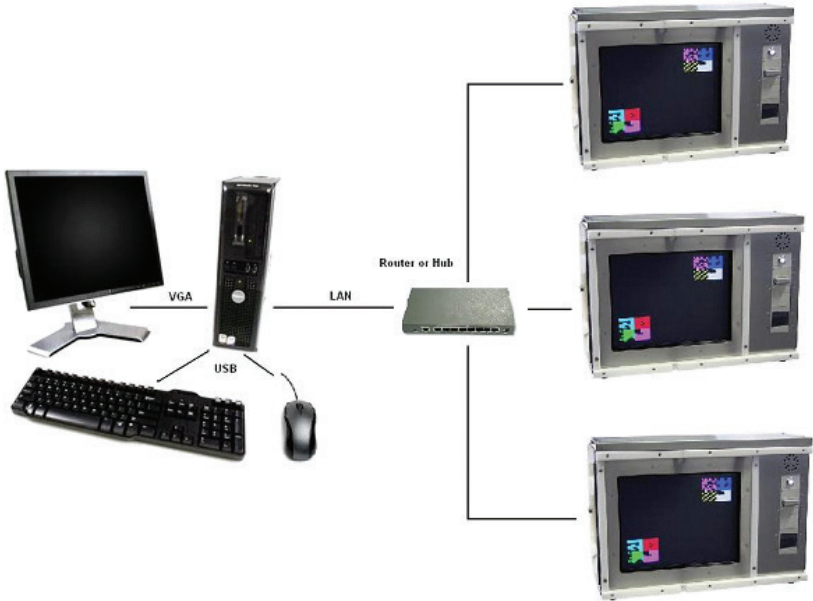
1.3   Accessories

The CANTAB Intellistation can be configured with multiple reward, stimuli, output and input accessories. All removable accessories have their own user manuals if further information is needed.

Standard accessories for an 80950 CANTAB Intellistation are the speaker, Lever (80112), House light (80222), Pellet Receptacle (80209MT), and Pellet Dispenser (80209-190).

Standard accessories for an 80951 CANTAB Intellistation are the speaker, Lever (80112), House light (80222), Lickometer (80661B), and Pump (80204P).

Internal accessory connections include:
1. Speaker
2. House light
3. Lever
4. Lickometer
5. Pellet
6. Pellet Reward or Magazine
7. Liquid Pump

External accessory connectors include:
1. Extra Reward
2. Pump2 / Feeder2

Manuals for included accessories are included with the purchase of a CANTAB Intellistation. Information on additional accessories is available from www.lafayetteinstrument.com or by calling Lafayette Instrument Company.

2.   Installation of Software

Text to be typed is indicated by use of the font `Courier New`, unless otherwise indicated. Text should be typed exactly as seen, including spaces.

Items that can be seen on the screen are indicated by use of an *italic* font in the document.

2.1   Initial Setup

Use the following instructions to guide you through the installation process of WhiskerServer software on a standard desktop PC, in order to write and test configurations (virtual testing).

At various times you may be sent upgrades to the software. To install this software you should only have to follow instructions given with the software (i.e. uninstall the current software using 'Start→Settings→Control Panel→Add/Remove Programs' and then follow sections 2.5 to re-install). You should not need to redo the configuration processes described in chapter 3, as all personal settings should be retained in the registry, but if the system does not respond perfectly after upgrading, it is worth checking that these settings are still correct.

The Embedded PC used to control the CANTAB suite of products, includes the following Operating software, WhiskerServer programs and drivers, which are shown below in this table. All listed software are provided with the latest drivers available at the time of delivery.

Description	Details
Windows Embedded Standard	Operating System
WhiskerServer	Control Environment
Monkey CANTAB	Program Module
CANTAB Communicator (CC)	Remote Control Service
Universal Pointer Device Driver (UPDD)	Driver Software for Touch screen version 4.01.06R or later
Bootloader software	(not needed for new systems)

2.2   Installation of UPDD for Windows

The UPDD comes pre-installed on the CANTAB Intellistation. If the UPDD drivers are lost or malfunctioning, either re-install or repair the UPDD drivers by using the following set of instructions. Contacting Lafayette Instrument Company will be necessary before following these instructions:

1. To install/repair the software use the Add/Remove Programs option in the Control Panel, this can be found from Start/Settings/Control Panel.
2. Obtain the correct UPDD driver version 4.01.06R or later and follow the on-screen commands to continue the installation.
3. Launch the UPDD install program; follow the prompts, until the correct COM port is selected.
4. It should now install the latest version of the UPDD software, when it has finished, exit all open windows.

2.3 UPDD Setup and Touch screen Calibration

The following depict how to setup UPDD for use with the CANTAB Intellistation Touchscreen.

*Note that these screenshots are possibly from an older version of UPDD, newer versions of UPDD may have updated interfaces.

Click Start → All programs → UPDD → Settings.

Figure 1 shows the UPDD console and the information regarding to the connected devices. An Elo SmartSet 4000S driver is chosen to work with the Intellistation. You can also add and modify parameters for the device.

Figure 2 displays the information when adding a device to the UPDD console. By clicking on the <Coose controller type> window, selecting the correct Elo SmartSet 4000S, as shown in Figure 3, name the Device "Elo SmartSet 4000S" and click Ok, the UPDD console is now correctly configured.
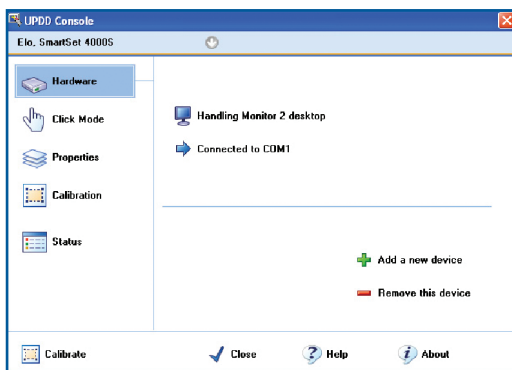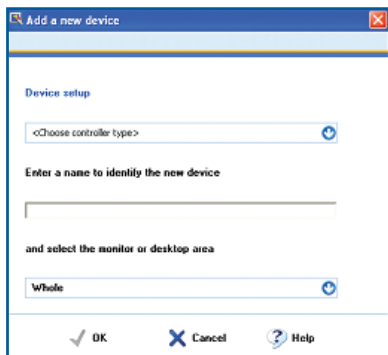

Figure 1

Figure 2

Figure 3

At the main UPDD console window, left click on

⇨ Connected to COM1

The correct serial com port will be displayed as in Figure 4. The general settings used are: Com 1, Baud rate 9600, Parity none (0), data bits 8, stop bits 1 and FIFO 8.
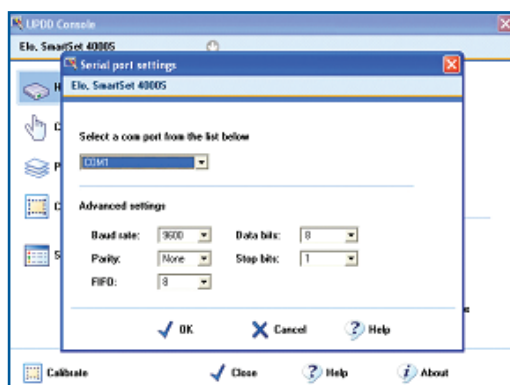

Figure 4

Figure 5 shows the type of click mode that will be used. It should be configured as "Click and drag" with a check mark by "Silent touch".
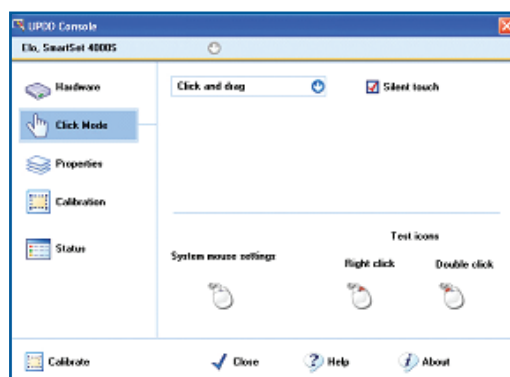

Figure 5

Figure 6 shows the properties of the Elo SmartSet 4000S. Set the low pass filter to 0, liftoff time to 2, Stabilization to 0, and Averaging to 8. Put checks in the boxes by Use lift off packet, Anchor mouse, and Enabled. Set the Release time to 5.
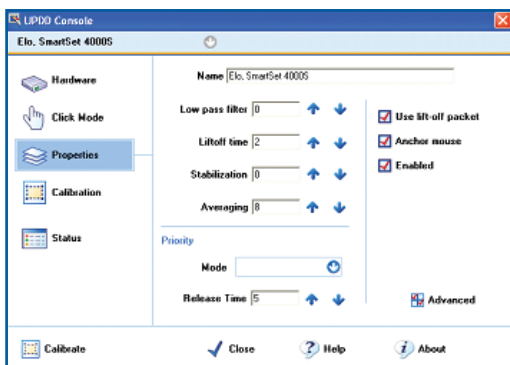

Figure 6

By clicking on the "Advanced" tab in the properties window, the following will be displayed.

All edge acceleration Width and Gain values should equal 0 and a check should be in the box with label "ignore touches outside calibrated area".

There are two ways that the screen can be calibrated, the first is to use the right hand mouse button and click on the pointer devices settings icon in the system tray (bottom right hand corner) and click calibrate. The second way is to go to the start menu and follow Start/Programs/UPDD/Calibrate, then follow the on screen commands.
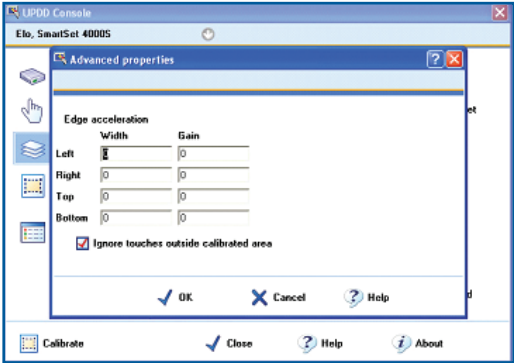
Figure 7

The above calibration is sufficient to operate Monkey CANTAB within WhiskerServer; however it is possible to modify the way that UPDD operates in the Windows environment. To change any of the parameters use the settings option in the UPDD program. You will also find a Help directory here for further technical information. The following screen captures and text give a guide to recommended settings.

Figure 8 shows the calibration screen with recommended settings.

Style is set to "Normal", Number of points equals 5, Margin equal 12%, and a timeout of 10 seconds. Check the box for calibration beeps.

Calibration can also be accessed by clicking the Pointer Device Settings tab in the windows taskbar.
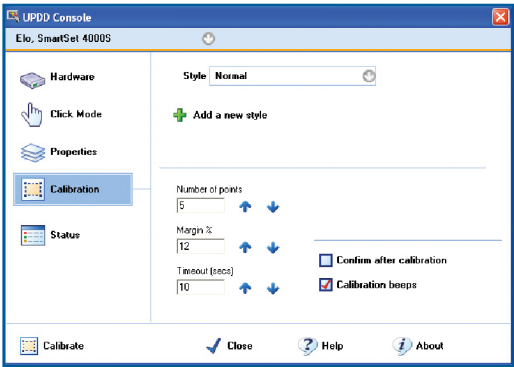
Figure 8

Figure 9 shows the calibration window as shown on the subjects display. Follow the on-screen prompts to complete calibration.

Figure 9

The Status of the UPDD console is shown in Figure 10. A useful function is the Dump settings. This function is used to dump driver and system settings to a text file UPDDset.txt. This file may be requested during support queries.

By clicking on About at any time, the UPDD console will display the version number and other support information
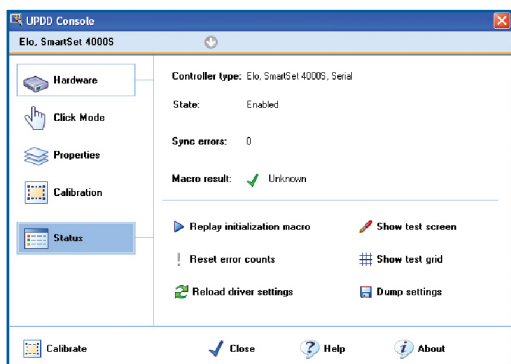

Figure 10

Click on close once all settings have been correctly configured, and the touchmonitor calibration is complete. UPDD is ready to be used by WhiskerServer and CANTAB.
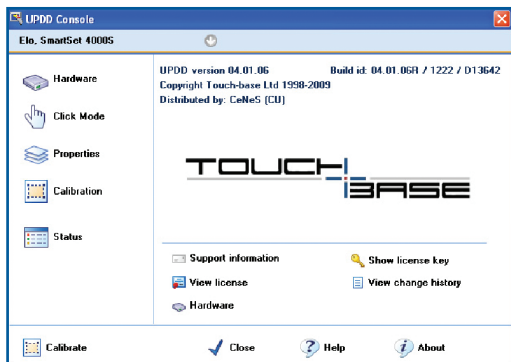

Figure 11

2.4   Installation of CANTAB Communicator

The CANTAB Communicator Remote Control Service comes pre-installed on each CANTAB Intellistation. If the CANTAB Communicator Service software is lost or malfunctioning, either re-install or repair the software by using the following set of instructions. Peform this installation once on all Intellistation PC's; Refer to the CANTAB Communicator section 5.1 for additional instructions and help.

1. To install/repair the CANTAB Communicator Service software obtain the WhiskerServer Monkey CANTAB for Windows Software installation CD and move the CANTAB Communicator folder to a USB flash drive or onto a network drive that is accessible by the Intellistation.
2. Using the Intellistation, open the CANTAB communicator folder and copy the contents to: Local Disk\Program Files\CANTAB Communicator
3. Launch the CC Config application, and set the Whisker Path, Whisker startup folder, and CANTAB path according to the defaults as shown below. Click Save Data once all settings are correctly entered.
   - Whisker Path: `C:\Program Files\WhiskerControl\WhiskerServer.exe`
   - Whisker startup folder: `C:\Program Files\UPDD\`
   - CANTAB Path: `C:\Program Files\MonkyCantab\MonkeyCantab.exe`
4. Upon entering the CC Config application, the *Stored Name*, currently registered computer name, and the *Found MAC* address, will be shown.
5. The *Stored Name* will be the name shown in the CANTAB Communicator Console program
6. The *Found MAC* is a unique key stored internally in the PC, to be used with the CANTAB Communicator Console program. Click *Register MAC* once the correct MAC address is shown.
7. If a New Name is needed, fill in the *New Name* box and click *Register Name*. If the *New Name* box is left blank and *Register Name* is clicked, the default Name will be stored. The *New Name* is solely used by the Communicator to distinguish which Intellistation is being called. This option could prove to be very useful when dealing with multiple Intellistations.
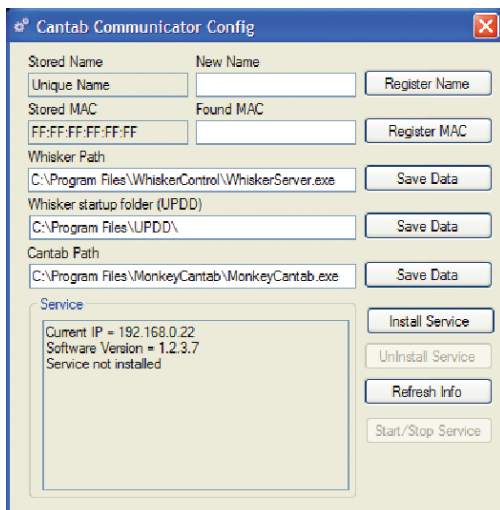
8. Once all settings have been appropriately entered, click *Install Service*.
9. Click *Start/Stop Service*. This will enable or disable the program from running. Only a running CANTAB Communicator service can accept remote control connections.
10. The service dialog box will display the current IP, Software version, and related service information. When the service has started, the dialog will read: *Service: Running* When the service has stopped, the dialog will read: *Service: Stopped*
11. Once the service is running, close the window.

2.5   WhiskerServer Multi-Media Installation

The following steps explain how to load all the components for WhiskerServer Multimedia; Do not install Monkey CANTAB as this will be explained in Section 2.6.

Useful Key strokes
- **Alt & Tab** - With the WhiskerServer client screen in view, this brings back the WhiskerServer control screen to the front
- **F1** - This launches the Help menu
- **Ctrl & Esc** - This enables the Windows Desktop menu, so that you can access Windows programs

1. Copy all contents of the WhiskerServer Monkey CANTAB for Windows Software installation CD onto a USB flash drive or onto a network drive that is accessible by the Intellistation.
2. Move or copy these folders to the Embedded PC in the Intellistation. From the CANTAB Intellistation, locate the copied files and open the directory in which they are contained.
3. Double click on the WhiskerServer directory; this will then double click on the *WhiskerServer_v3.5.1_Multimedia_setup* icon and follow the on-screen instructions. Version numbers in software may be higher, indicating an update to the latest version.
4. When the process reaches the Select Additional Tasks option, ensure that the option for UPDD version 4.01.06R or higher is selected.
5. Further software required for WhiskerServer is Adobe, the instructions should be followed as suggested.
6. When the installation has finished please read the Readme file for information regarding the configuration of WhiskerServer, which is also described in the section 3.0.

2.6 Monkey CANTAB Installation

The following steps explain the installation of Monkey CANTAB onto the Intellistation and/or the Remote PC.

1. Using the WhiskerServer Monkey CANTAB for Windows Software installation CD, copy the contents of the Monkey CANTAB Software suite onto a USB Flash Drive or a network drive that is accessible by the Intellistation.
2. Move or copy these folders to the Embedded PC in the Intellistation. Locate these files on the Intellistation, and open the directory in which they are contained.
3. If using a Remote PC to launch and run Monkey CANTAB, move the Monkey CANTAB Software to the remote PC, locate the files, and open the directory in which they are contained.
4. Double click on the MonkeyCANTAB setup icon and follow the on-screen instructions. Version numbers in software may be higher, indicating an update to the latest version.
5. To set-up Monkey CANTAB for use after you have configured WhiskerServer, please refer to the Monkey CANTAB help files in the Monkey CANTAB directory, which can be found on the Installation CD.
6. When the installation is complete shutdown all the windows except the Readme file as this can be used for the next section.

2.7 Windows Embedded Standard Installation

The CANTAB Intellistation comes preloaded with the Windows Embedded Standard operating system. If for any reason the OS ceases to function, contact Lafayette Instrument Company immediately. Any and all concerns or problems occurring with the OS should be directed to Lafayette Instrument Company.

2.8 Firmware Updates

In the event that the CANTAB control PCB firmware is in need of an update, Lafayette Instrument Company will contact all systems owners with directions on how to obtain the firmware update.

Sample instructions for updating the firmware can be found in the section titled "Firmware Updater Usage."

2.9   Computer Name/Hostname

The computer name for each CANTAB Intellistation is referenced as the hostname within WhiskerServer and Monkey CANTAB. The hostname is used by WhiskerServer and Monkey CANTAB for network communications. The default computer name/hostname for the CANTAB Intellistation is set by Lafayette Instrument Company before the unit is shipped. To change** the computer name, Click Start→ right click My Computer → click Properties → click on the Computer Name tab → click Change and type in the new Computer Name. Click OK, again click OK, and then reboot for changes to go into effect.

**If the Intellistation is not on a stand-alone network, permission for this may only be granted through a local administrative IT department.

3.   Configuring WhiskerServer

The following steps are used to configure WhiskerServer so that it can communicate with the Embedded PC. The following settings are the recommended defaults that have been tested by Lafayette Instrument Company. More details can also be found in the WhiskerServer help section in the server program.

3.1   Accessing WhiskerServer

1. To access the WhiskerServer you can either use the key option by pressing [Ctrl+Alt+S] or select the Start menu where you should see the main WhiskerServer directory; position your mouse above this and it will expand to show the installed components.
2. The WhiskerServer option should be the last option, click once on this option to launch the Whisker Server. WhiskerServer is automatically started when the Embedded PC is booted/started.
3. Open the WhiskerServer Tree in the left side window by clicking the (+) next to WhiskerServer.
4. Click on *Server Status*, to view pertinent information such as;
    *   Whisker version
    *   Network status
    *   Server hostname, used for connecting to Monkey CANTAB
    *   Server IPv4 address, used for connecting to Monkey CANTAB
    *   Client information
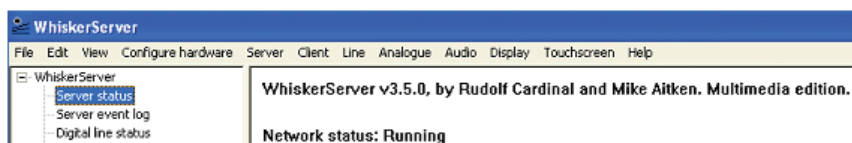
3.2   Display Setup

1. At the desktop screen, right mouse click on the main part of the desktop screen. A window which allows you to modify the display properties will appear.
2. If connecting an external monitor to the Intellistation, Click on the graphics properties option and then display devices, then choose, *extend my desktop* and click *digital display + monitor*.
3. Check the number of the monitors in the *properties* window by clicking on the *Identify* button.
4. The monitors now need to be assigned to WhiskerServer, so launch the WhiskerServer and then select *Configure Hardware.*
5. Select the *Display devices* option as shown in Figure 12.
6. When using an external monitor connected to the CANTAB Intellistation, tick on the box to select *Use Device* for Device 2. Tick the Exclude mouse option, which disables the mouse on the client screen so be aware that this will disappear with the client screen up. Tick the topmost option, and also tick the *Use DirectDraw* option as shown in figure 13.
7. Click *OK* and then shutdown and restart WhiskerServer, so that the changes made will be saved.
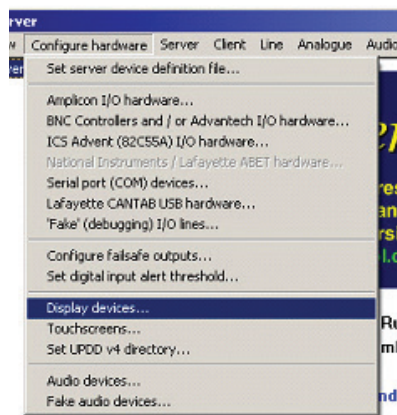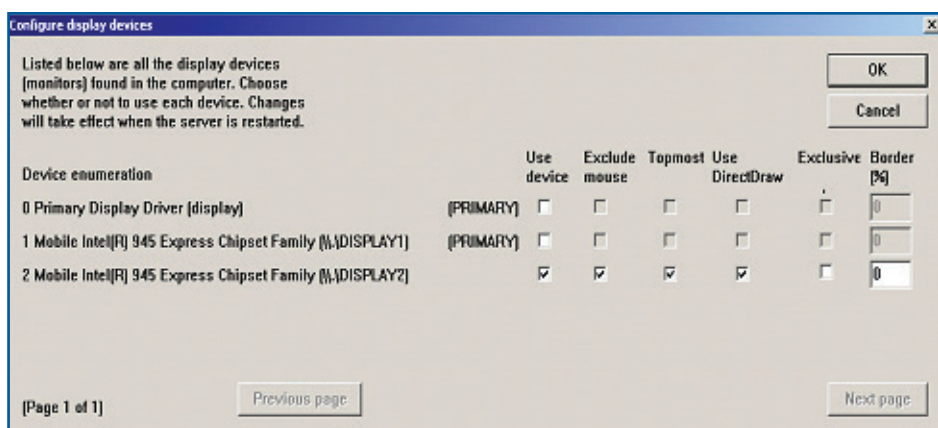8. Launch WhiskerServer.

Figure 12

Figure 13

9. To check this device open the WhiskerServer tree and click on *Display devices* and then *Physical display 0*. The window on the right should now go black and represent what will be on the displays.

10. Now select the Display option on the top option bar, and then click on *Show test pattern on all displays*. The WhiskerServer test pattern should now be visible on the displays as well as the right window of the main Server window.

11. This completes the display set-up. Please follow the next section to assign the Touch screen to the displays.
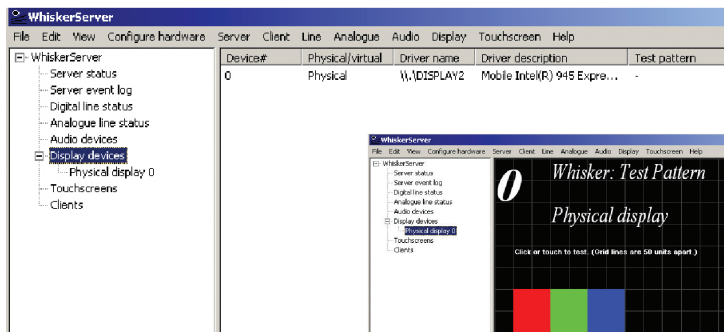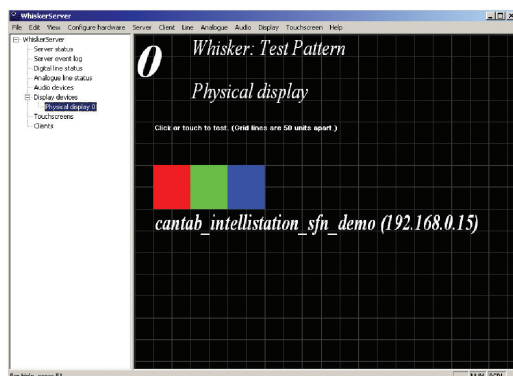

Figure 14

Figure 15

3.3   Touch screen Setup *(not required for virtual testing)*

1. With WhiskerServer launched and the window on the desktop, click on the Server option at the top, and then select *Configure Hardware*.

2. Move the mouse across onto the option *Touchscreens...* and select by clicking the mouse. Check the number of the monitors in the *properties* window by clicking on the *Identify* button.

3. When using an external monitor connected to the CANTAB Intellistation, Tick the *Use Device* option and select Display 2 as the relevant display for the touchscreen.

Figure 16

4. Click *OK* and then shutdown and restart WhiskerServer.

5. With the server window visible click on the *Touchscreen* option in the expanded tree of *WhiskerServer*. This will display the connected Touch screen devices. The Physical Display 0 is the display device receiving touches, and the Device ID is the ID number associated with the Touchscreen ID in the Configure window.
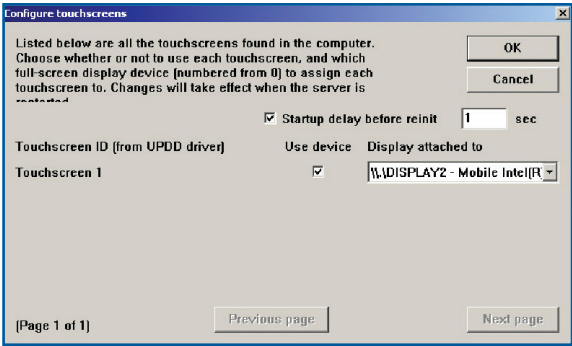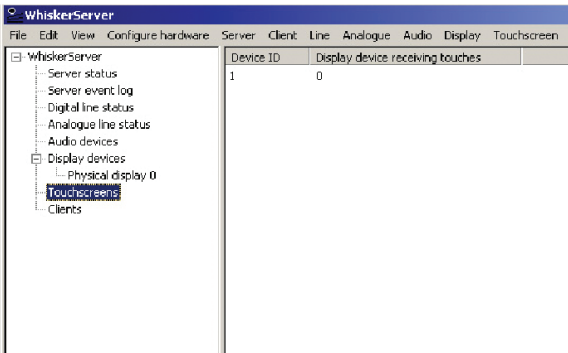
Figure 17

3.4   Audio Setup

1. With the WhiskerServer launched and the window on the desktop, click on the *Server* option at the top, and then select *Configure Hardware*.

2. Move the mouse across onto the option *Audio devices* and select it by clicking the mouse.

3. Click on the box *Use* for the Realtek HD audio output, this will enable the use of audio files in programming on the Intellistation.

4. Click *OK* and then shutdown and restart WhiskerServer.

5. To check the operation of the audio settings you now have to select the destination of the Multimedia resource folder. This is accessed from the Server on the WhiskerServer window.

6. The option *Set default multimedia resource folder*, is the third option down and allows you to set the destination of the multimedia resources.

7. For test purposes we will set the audio with a test destination folder. With the *Set default multimedia resource* folder window displayed, click on the Browse button adjacent to the bottom selection bar.

8. A browse window will appear, navigate through the directory levels so that you are at the following folder: Local Disk\Program Files\ Whisker Control\Server Test Media\Numbers

9. Click *OK*, the destination folder should now be displayed in the bottom bar, click *OK* again to accept and then click on *Audio devices*, which is on the left of the WhiskerServer tree window. Click on the Device, in the right hand window.
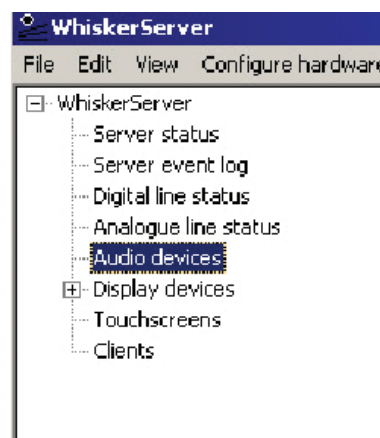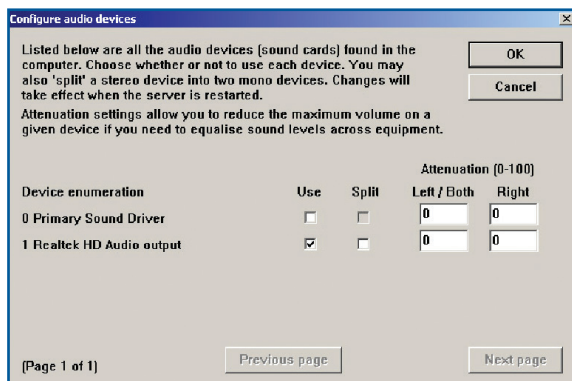
10. Click on the Audio option on the top bar, then click on the Test selected sound device option. You should hear the corresponding number to the device selected.
11. Double click on the volume icon in the taskbar to adjust the volume of the sound
12. Click OK and then shut down WhiskerServer. This now completes the Configuration of the WhiskerServer.
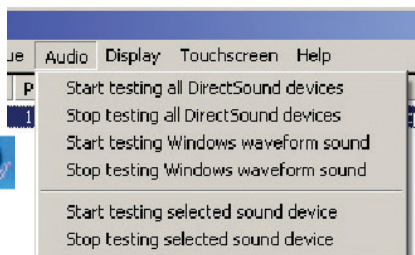
3.5 Line Definitions

1. If you are setting-up a virtual test system, with no hardware attached, you will first have to set-up some fake I/O lines (see section 4.3 Monkey CANTAB Manual - training and testing configurations).
2. The line definitions have been previously configured on the Intellistation, and also tested. If the definition file is needed, refer to the installation CD and a folder called *WhiskerServer Definition Files*. In this folder are two definition files, one for Intellistation and one for virtual testing on a standard desktop with no hardware attached (*WhiskerServer device definitions – Virtual Testing.txt*). Select the appropriate file for your system and copy this file to *Program Files\WhiskerControl\Device Definition Files* folder.
3. With the WhiskerServer launched and the window on the desktop, click on the Server option at the top, and then select *Configure Hardware*.
4. Move the mouse across onto the option set server device definition file and select by clicking the mouse.
5. Browse to find the *WhiskerServer device definitions – CANTAB - USB.txt* file you copied in step 3.2, open and click *OK*.
6. Close and restart the server for the changes to take effect.
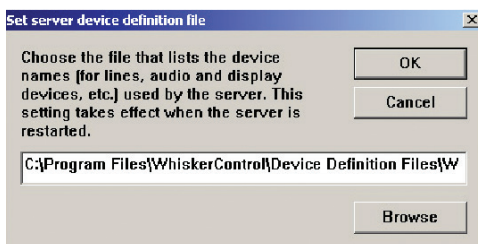
7. Expand the WhiskerServer tree and select *Digital lines status.*

8. Scroll right until the *Server device group* and *Server device name columns* are visible. Lines should be allocated as written in the *device definition.*

9. To check the operation of the I/O card simply click on Line No. 8 output and press key 1(One) to switch 'ON' and 0(Zero) to switch 'OFF", the house light should activate. Similarly if you operate the lever, Line No. 0 should show a change of state and will display ###.

3.6 Starting Monkey CANTAB

1. If using the CANTAB Intellistation in a non-networked configuration, launch the Monkey CANTAB Software by double clicking the Monkey CANTAB icon on the desktop. Use the Windows key + D to display the desktop.

2. Launch the WhiskerServer on the intellistation and then access the Monkey CANTAB window by pressing `[alt-tab]` together, so that the selection is on the Monkey CANTAB Icon and release. `[alt-tab]` Allows for switching between open programs.

3. If using the CANTAB Intellistation in a networked configuration, make sure the CANTAB Intellistation or Intellistations are networked properly; launch the Monkey CANTAB Software by double clicking the Monkey CANTAB icon on the desktop of the Remote PC.

4. Launch the WhiskerServer on each Intellistation and then access the Monkey CANTAB

5. If running both WhiskerServer and Monkey CANTAB on a single Intellistation, the top line should read *Connect a WhiskerServer named* `[localhost]` *on port* `[3233]`. The default port name will always be 3233.

6. If using a Remote PC that is running Monkey CANTAB, type in the IP address or hostname of the Intellistation in place of the `[localhost]`. Refer to section 3.1.4 to find the hostname and/or IP address of an Intellistation.
7. Click *Connect* (the Status messages window should confirm [connected].
8. For the first box, enter 0 in the Claim box number box and click Claim (the Status messages window should confirm [*lines claimed successfully*]. This allows for the use of a single station configuration. If using a networked configuration with multiple stations, type in each Intellistations IP address or hostname and claim boxes starting with the number 0 and ascending to the number of intellistations present.

See the help button on the Monkey CANTAB Window for information on how to set parameters for the tests and run them.

4. Other Software Information

4.1 CANTAB Communicator Usage

The Lafayette Instrument Company CANTAB Communicator Console software program is used to connect multiple CANTAB Intellistations to a single Remote PC. CANTAB tests can be remotely run, manipulated, and displayed for the ease of the user.

See Section 2.4 for the only installation instructions to run the CANTAB Communicator. This software must be installed on the Remote PC from the WhiskerServer Monkey CANTAB for Windows Software installation CD.

4.1.1 Console Application

On the Remote PC, find the CANTAB Communicator folder at C:\Program Files\CANTAB Communicator and click on the CANTAB Communicator.exe file. The software program will open.
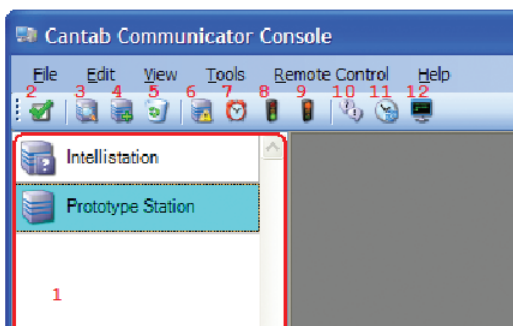
1. Within the left side window (1), as shown on the previous page, is the list of known Intellistations. The status of which is listed below.

> The system is online, but currently not connected.

> Currently connected, and can issue commands to the Intellistation.

> Currently connected in a remote session and have full control of the Intellistation.

> The system is offline or in some other state where the status is unknown.

> There is some form of error that is interfering while establishing status.

Next to each status indicator, is the name of the station that was assigned in section 2.4.

2. To automatically detect CANTAB Intellistation/s, click on (3) which will scan the local network. Once all available Intellistations have been found, they will be added to the list in the left-hand column. (Make sure the CC Config program has been installed and that service is running on each Intellistation before scanning the network)

3. To manually enter an Intellistation, click (4) and enter its' IP address.

4. To remove unnecessary Intellistations from the list, select them and click (5).

5. Connect to selected Intellistations by clicking on (8). Or Click on (2) to select all displayed Intellistations, and then click on (8).

6. Once all stations have been selected, click (12) to open the remote control dialog. This will allow for the control via the remote desktop of each Intellistation. See 5.1.2 for further information.

7. Clicking on (11) will update the time on selected stations to match the time of the Remote PC running the Console.

8. To send a "Wake on LAN" event to any Intellistation, select the desired station and click on (7). This event will turn on a station after and only after that particular Intellistation has been properly shutdown and the "Mains" power has not been turned off. If "Mains" power has been turned off a "Wake on LAN" event will not bring power onto the station, until the PC has been manually turned on once.

9. To disconnect from selected stations, click (9).

4.1.2   Remote Control Window

The Remote Control Window is accessed by following the steps in sections 2.4 and 5.1.1. Within the CANTAB Communicator Console program, click on (12). This will allow the Remote PC to control selected Intellistations. The following window will appear as a remote session is started.
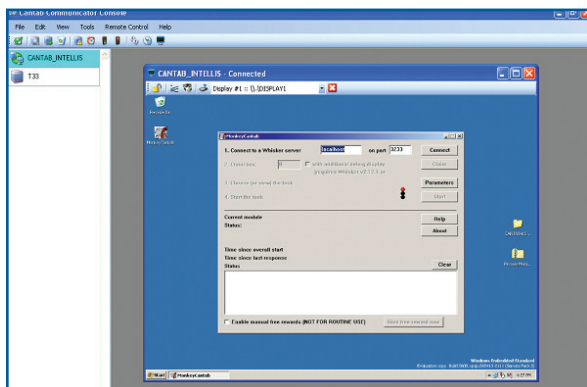
Within the Remote window, several toolbar buttons and remote features have been made available.

1. Click (1) to Enable/Disable the use of keyboard/mouse input of the selected Intellistation. If disabled or "locked" then mouse/keyboard actions are not sent to the selected Intellistation.
2. Click (2) to launch the WhiskerServer on the selected Intellistation
3. Click (3) to launch the CANTAB application on the selected Intellistation
4. Click (4) to send a CTRL+ALT+DELETE signal to the Intellistation
5. Click (5) to choose which display of the selected Intellistation will be shown within the remote window.
    Choose Display 1 to show the desktop of the Intellistation primary monitor, Choose Display 2 to show the subject monitor.
6. Click (6) to close the remote control window
7. The window shown as (7) is the display of the selected Intellistation. With the keyboard/mouse input (1) enabled, the ability to remotely control an Intellistation is available.

4.1.3   CANTAB Communicator Example

1. For each CANTAB Intellistation, run the CCConfig application, register the Found MAC, if desired enter a New Name, verify the Whisker and CANTAB paths and the UPDD startup folder and install the service. Installation of the service is only needed once on each Intellistation. If the service has been previously installed, the Found MAC, Stored Name and all paths/folders will not need updating, and thus the service can simply be started.
2. Once all information is installed, click Start/Stop Service and verify Service: Running.
3. Complete steps 1 and 2 for all Intellistations
4. Open the CANTAB Communicator Console on the Remote PC.
5. Scan the local network for units, select them and add them to the list.
6. Connect to the selected Intellistations, and open the remote control dialog.
7. Enable the keyboard/mouse controls to utilized all the remote control features
8. Remotely start the WhiskerServer and Monkey CANTAB programs.

Upon connecting with the remote control, versions are checked and if needed a prompt will be displayed indicating the need of upgrades to Intellistations. A dialog will appear prompting the selection of transmitting and installing a new upgrade.

4.2   Firmware Updater Usage

The Lafayette Instrument Firmware Updater utility allows customers to upgrade the firmware on their products without sending the product back to Lafayette Instrument to be reprogrammed.

When a firmware update is available for a product, customers may be notified via email. The email will contain a link indicating where the firmware update may be downloaded; the update may also be available online. The firmware update utility is a single, simple-to-use executable.
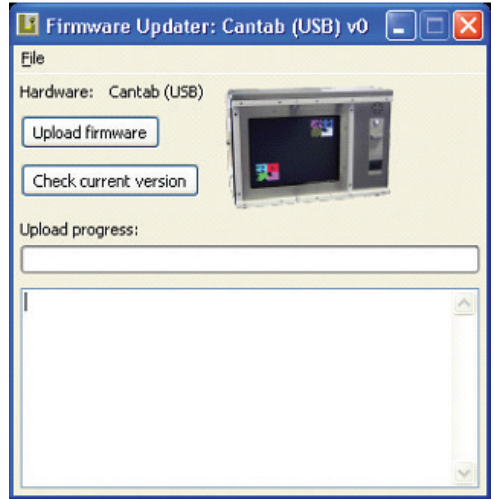
The downloaded firmware updater is specific to a given product; that product is both named as text within the program, and an image of the product is shown, so that the customer can be certain he or she is using the correct update utility.

Clicking the "Check current version" button will tell the user what version of firmware is currently loaded on the product. Clicking the "Upload firmware" button will show the user a prompt.
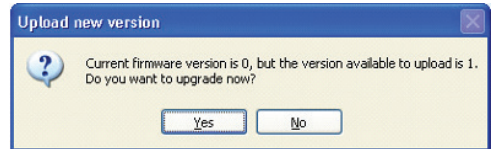
Clicking "Yes" on that dialog will automatically upgrade the product. The actual time required to upgrade a product will vary by device, but a user can generally expect a firmware update to take well under five minutes from the time the utility is downloaded to the time the device is upgraded. Once an update is complete, a dialog will pop up informing the user that a new version has been uploaded. After that, the user may shut down the firmware updater and the device will be ready to use as normal.

In the unlikely event of an error during the upgrade process (such as a power outage or the communications cable between the device and the PC being disconnected), most products will automatically revert back to the previously working version without any interaction by the user. If there is a persistent problem with updating, on-screen error reporting is available so that Lafayette Instrument Company may be contacted for assistance.

4.3   Other License Information

The CANTAB Intellistation makes use of LILO, an open source bootloader. LILO's license is as follows:

LInux LOader (LILO) program code, documentation, and auxiliary programs are Copyright 1992-1998 Werner Almesberger. Copyright 1999-2005 John Coffman. All rights reserved.

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Instrumentation may not be returned without prior authorization by Lafayette Instrument Company and a completed Return Form. When you complete the Form, or call Lafayette Instrument, you will receive a Return #. Your Return # 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 LIC PO Box. Items should be packed well, insured for full value, and returned along with a copy of the Return Form or the Return #. An estimate of repair will be given prior to completion ONLY if requested in an enclosed cover letter. We must have a completed 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.

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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.

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