

Model 302

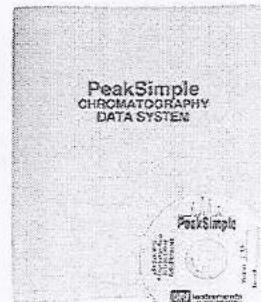
Six Channel USB PeakSimple Data System

The Model 302 may be used with any brand or model of GC or HPLC offering an analog detector output signal ranging from -5V to +5V. It includes three independent, programmable controls (0V to +5V analog output) for temperature & pressure or HPLC gradient formation. The Model 302 has six channels, which can be randomly assigned to one of four time bases, which allows independent start and stop times for four separate instruments. Four remote start inputs compatible with 2-wire switch closures (typically output by GCs and HPLCs as a remote start signal) are also included for your use. Two pulse stretchers are provided to accommodate instruments with remote start signals shorter than one second (such as Hewlett Packard GCs).

The computer to which you connect the Model 302 must support USB (it must have at least one USB port—rev 2.0 or higher—and use Windows™ 98, 98SE, ME, 2000, XP or newer).

With your purchase of the Model 302, you should receive the following items:

- 1 - Model 302 Data System box (front and rear views shown below)
- 2 - USB cable for connection to your computer's USB port
- 3 - Manual (either the PeakSimple Chromatography Data Systems or the SRI general product manual)
- 4 - PeakSimple for Windows™ software (inside the manual cover)



The Model 302 comes in a sturdy aluminum box consisting of top and bottom halves, secured together with two brass thumbscrews for easy interior access.

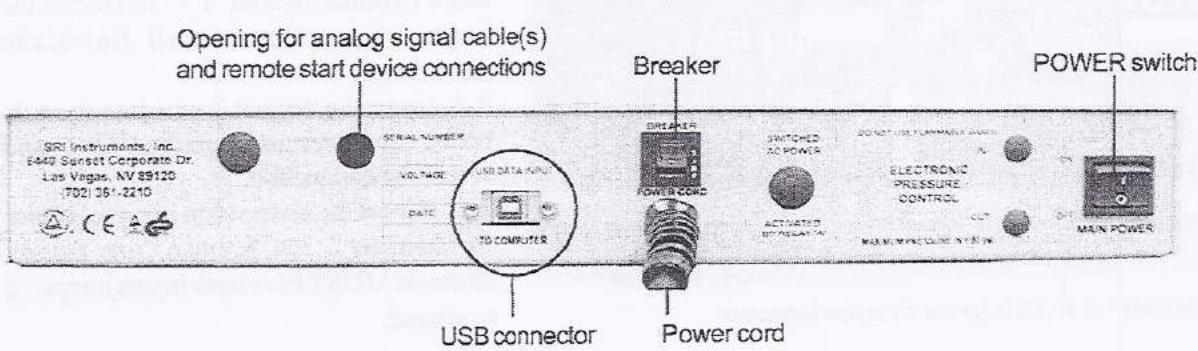
The brass thumbscrews are on the left- and right-hand panels of the Model 302 box.



Front View



Rear View

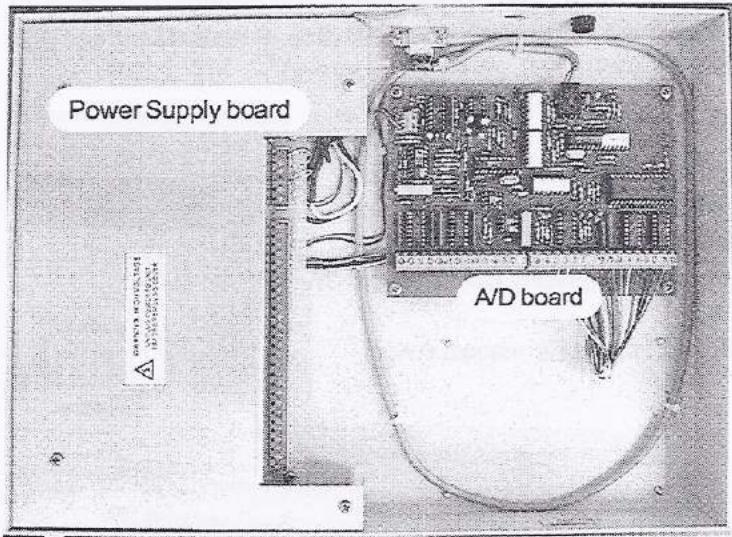


Model 302

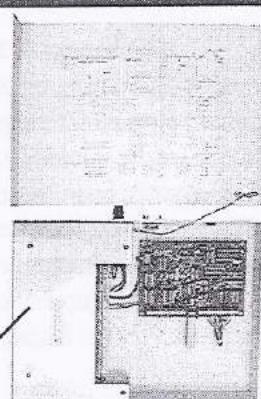
Six Channel USB PeakSimple Data System

1. Open the Model 302

Verify that the Model 302 is powered OFF and unplugged. Remove the thumbscrews on both sides of the Model 302 box and slide the top cover up and off. It is connected to the bottom of the box by a ground wire, so just set it next to the bottom half of the box.



High voltage
aluminum
safety cover

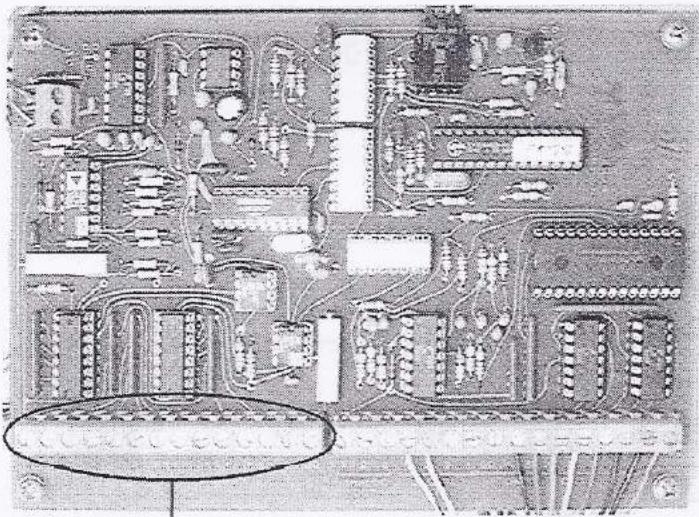


The Model 302 box contains two circuit boards. The board on the right-hand side is the A/D board. The board on the left-hand side under the removable high voltage aluminum safety cover is the Power Supply board. If you need to remove the high voltage aluminum safety cover, **ALWAYS unplug the Model 302 from the wall power outlet first** (you do not need to remove it for the wiring connections described here).

2. Connect the Analog Signal Cable(s)

NOTE: The analog output from some GCs and LCs can have a range of up to 10 volts DC. The Model 302 can tolerate this voltage input, but signals above 6 volts will generate unwanted noise and signals above 5 volts will be “clipped” (the tops of the waveforms will be cut off). Use the 1 volt output typically available on the back of your instrument.

2-1. Route the analog signal cables from your instrument through the open hole in the back of the Model 302.



Channels 1-6 and GD (ground) screw terminals

2-2. Strip 1/4" of insulation from the “signal+” and “signal-” wires of your instrument’s signal cables.

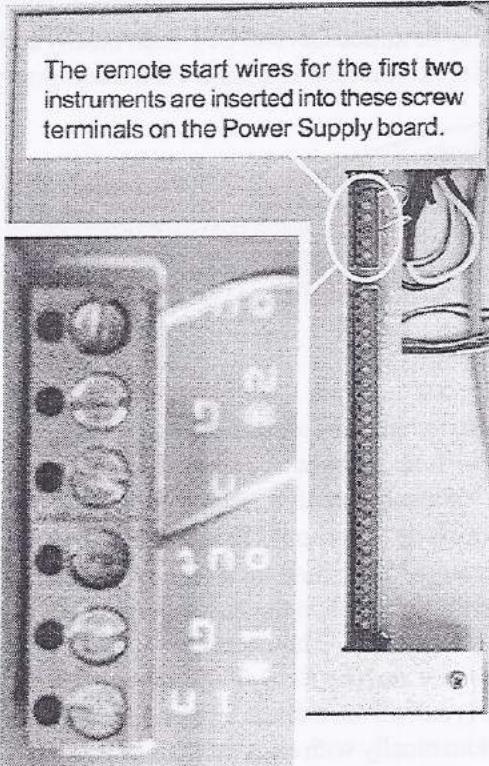
2-3. Remove any jumpers placed in the Channels 1-6 screw terminals at the factory. Insert the “signal+” wire into the A/D board screw terminal marked “1 +” and secure the connection with a small flat-blade screwdriver.

2-4. Insert the “signal-” wire into the A/D board screw terminal marked “1 -” and secure the connection.

2-5. Repeat the connection of signal cables for channels 2, 3, 4, 5, and 6. Any unused channels MUST have both inputs jumpered to ground.

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3. Connect the Remote Start Cables (OPTIONAL)

The Model 302 remote start capability allows you to start the data system by means of a switch closure. Four separate remote start circuits permit the user to individually start TIMEBASE 1, 2, 3, and 4 of the data system. In some applications, the chromatograph being used with the Model 302 may offer a remote start signal output or switch closure output that permits starting an integrator or other device when the START button is pressed on the chromatograph's on-board control panel. Typically, this signal can be used to start the Model 302. TIMEBASES 1 and 2 are equipped with pulse stretchers.

3-1. Route the remote start cable from your instrument through the open hole in the back of the Model 302.

3-2. Strip 1/4" of insulation from the "+" and "-" wires of your remote start cable(s).

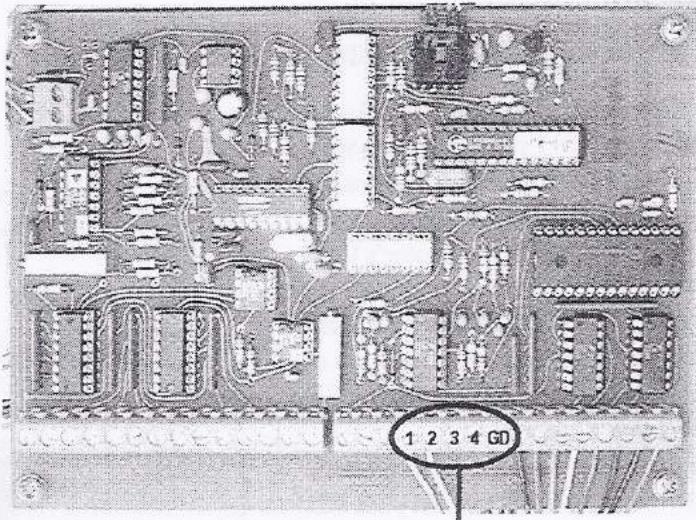
3-3. Insert the "+" wire into the Power Supply board screw terminal marked "#1 IN" and secure the connection.

3-4. Insert the "-" wire into the Power Supply board screw terminal marked "#1 G" and secure the connection.

3-5. For a second instrument, insert the "+" wire into the "#2 IN" terminal, and the "-" wire into the "#2 G" terminal.

3-6. The screw terminals for the third and fourth instruments' remote starts are on the A/D board. The bank of screw terminals is labeled "DIGITAL IN" under "1 2 3 4." Connect the "+" wires for the third and fourth instruments to screw terminals 3 and 4, respectively. Connect both "-" wires to the "GD" screw terminal next to the "4" screw terminal (on the right-hand side).

NOTE: TIMEBASES 3 and 4 require a remote start signal that persists longer for than one second. Check your instruments' specifications (for example, Hewlett Packard GCs produce a very short remote start pulse, so you should connect one of these to TIMEBASE 1 or 2, which are equipped with pulse stretchers).



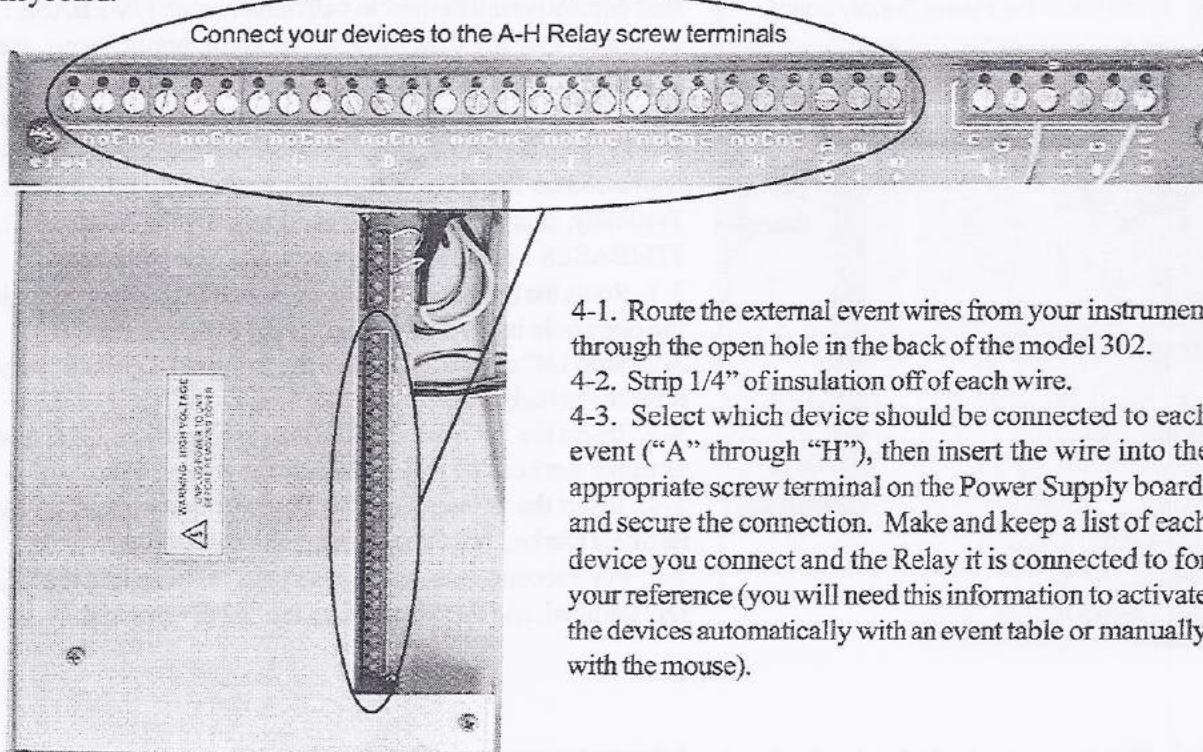
Connect the remote start "+" cables to screw terminals "3" & "4," and the "-" cables to "GD".

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4. Connect the External Event Relay Wires (OPTIONAL)

The Model 302 has eight 0-5 volt TTL level outputs that are wired to a bank of mechanical relays with screw terminals for easy connection to any device which may be operated from a contact closure (normally open [NO] and normally closed [NC] contact closures). These relays may be turned ON and OFF individually and automatically through a PeakSimple timed event table. Manual control is also available via the computer keyboard.



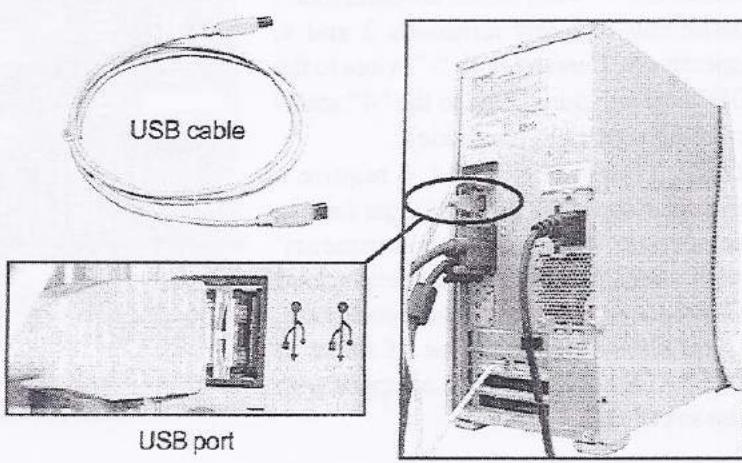
- 4-1. Route the external event wires from your instrument through the open hole in the back of the model 302.
- 4-2. Strip 1/4" of insulation off of each wire.
- 4-3. Select which device should be connected to each event ("A" through "H"), then insert the wire into the appropriate screw terminal on the Power Supply board, and secure the connection. Make and keep a list of each device you connect and the Relay it is connected to for your reference (you will need this information to activate the devices automatically with an event table or manually with the mouse).

5. Replace the cover on the Model 302 and secure it with the thumbscrews.

6. Connect the USB Cable to Your Computer

The Model 302 is equipped with a USB connector. A USB cable (provided) connects the Model 302 to your Windows™ computer's USB port. This plug and play interface permits the Model 302 to be loaded onto and operated from a desktop or laptop computer that supports USB (rev. 2.0 or higher).

- 6-1. Secure one end of the USB cable to an available USB port on your PC.
- 6-2. Secure the other end to the USB connector on the back of the Model 302.



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7. Connect Power to the Model 302

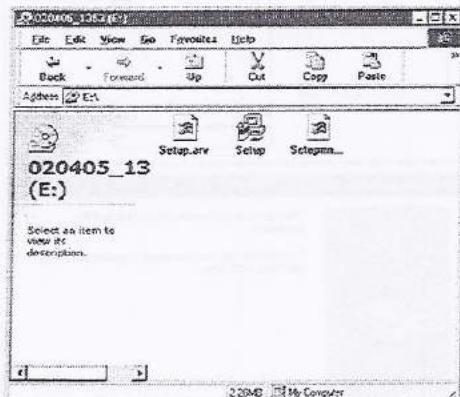
The Model 302 is provided with a power cord which plugs into a standard 110 (or 220) volt outlet. Plug the Model 302 into the wall outlet. Turn ON the power switch and verify that the POWER LED on the front of the Model 302 is lit.



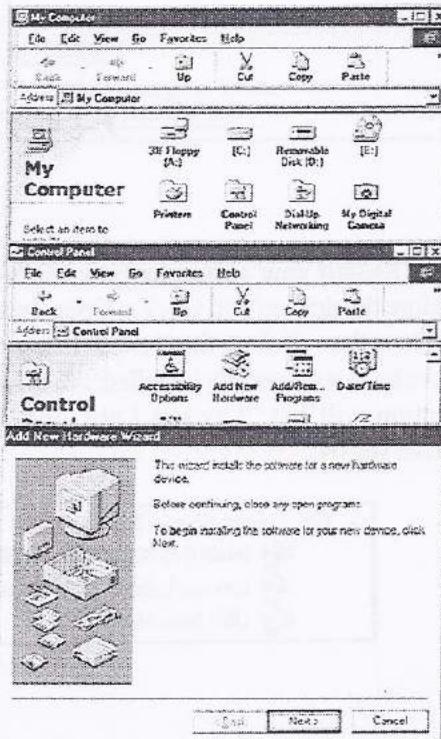
The power LED is lit when the Model 302 is connected to a power source & switched ON.

8. Install PeakSimple Chromatography Software

8-1. Locate your copy of PeakSimple, which is shipped inside the front cover of your manual. Insert the CD or floppy disk(s) into your computer's appropriate drive.



8-2. Open the appropriate drive through My Computer, then double click on "Setup.exe" and follow the instructions. By default, the setup program places the PeakSimple application directory on the hard drive: c:\peak2000. If you put the application directory elsewhere, take note of the path as you may have to enter it in a dialog box during the USB driver installation procedure.



9. Install the USB Drivers

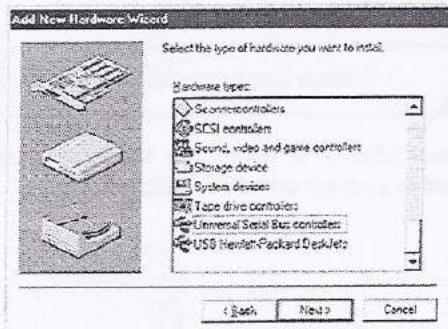
There are three important files saved to the PeakSimple application directory at the conclusion of the software installation: LL_USB.inf, LL_USB.sys, and LL_USB2K.sys. These files are required for Windows to recognize the A/D board connected to the computer's USB port.

9-1. Double-click on the My Computer icon on your desktop, then on Control Panel, then on Add New Hardware, which should open the Add New Hardware Wizard.

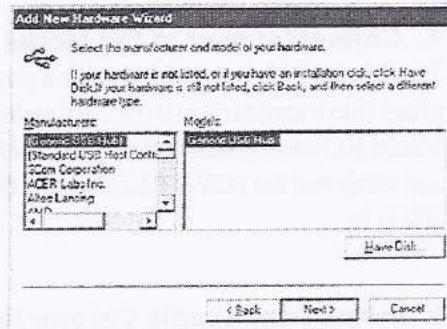
9-2. Click the Next button twice, until you get to the screen that gives you a choice between letting Windows find the new hardware, or selecting it yourself from a list. Click the radio button to choose the hardware from a list and click the Next button.

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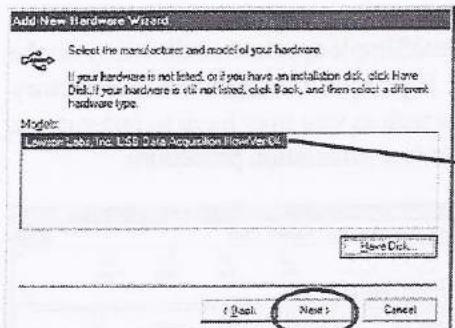
Six Channel USB PeakSimple Data System



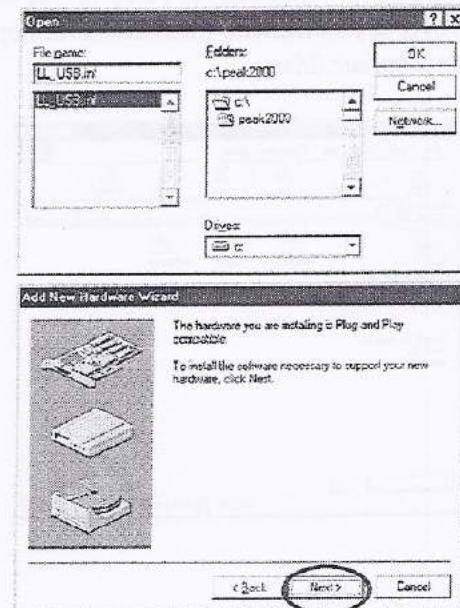
9-3. Scroll down the hardware list, click on Universal Serial Bus controllers, then click Next. From the following screen click the Have Disk button.



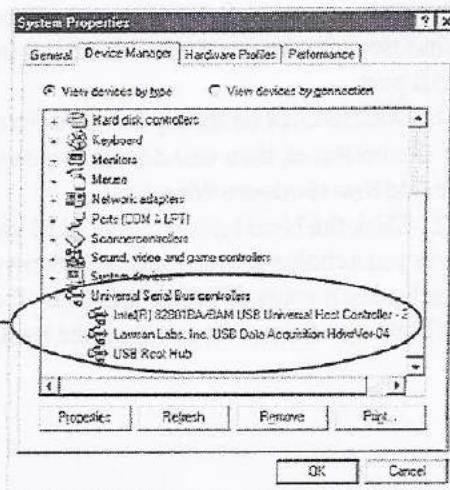
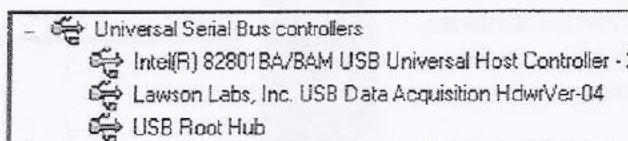
9-4. Click Browse and navigate to the PeakSimple application directory, or type in the path ("c:\peak2000" or the name you have chosen). The Wizard should find the LL_USB.inf file. When you click OK, the Wizard will verify that you want to copy files from the PeakSimple directory ("Copy manufacturer's files from: c:\peak2000").



9-5. When you click OK again, the Wizard will confirm that the drivers are for Lawson Labs. Click Next on this screen and the following screen, and Windows will finish installing the software for the Model 302. Click Finish.



9-6. Restart your computer (you MUST restart your computer before the drivers will work). Open the Control Panel again, then System, then click on the Device Manager tab. If the USB drivers have been successfully installed, the Universal Serial Bus controllers section will list "Lawson Labs, Inc. USB Data Acquisition HdwrVer-04."

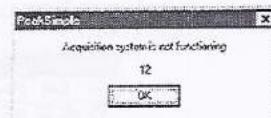


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Six Channel USB PeakSimple Data System

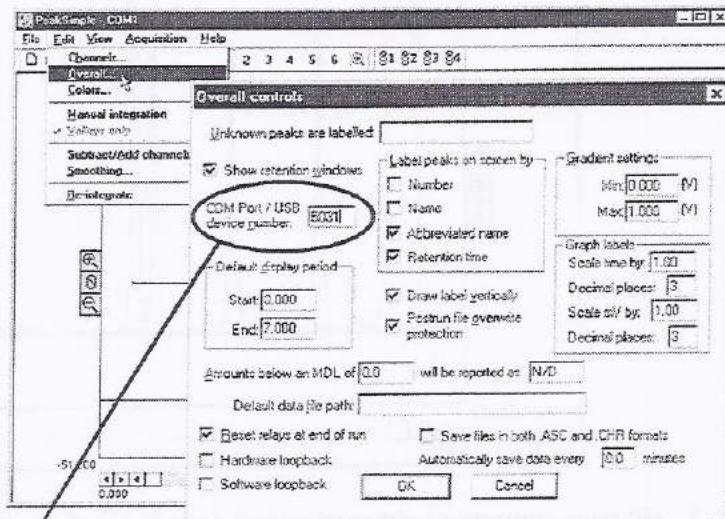
10. Launch PeakSimple

10-1. Double-click on the PeakSimple icon to launch the program. Verify that communication has been established between your computer and the Model 302. An error message will appear if communication is not established. This is normal until you complete the following step.



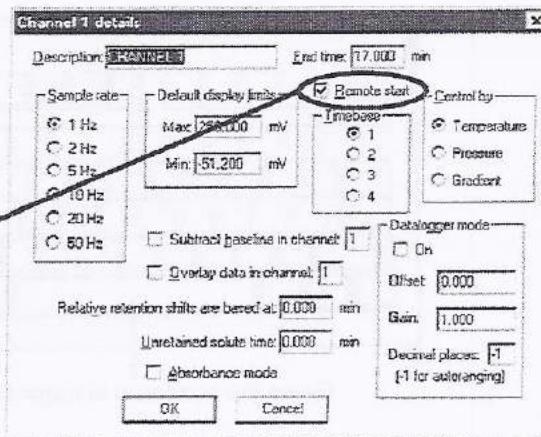
10-2. Each SRI USB data system has a unique 4-digit USB device number beginning with "5" (5031, 5032, etc.). This ID. number is printed on the back of your Model 302, and on your PeakSimple disk. Open the PeakSimple Edit menu and choose Overall. Enter your Model 302 ID. number in the box labeled "Com port / USB device number." Click OK, and PeakSimple will attempt to "wake-up" the data system. Click the

Save All icon so you don't have to re-enter the USB device number.



Enter the 4-digit USB device number here

10-3. For the remote start option:
Open the Edit menu and choose Channels. Click on the Details button for channel 1. Verify that Remote start is enabled (the box should be checked). Repeat this step for channels 2-6 if necessary.



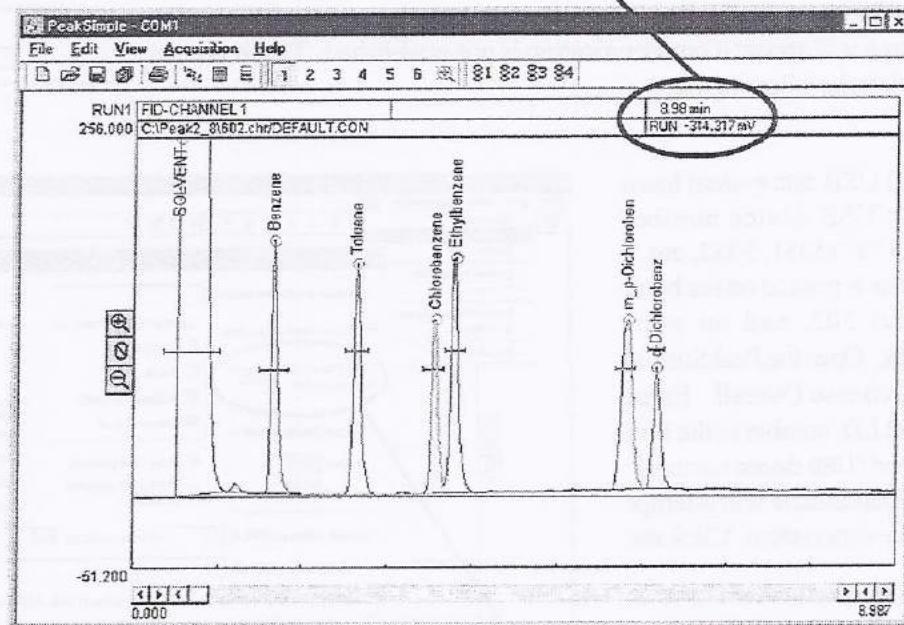
10-4. For information about using Event tables, manual Relay activation, etc., see the "PeakSimple Tutorials" and the "PeakSimple Software" sections in the manual (and online at www.srigc.com—click on the "Download Our Documents" button on the homepage).

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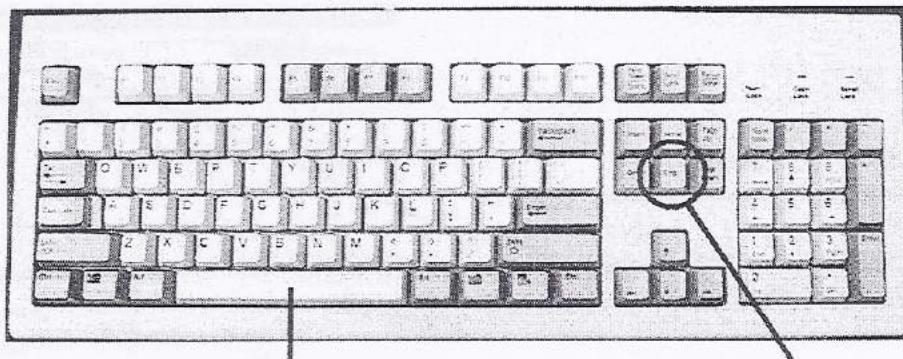
Six Channel USB PeakSimple Data System

11. Starting an Analysis

10-1. The upper right corner of the PeakSimple chromatogram window contains real-time information pertinent to your analysis in progress. The status of the run (STAND BY, RUN) is displayed in capital letters next to the millivolt (mV) reading, underneath the amount of time into the run.



11-2. Hit your computer keyboard spacebar to begin the run, and the data is plotted onscreen in the chromatogram window.



11-3. Hit the End key on your computer keyboard to stop the run.

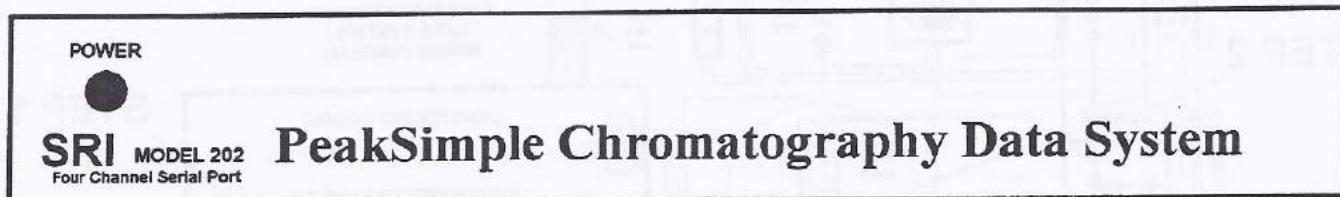
Technical Support:

If you have questions or problems, call SRI for free technical support at 310-214-5092, 8am - 5pm California time.

The SRI Model 202 PeakSimple Chromatography Data System is a four channel, analog to digital converter, controlled by our powerful PeakSimple Software. The Model 202 may be used with any brand or model of HPLC or gas chromatograph offering an analog detector output signal.

The Model 202 also features two independent, programmable controls which can be used for temperature and pressure ramping or HPLC gradient formation. There are also two Remote Start inputs that are compatible with two-wire switch closure signals typically output by GCs and LCs as a remote start signal.

Eight TTL outputs (0 to 5 volts) for computer control of external events come standard with the Model 202. If TTL outputs are not adequate for your application, the Model 202 also contains relay circuits offering normally open (NO) and normally closed (NC) switch closures. Electronic Pressure Control (EPC) and a switched AC power output may be ordered as an option for the Model 202.



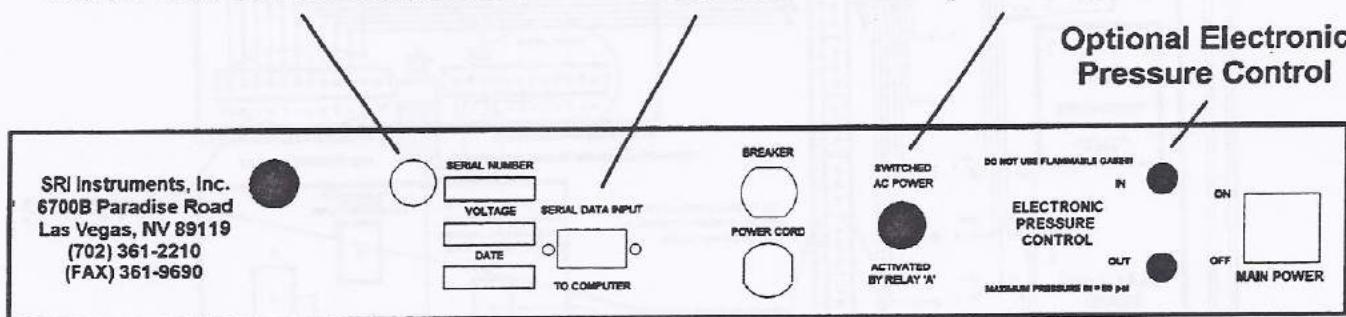
(front view)

**Opening for an analog signal cable
and remote device connections**

**RS232 serial port
connector**

**Optional switched
AC power output**

**Optional Electronic
Pressure Control**



(rear view)

The Model 202 comes with a built-in serial interface for connection to your desktop or laptop computer's COM Port. (See the "PeakSimple For Windows" section in this manual for minimum system requirements.)

You should have received the following with your Model 202 purchase:

- (1) Model 202 PeakSimple Chromatography Data System Box
- (1) Serial Data Interface Cable for connection to your computer's COM Port
- (1) PeakSimple For Windows software package
- (1) PeakSimple Chromatography Data System Manual

Chapter: MODEL 202 DATA SYSTEM HARDWARE

Topic: Model 202 Installation Connections

To connect the Model 202 to your computer it will be necessary to access connection terminals inside the Model 202 Box.

Verify that NO POWER is applied to the unit before performing the following procedure!! Remove the thumbscrews on either side of the Model 202 Box and carefully slide up the top cover and set it aside. Figure 1, (below), depicts the layout of the Model 202 circuit boards and all wiring connections. To connect your system to the Model 202 Data System; please complete Steps 1 Through 7 as shown below and described on the following pages.

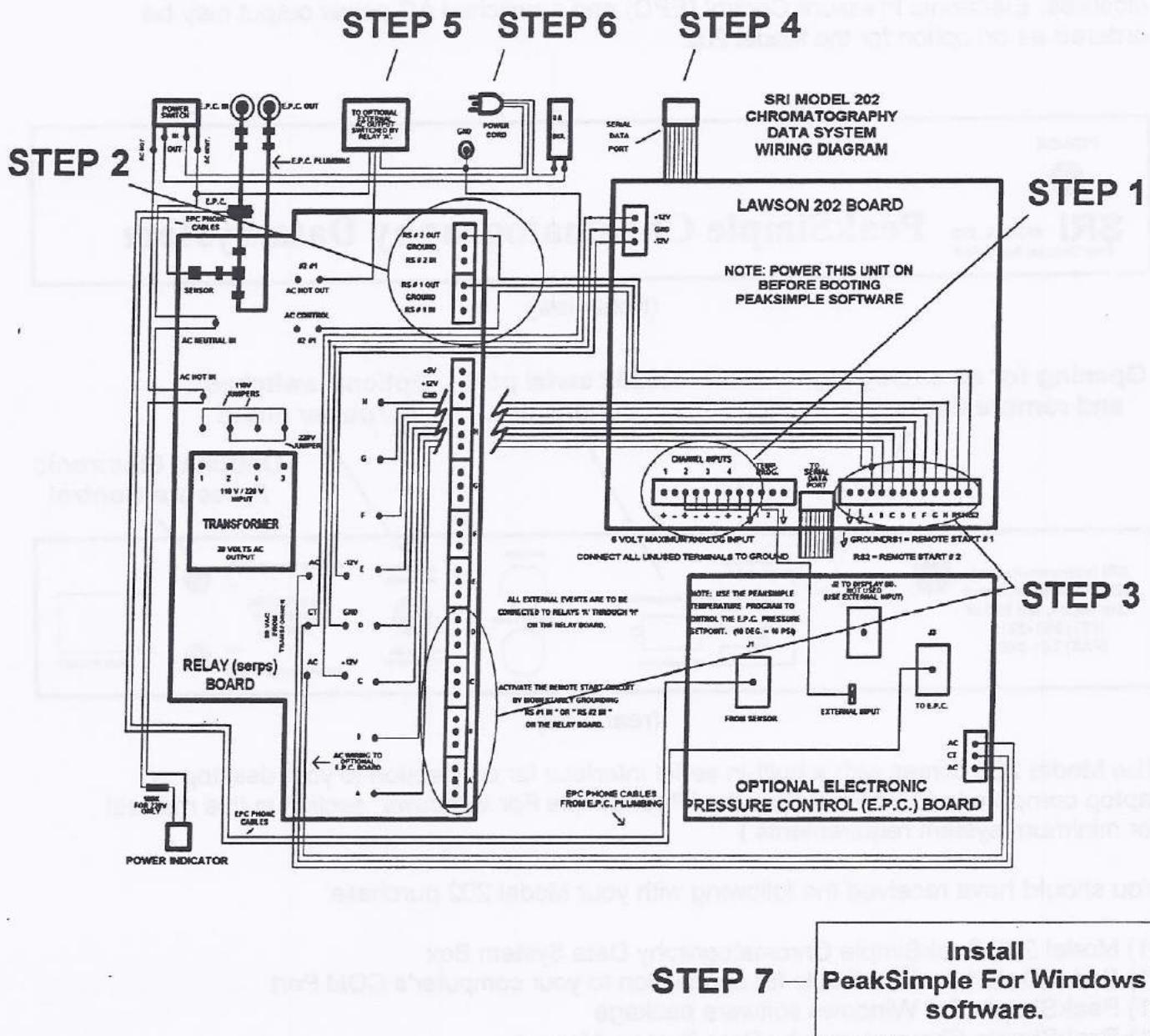


FIGURE 1

STEP 1: Connecting the analog signal cable(s):

NOTE: The analog output from some GCs or LCs can have a range of up to 10 volts dc. Although the Model 202 will allow high voltage inputs such as this; be advised that signals above 6 volts will generate unwanted noise and signals above 5 volts will be "clipped". (The tops of the waveforms will be cut off.)

Route the analog signal cables from your instrument through the open hole in the back of the Model 202.

Strip 1/4" of insulation off of the 'signal +' and 'signal-' wires of your signal cables. Insert 'signal +' into the Lawson 202 board screw terminal marked 'CH1 sig +' and secure the connection using a small screwdriver.

Insert 'signal -' into the Lawson 202 board screw terminal marked 'CH1 sig -' and secure the connection using a small screwdriver.

Repeat the connection of signal cables for channels 2, 3 and 4.

Any unused channels MUST have both inputs jumpered to ground.

STEP 2: (OPTIONAL) Connecting the remote start cable(s):

NOTE: The Model 202 offers remote starting capability as a standard feature. Two separate remote start circuits permit the user to start the MAIN and ALTERNATE Trigger Groups of the data system by means of a switch closure, such as a footswitch. In some applications, the chromatograph being used with the Model 202 may offer a remote start signal output or switch closure output that permits starting an integrator or other device when the START button is pressed on the chromatograph's on-board control panel. Typically, this signal can be used to start the Model 202.

Route the remote start cable from your instrument through the open hole in the back of the Model 202.

Strip 1/4" of insulation off of the '+' and '-' wires of your remote start cable. Insert '+' into the RELAY (serps) board screw terminal marked '#1 IN' and secure the connection using a small screwdriver.

Insert '-' into the RELAY (serps) board screw terminal marked '#1 G' and secure the connection using a small screwdriver.

NOTE: Be sure to check the "Remote Start" box in the PeakSimple For Windows EDIT - CHANNELS - DETAILS screen for the appropriate channels. Refer to the "PeakSimple For Windows" section of this manual.

STEP 3: (OPTIONAL) Connecting the external event relay wires:

The Model 202 features eight 0-5 volt TTL Level outputs that may be turned on and off individually and automatically by means of a timed event table.

Manual control is also available via the keyboard.

These outputs may be used to control external events or devices. If TTL level outputs are not adequate for your application, the Model 202 is also equipped with eight relay circuits offering normally open (NO) and normally closed (NC) contact closures.

STEP 3: (Continued)

Route the external event wires from your instrument through the open hole in the back of the Model 202.

Strip 1/4" of insulation off of each wire. Select which device should be connected to events 'A' through 'H' and insert the wire into the appropriate screw terminal and secure the connection using a small screwdriver.

Refer to the "PeakSimple For Windows" section of this manual for setting up event tables, keyboard activation, etc.

STEP 4: Connecting the Serial Data Interface cable to your computer:

The Model 202 is equipped with a RS-232 serial port. A DB-9 type serial cable (provided) connects the Model 202 to your personal computer through the PC's COM port. This simple interface permits the data system software to be loaded onto, and operated from, either a desktop or notebook PC for portability in field operations.

Secure one end of the Serial Data Interface cable to an available COM port on the Back of your PC. Secure the other end to the DB-9 connector on the back of the Model 202. (Refer again to Figure 1 for location of the Serial Data port.)

STEP 5: (OPTIONAL) Connecting to the switched AC output:

Connections for the switched AC output are pre-wired at the factory.

All you need to do is plug your device into the cord provided; activate relay 'A' using PeakSimple software and the outlet will be powered. (1 AMP maximum)

NOTE: The switched AC output must be specifically requested at the time you order the Model 202.

STEP 6: Connecting power to the Model 202:

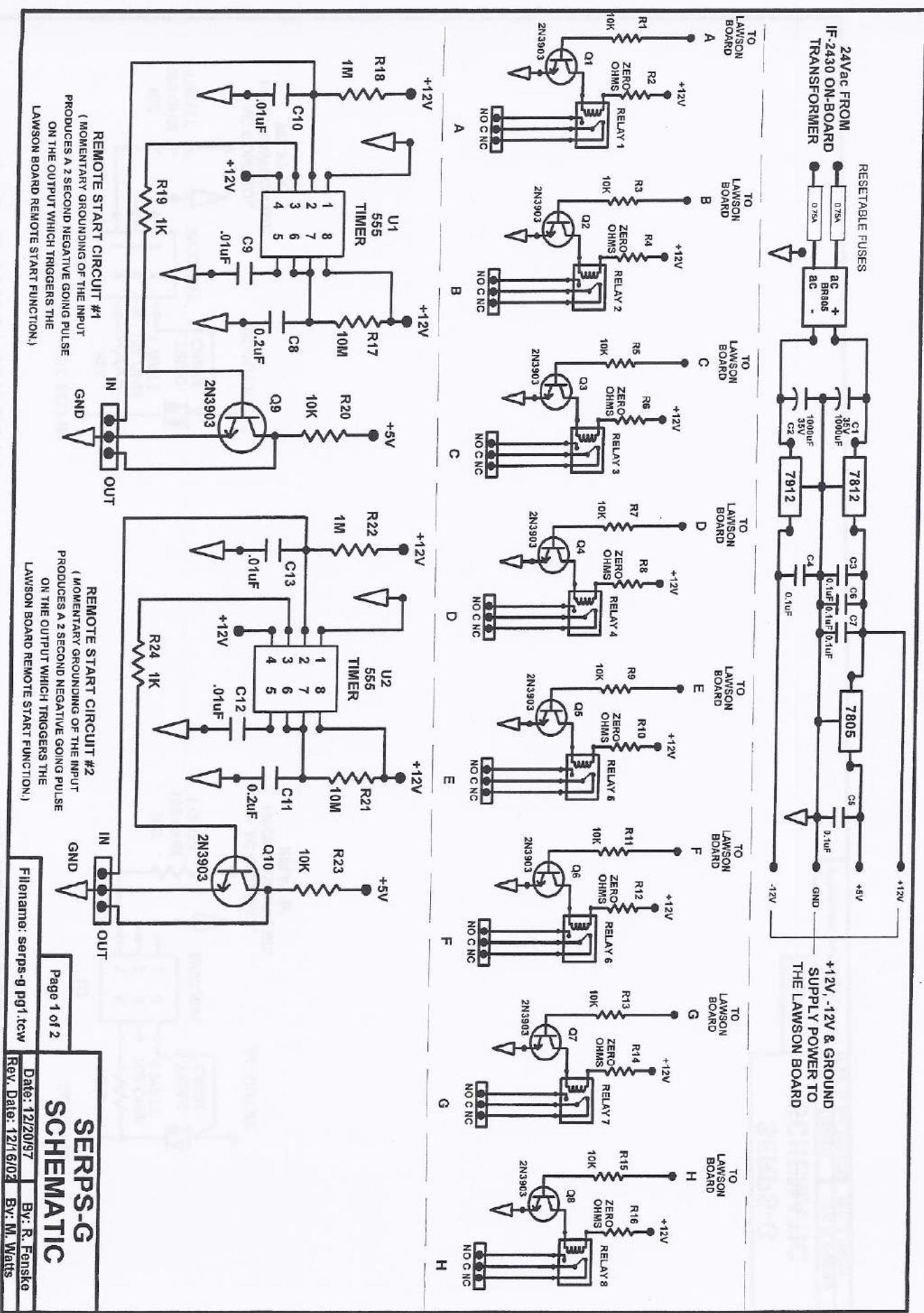
Slide the top cover back onto the Model 202.

Secure the cover with the two thumbscrews.

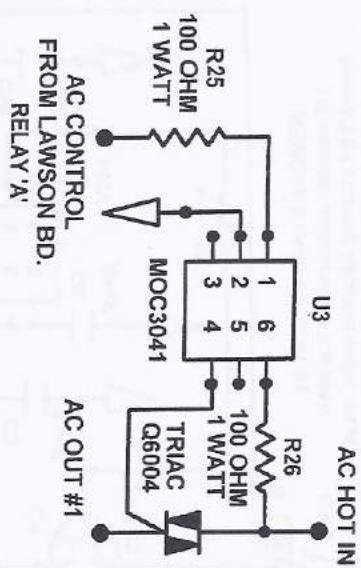
Model 202 units are equipped with a power cord which plugs into a standard 110 (or 220) volt outlet. Plug the Model 202 into the outlet and verify that the POWER indicator on the front of the Model 202 is lit.

STEP 7: Installation of PeakSimple Software:

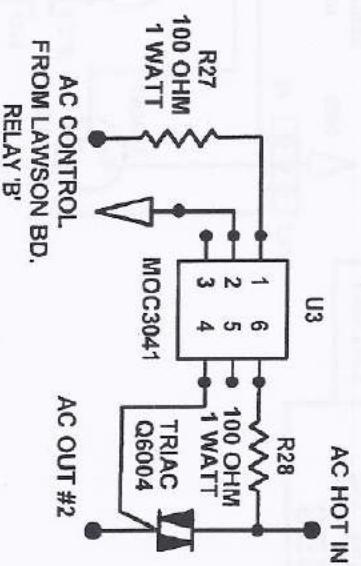
Refer to the "PeakSimple For Windows" section of this manual for details on proper installation and operation.



OPTIONAL AC OUTPUT CIRCUIT #1



OPTIONAL AC OUTPUT CIRCUIT #2



SERPS-G SCHEMATIC

Page 2 of 2

Filename: serps-g pg2.tcw
Date: 12/20/97 By: R. Fenske
Rev. Date: 12/16/02 By: M. Watts

Quick Start

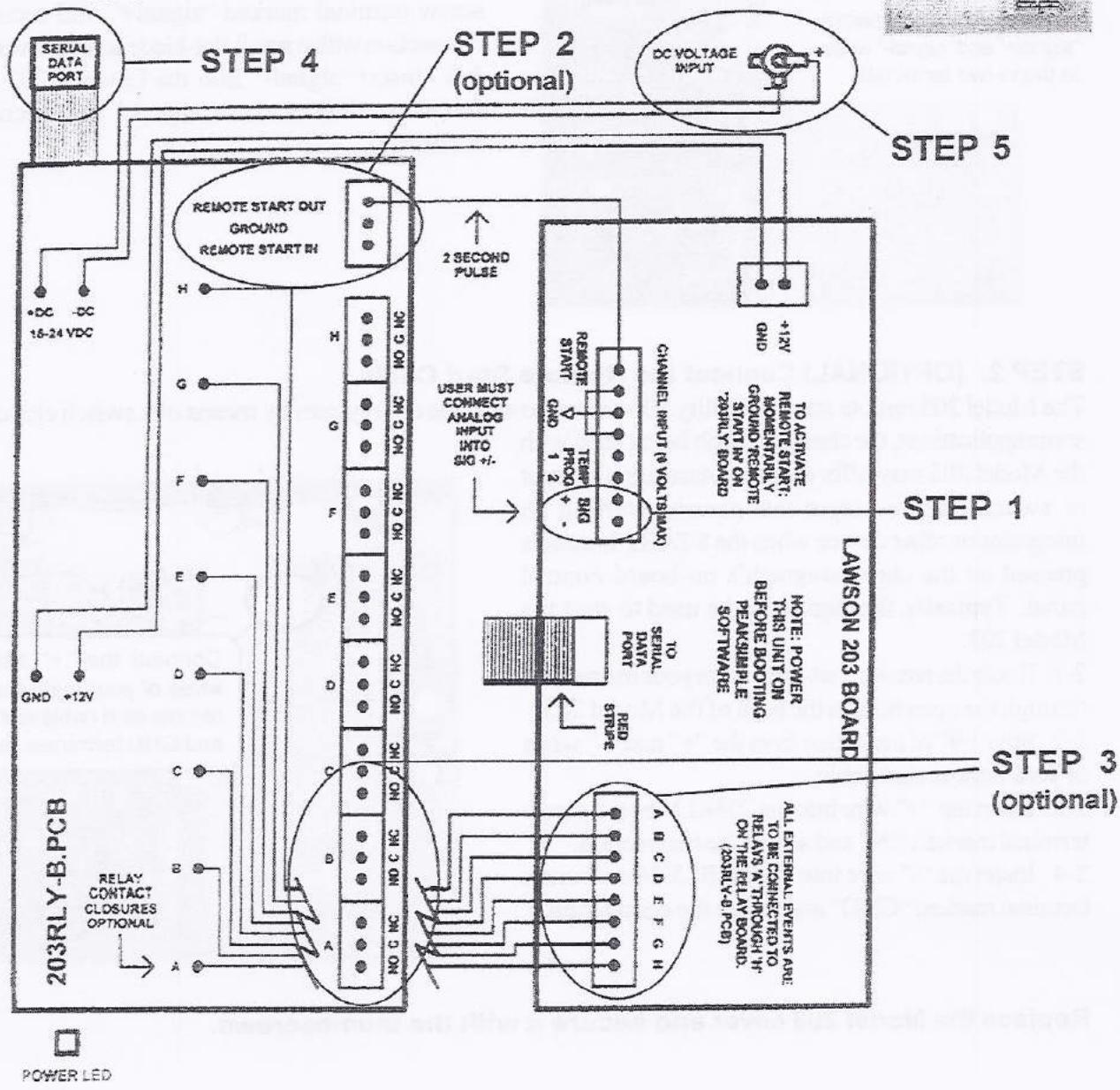
Model 203

Single Channel PeakSimple Data System

The Model 203 may be used with any brand or model of GC or HPLC offering an analog detector output signal ranging from 0-5V. It includes two independent, programmable controls (0-5V analog output) for temperature & pressure or HPLC gradient formation. A remote start input compatible with 2-wire switch closures (typically output by GCs and HPLCs as a remote start signal) is also included for your optional use.

Open the Model 203

Verify that the Model 203 is not plugged into a wall socket and is therefore powered OFF (no power switch). Remove the thumbscrews on both sides of the Model 203 box and slide the top cover up and off. It is connected to the bottom of the box by the ground wire, so just set it next to the bottom half of the box. There is a wiring diagram of the Model 203 circuit boards and all wiring connections on the inside of the top cover. Use this wiring diagram (shown below) to complete steps 1-5 as described on the following pages.

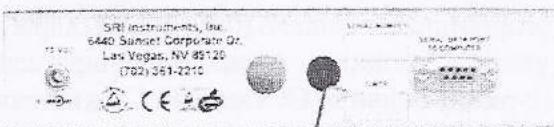


Quick Start

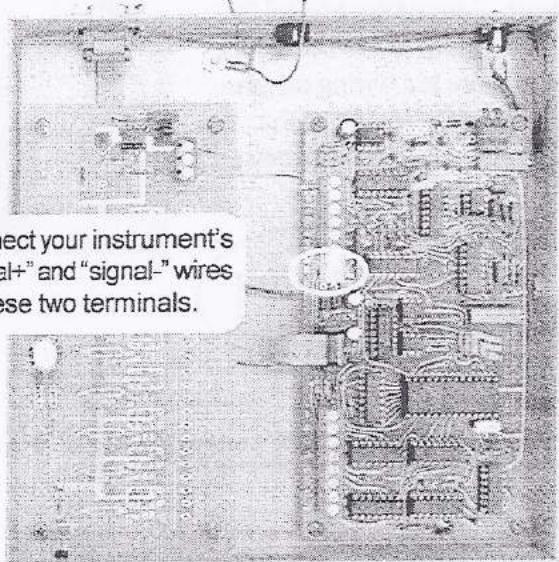
Model 203
Single Channel PeakSimple Data System

STEP 1: Connect the Analog Signal Cable

- 1-1. Route the analog signal cable from your instrument through the open hole in the back of the Model 203.
- 1-2. Strip 1/4" of insulation from the "signal+" and "signal-" wires of your instrument's signal cable.



Route wires through this hole



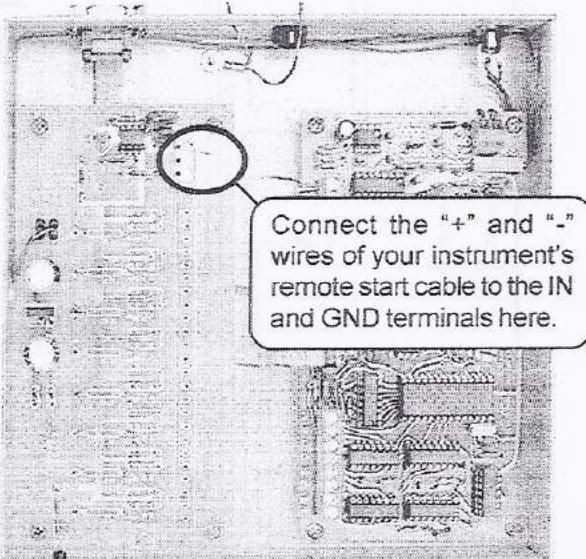
Connect your instrument's "signal+" and "signal-" wires to these two terminals.

- 1-3. Insert "signal+" into the Lawson 203 board screw terminal marked "signal+" and secure the connection with a small flat-blade screwdriver.
- 1-4. Insert "signal-" into the Lawson 203 board screw terminal marked "signal-" and secure the connection.

STEP 2: (OPTIONAL) Connect the Remote Start Cable

The Model 203 remote start capability allows you to start the data system by means of a switch closure. In some applications, the chromatograph being used with the Model 203 may offer a remote start signal output or switch closure output that permits starting an integrator or other device when the START button is pressed on the chromatograph's on-board control panel. Typically, this signal can be used to start the Model 203.

- 2-1. Route the remote start cable from your instrument through the open hole in the back of the Model 203.
- 2-2. Strip 1/4" of insulation from the "+" and "-" wires of your remote start cable.
- 2-3. Insert the "+" wire into the 203RLY board screw terminal marked "IN" and secure the connection.
- 2-4. Insert the "-" wire into the 203RLY board screw terminal marked "GND" and secure the connection.



Connect the "+" and "-" wires of your instrument's remote start cable to the IN and GND terminals here.

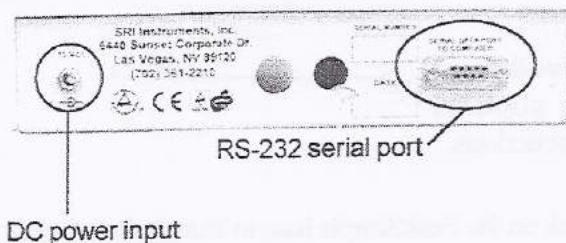
Replace the Model 203 cover and secure it with the thumbscrews.

Quick Start

Model 203
Single Channel PeakSimple Data System

STEP 3: Connect the Serial Cable to Your Computer

The Model 203 is equipped with a RS-232 serial port. A DB-9 type serial cable (provided) connects the Model 203 to your Windows™ computer through the PC's COM port. This simple interface permits the Model 203 to be operated from a desktop or laptop computer.

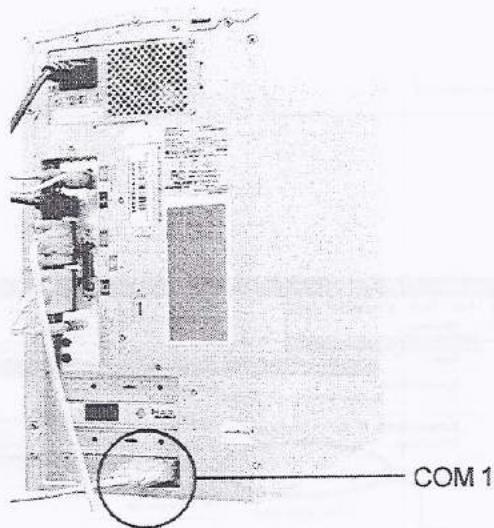


3-1. Secure one end of the serial cable to an available COM port on your PC.

3-2. Secure the other end to the RS-232 serial port on the back of the Model 203.

DC power input

Serial cable (DB-9 type)



COM 1

STEP 4: Connect Power to the Model 203

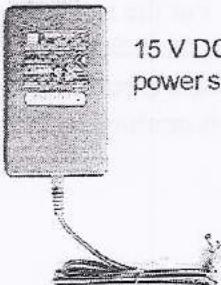
Model 203 units are provided with a 15 V DC power supply which plugs into a standard wall volt outlet. Plug the power supply output plug into the back of the Model 203 and plug the power supply into the wall outlet. Verify that the POWER LED on the front of the Model 203 is lit.

POWER LED



PeakSimple Chromatography Data System
Single Channel Serial Port

15 V DC
power supply

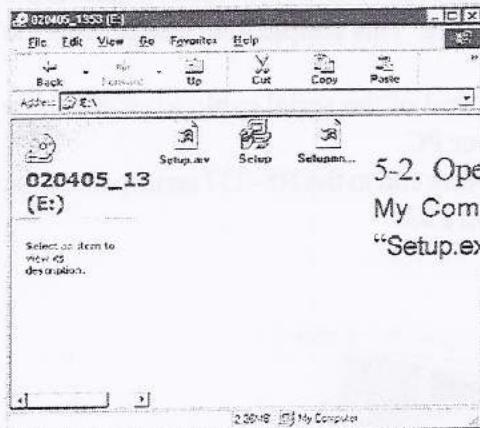


Quick Start

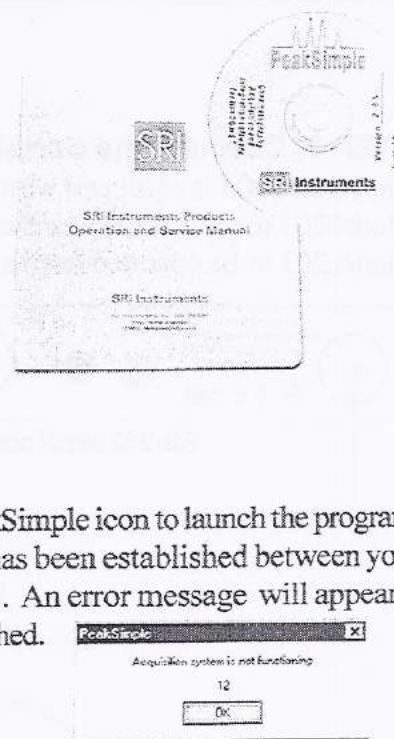
Model 203
Single Channel PeakSimple Data System

STEP 5: Install PeakSimple Chromatography Software

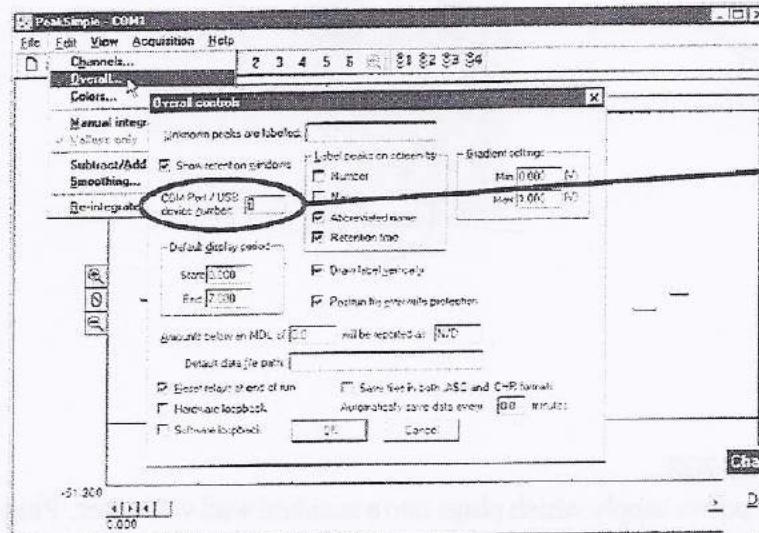
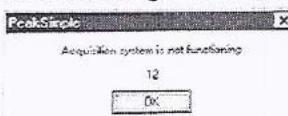
- 5-1. Locate your copy of the PeakSimple software, which is shipped inside the front cover of your SRI manual. Insert the CD or floppy disk(s) into your computer's appropriate drive.



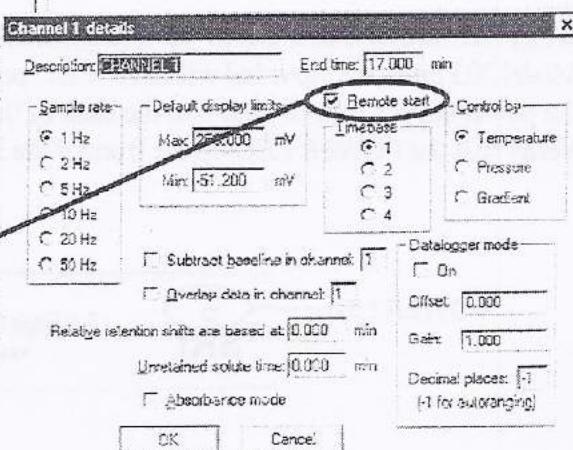
- 5-2. Open the appropriate drive through My Computer, then double click on "Setup.exe" and follow the instructions.



- 5-3. Double-click on the PeakSimple icon to launch the program. Verify that communication has been established between your computer and the Model 203. An error message will appear if communication is not established.



- 5-4. PeakSimple defaults to COM 1. If you did not connect the Model 203 to COM 1, you will get the error message. Open the Edit menu and choose Overall. In the dialog box that appears, enter the number of the COM port to which you have connected the Model 203. If you do not know the number of the COM port to which you connected the 203, use the process of elimination: try different numbers until you find one that works.

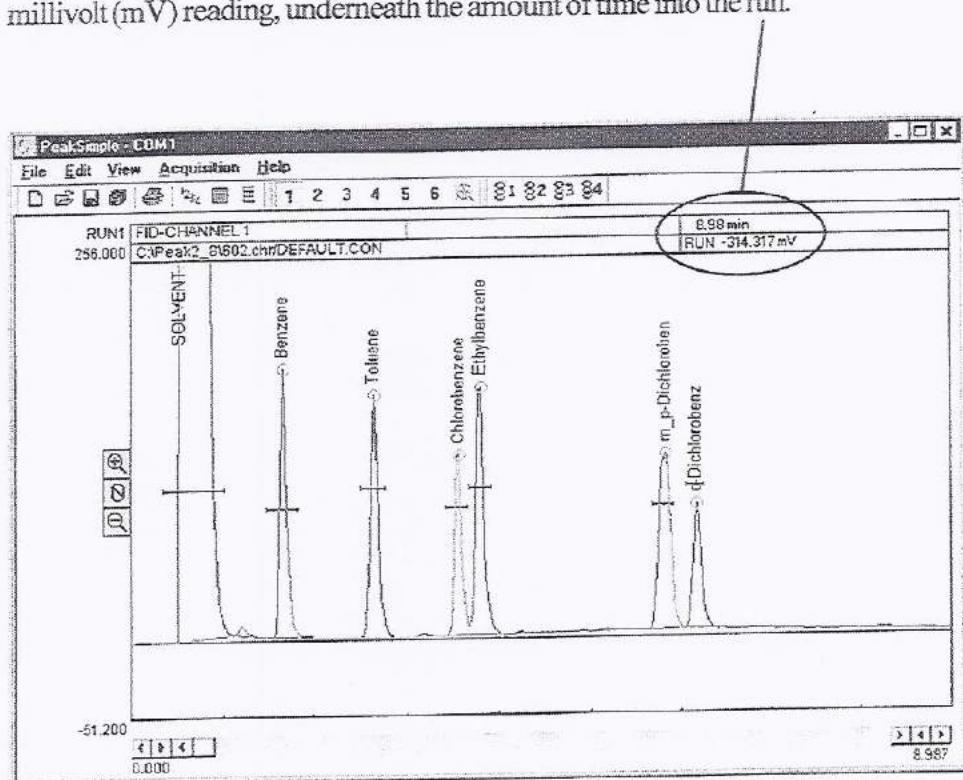


- 5-5. For the remote start option:

Open the Edit menu and choose Channels. Click on the Details button for channel 1. Verify that Remote start is enabled (the box should be checked).

STEP 6: Starting an Analysis

6-1. The upper right corner of the PeakSimple chromatogram window contains real-time information pertinent to your analysis in progress. The status of the run (RUN, STAND BY) is displayed in capital letters next to the millivolt (mV) reading, underneath the amount of time into the run.



6-2. Hit your computer keyboard spacebar to begin the run, and the data is plotted onscreen in the chromatogram window.

6-3. Hit the End key on your computer keyboard to stop the run.

More on PeakSimple:

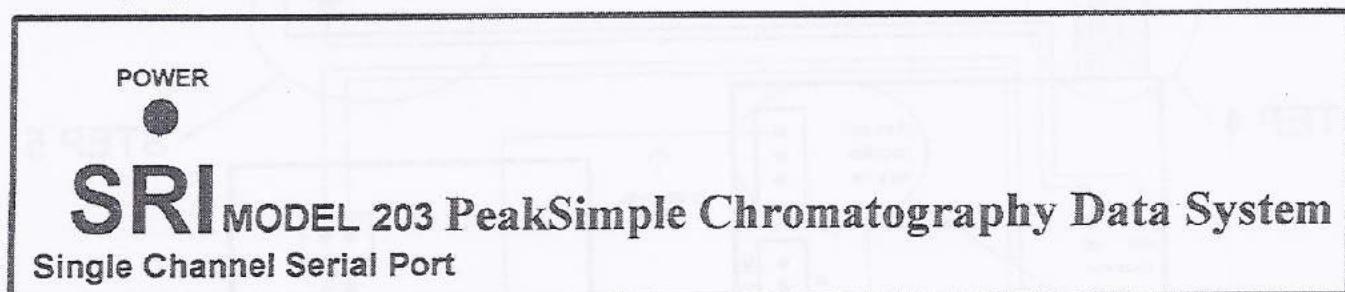
This Quick Start guide presents a very brief introduction to PeakSimple. There are tutorials in the manual and online at www.srigc.com (click on the "Download Our Documents" button) that will acquaint you with PeakSimple's basic functions.

If you have questions or problems, call SRI for free technical support at 310-214-5092, 8am - 5pm California time.

The SRI Model 203 PeakSimple Chromatography Data System is a single channel, analog to digital converter, controlled by our powerful PeakSimple Software. The Model 203 may be used with any brand or model of HPLC or gas chromatograph offering an analog detector output signal.

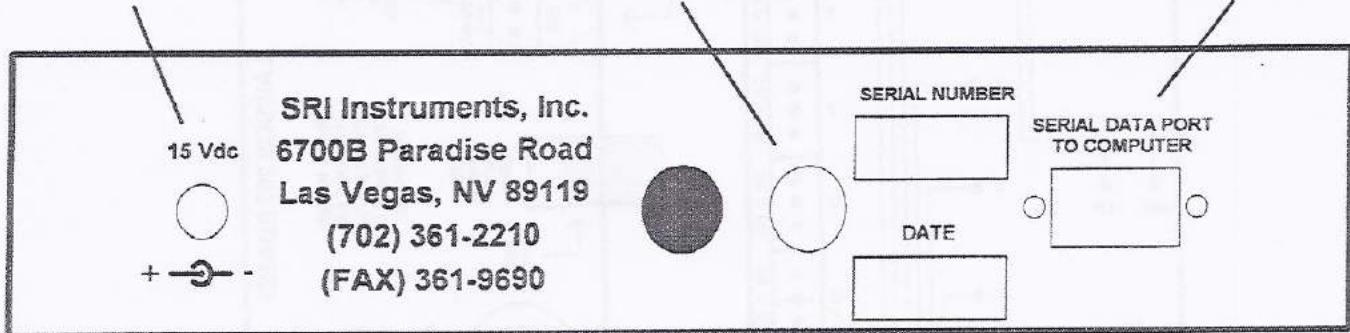
The Model 203 also features two independent, programmable controls which can be used for temperature and pressure ramping or HPLC gradient formation. There is also a Remote Start input that is compatible with two-wire switch closure signals typically output by GCs and LCs as a remote start signal.

Eight TTL outputs (0 to 5 volts) for computer control of external events come standard with the Model 203. If TTL outputs are not adequate for your application, the Model 203 can also be ordered with optional relay circuits offering normally open (NO) and normally closed (NC) switch closures.



(front view)

DC Power Input

Opening for an analog signal cable
and remote device connectionsRS232 serial port
connector

(rear view)

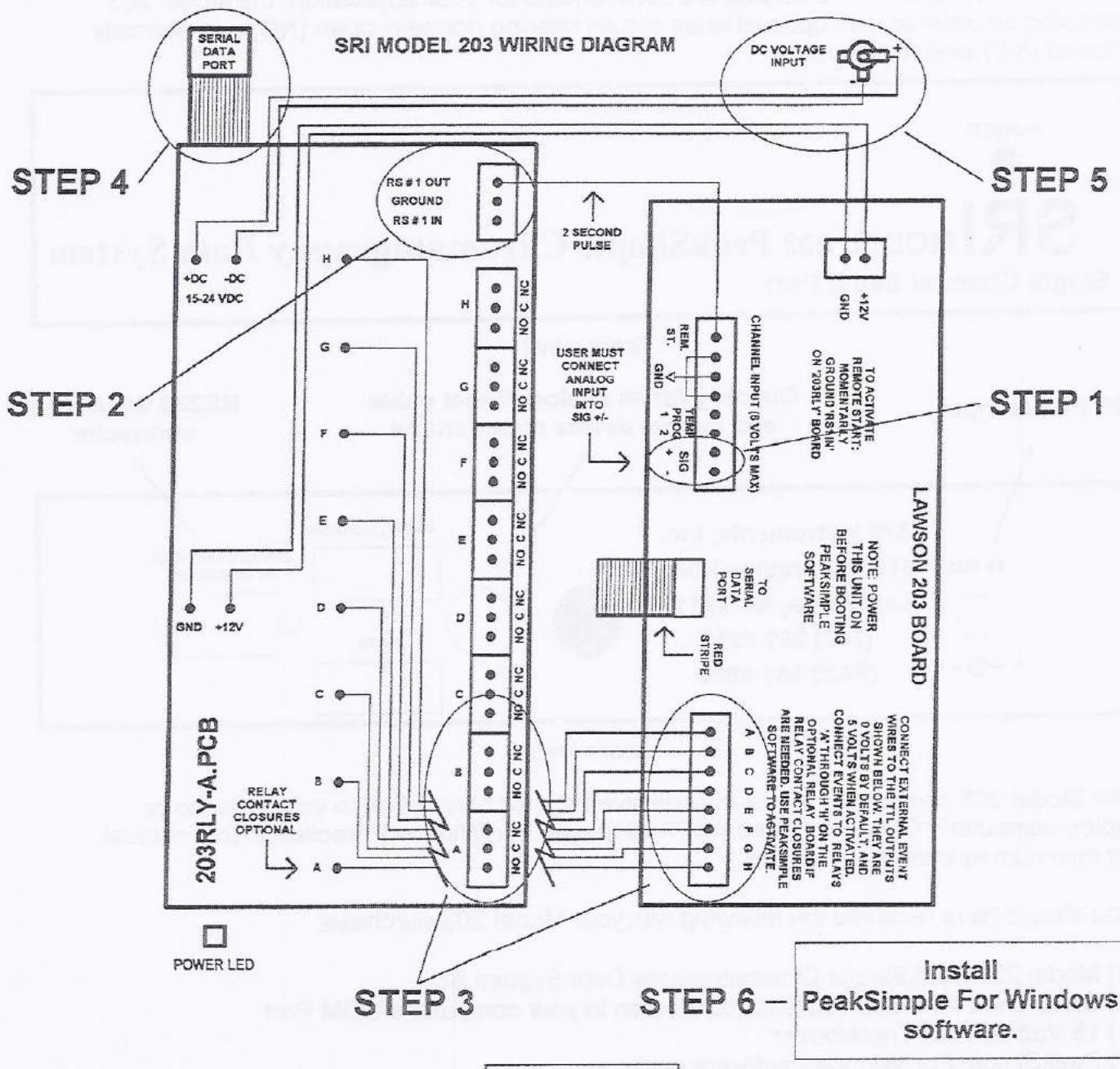
The Model 203 comes with a built-in serial interface for connection to your desktop or laptop computer's COM Port. (See the "PeakSimple For Windows" section in this manual for minimum system requirements.)

You should have received the following with your Model 203 purchase:

- (1) Model 203 PeakSimple Chromatography Data System Box
- (1) Serial Data Interface Cable for connection to your computer's COM Port
- (1) 15 Volt dc Wall Transformer
- (1) PeakSimple For Windows software package
- (1) PeakSimple Chromatography Data System Manual

To connect the Model 203 to your computer it will be necessary to access connection terminals inside the Model 203 Box.

Verify that NO POWER is applied to the unit before performing the following procedure!! Remove the thumbscrews on either side of the Model 203 Box and carefully slide up the top cover and set it aside. Figure 1, (below), depicts the layout of the Model 203 circuit boards and all wiring connections. To connect your system to the Model 203 Data System; please complete Steps 1 Through 6 as shown below and described on the following pages.



STEP 1: Connecting the analog signal cable:

NOTE: The analog output from some GCs or LCs can have a range of up to 10 volts dc. Although the Model 203 will allow high voltage inputs such as this; be advised that signals above 6 volts will generate unwanted noise and signals above 5 volts will be "clipped". (The tops of the waveforms will be cut off.)

Route the analog signal cable from your instrument through the open hole in the back of the Model 203.

Strip 1/4" of insulation off of the 'signal +' and 'signal-' wires of your signal cable. Insert 'signal +' into the Lawson 203 board screw terminal marked 'sig +' and secure the connection using a small screwdriver.

Insert 'signal -' into the Lawson 203 board screw terminal marked 'sig -' and secure the connection using a small screwdriver.

STEP 2: (OPTIONAL) Connecting the remote start cable:

NOTE: The Model 203 offers a remote starting capability as a standard feature. This permits the user to start the data system by means of a switch closure, such as a footswitch. In some applications, the chromatograph being used with the Model 203 may offer a remote start signal output or switch closure output that permits starting an integrator or other device when the START button is pressed on the chromatograph's on-board control panel. Typically, this signal can be used to start the Model 203.

Route the remote start cable from your instrument through the open hole in the back of the Model 203.

Strip 1/4" of insulation off of the '+' and '-' wires of your remote start cable. Insert '+' into the 203RLY board screw terminal marked 'IN' and secure the connection using a small screwdriver.

Insert '-' into the 203RLY board screw terminal marked 'GND' and secure the connection using a small screwdriver.

NOTE: Be sure to check the "Remote Start" box in the PeakSimple For Windows EDIT - CHANNELS - DETAILS screen for channel 1. Refer to the "PeakSimple For Windows" section of this manual.

STEP 3: (OPTIONAL) Connecting the external event relay wires:

The Model 203 features eight 0-5 volt TTL Level outputs that may be turned on and off individually and automatically by means of a timed event table. Manual control is also available via the keyboard.

These outputs may be used to control external events or devices. If TTL level outputs are not adequate for your application, the Model 203 can be fitted with eight relay circuits offering normally open (NO) and normally closed (NC) contact closures. NOTE: Relay contact closures must be specifically requested at the time you order the Model 203.

STEP 3: (Continued)

Route the external event wires from your instrument through the open hole in the back of the Model 203.

Strip 1/4" of insulation off of each wire. Select which device should be connected to events 'A' through 'H' and insert the wire into the appropriate screw terminal and secure the connection using a small screwdriver.

Refer to the PeakSimple Software section of this manual for setting up event tables, keyboard activation, etc.

STEP 4: Connecting the Serial Data Interface cable to your computer:

The Model 203 is equipped with a RS-232 serial port. A DB-9 type serial cable (provided) connects the Model 203 to your personal computer through the PC's COM port. This simple interface permits the data system software to be loaded onto, and operated from, either a desktop or notebook PC for portability in field operations.

Secure one end of the Serial Data Interface cable to an available COM port on the Back of your PC. Secure the other end to the DB-9 connector on the back of the Model 203. (Refer again to Figure 1 for location of the Serial Data port.)

STEP 5: Connecting power to the Model 203:

Slide the top cover back onto the Model 203.

Secure the cover with the two thumbscrews.

The Model 203 requires a minimum input of 14.8 V dc to operate.

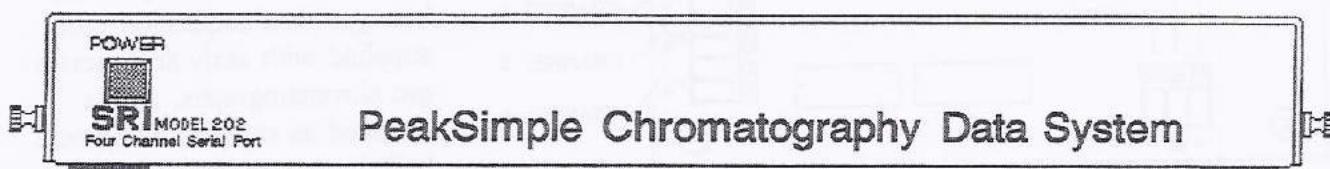
110 volt units are provided with a 15 V dc transformer which plugs into a standard 110 volt outlet. To avoid damaging the unit; plug the transformer output plug into the back of the Model 203 first and THEN plug the main transformer into the wall outlet. Verify that the POWER LED on the front of the Model 203 is lit.

STEP 6: Installation of PeakSimple Software:

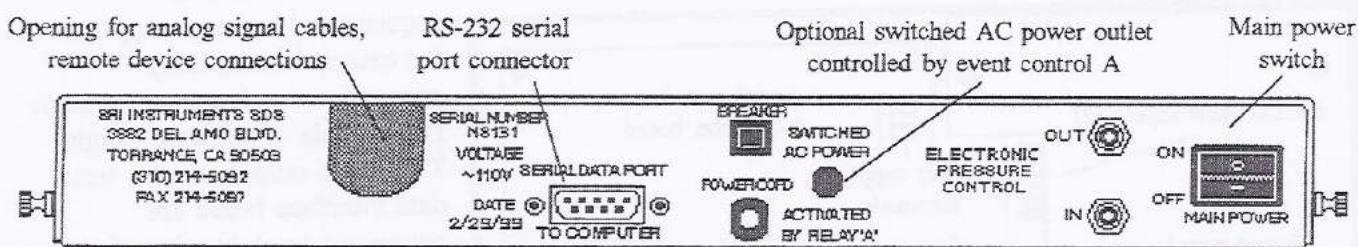
Refer to the "PeakSimple For Windows" section of this manual for details on proper installation and operation.

All SRI 8610B and 8610C gas chromatographs are equipped with a built-in four-channel serial data acquisition system. This system permits the acquisition of up to four analog signals in addition to providing control over the chromatograph's temperature, carrier gas pressure (if equipped with electronic pressure control, also referred to as EPC), and event functions. No additional interface board is needed, as is necessary when using the single-channel expansion bus data acquisition boards in use with pre-1995 SRI 8600 series gas chromatographs. All terminal connections previously found on the interface board are present on the serial interface board. Eight software-controlled relays provide external event control. The serial data acquisition system may be retrofit into early 8600 series gas chromatographs on request. Consult with SRI sales or technical support for details.

The SRI serial data acquisition system may be configured as an independent device, external to the chromatograph, permitting the use of a compact notebook or palmtop PC as the data system (via a serial port cable). In this configuration (shown below), the serial interface is contained within a power supply-equipped protective case and may be used with any brand or model of HPLC or gas chromatograph offering an analog detector output signal (0 - 5.0V). Both MS-DOS and Windows versions of PeakSimple software is provided with the serial interface unit and SRI GCs.



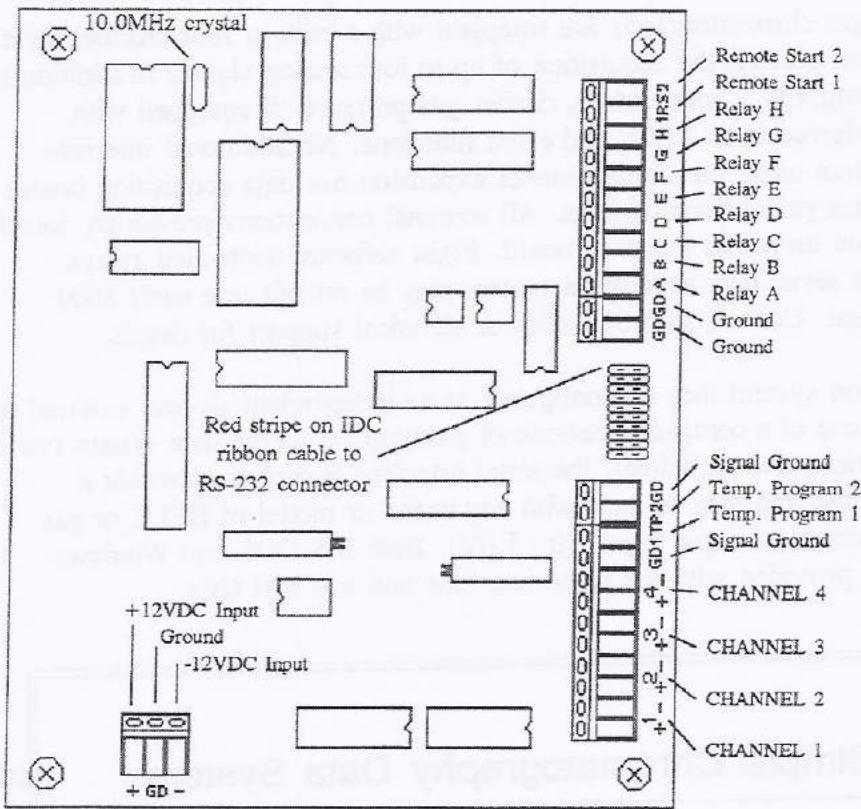
SRI Model 202 Serial data acquisition unit in stand-alone case with 110VAC power supply



Detail of rear panel of model 202 Serial data acquisition unit

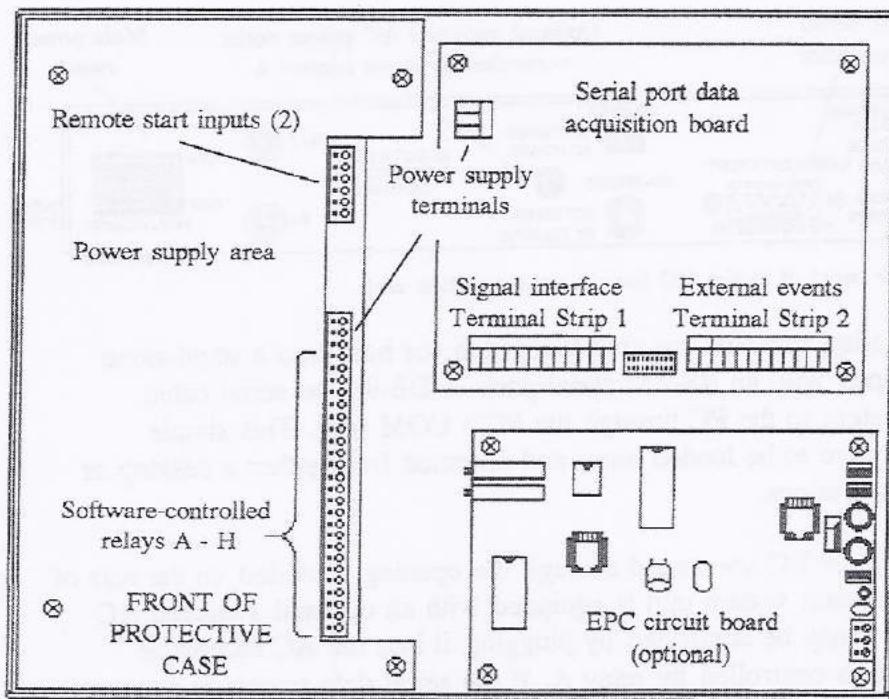
Every serial unit, whether installed in a SRI gas chromatograph, or built into a stand-alone external unit (shown above), is equipped with an RS-232 serial port. A DB-9 type serial cable (provided) connects the serial data system to the PC through the PC's COM port. This simple interface permits the data system software to be loaded onto, and operated from either a desktop or notebook PC for portability in field operations.

Connections to and from the GC or LC are routed through the opening provided on the rear of the serial data system unit. If the serial data system unit is equipped with an optional switched AC outlet, an external AC-powered device may be controlled by plugging it into the AC receptacle provided. The power to this receptacle is controlled by relay A. If the serial data system is equipped with the EPC option, two bulkhead connections will be found on the rear panel. Carrier gas is connected to EPC IN, and the pressure-controlled output is connected from EPC OUT to the GC injector carrier gas inlet. The programmable EPC option is controlled by the data system.



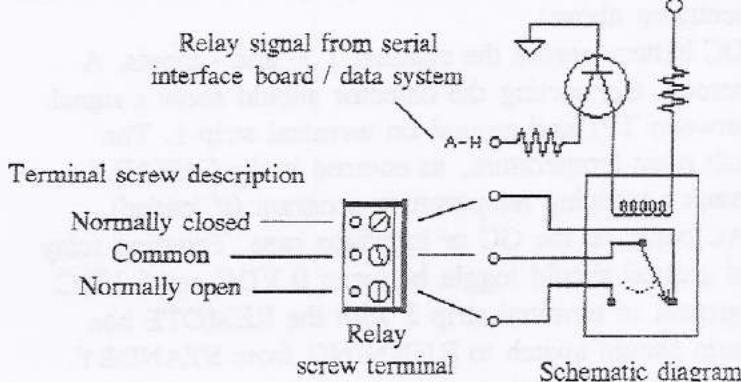
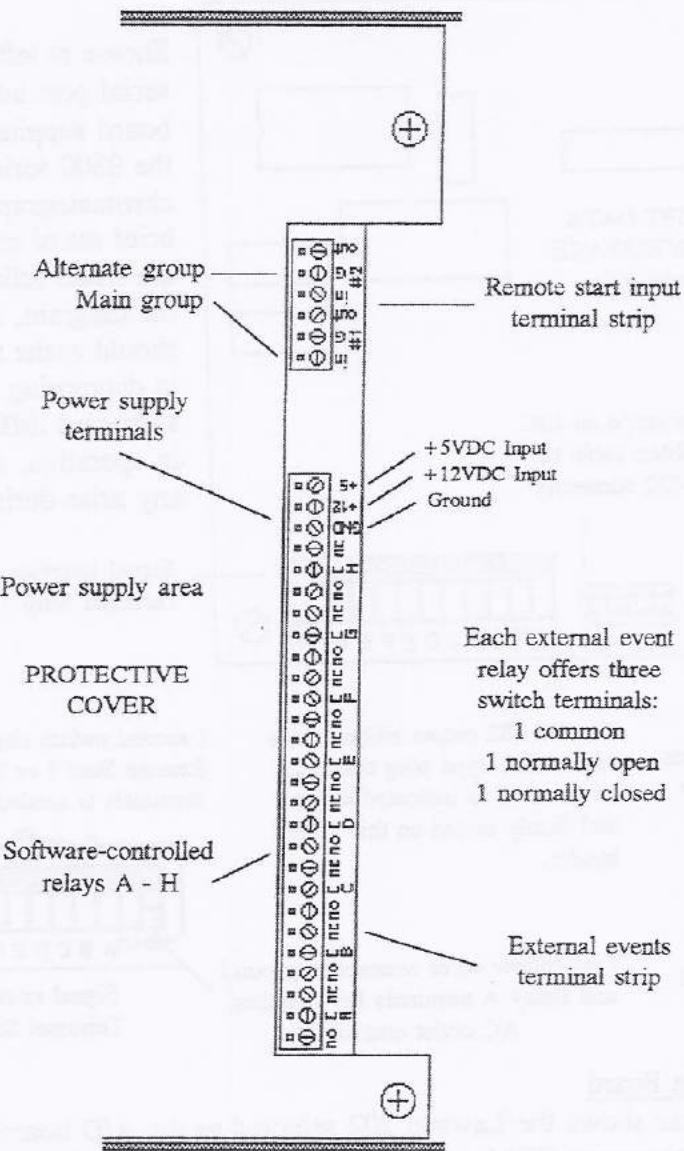
SRI Serial port data acquisition system board terminals

The SRI serial data acquisition system board, illustrated at left, may be installed directly into the chassis of most SRI gas chromatographs, either at time of manufacture, or as a retrofit. This board permits the gas chromatograph to communicate bi-directionally with the data system via a standard RS-232 serial port, in addition to acquiring analog signal data from up to four detectors simultaneously. The SRI model 202 serial data acquisition board replaces the earlier expansion bus-type data acquisition card supplied with early 8600 series gas chromatographs, and is included as standard equipment built into every full-featured SRI 8610B and 8610C GC.



Location of SRI serial port data acquisition board inside stand-alone power supply case

The serial data acquisition hardware supports the external event relay convention implemented in early PeakSimple II software. Eight TTL level outputs on the serial data interface board are connected to eight relays found on the edge of the power supply circuit board. These software-controlled relays permit automated or manual control of external events and devices. Also found on the power supply circuit board are two separate remote start inputs, for the data system main and alternate control groups. Four analog signal inputs are available on serial interface board's terminal strip 2. All unused inputs must be connected to signal ground - do not leave inputs "floating".



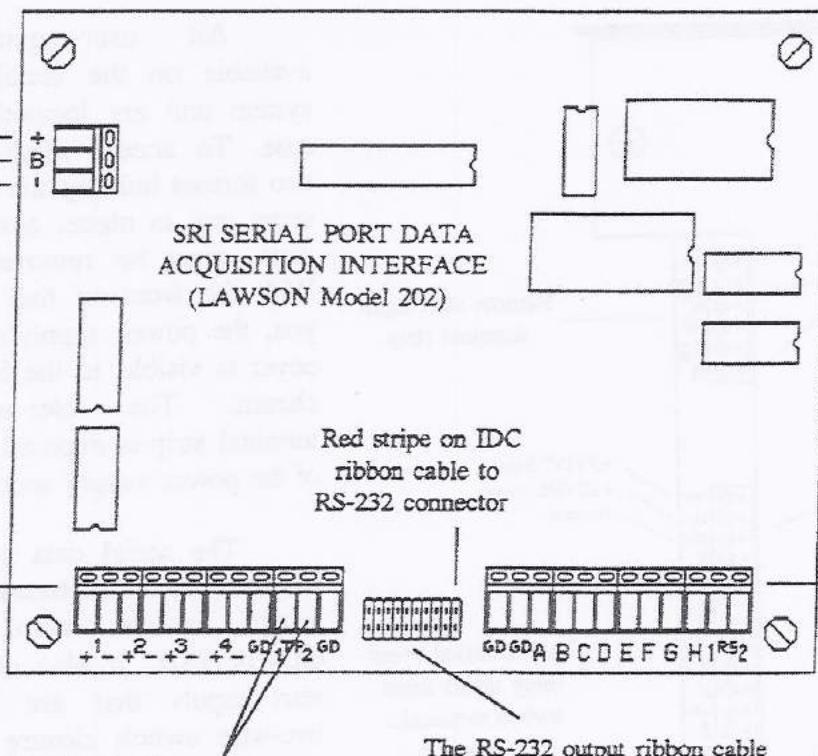
All user-required connections available on the serial data acquisition system unit are located inside the unit's case. To access these connections, the two screws holding the cover plate of the serial unit in place, along with the cover plate, must be removed and set aside. With the front of the serial unit facing you, the power supply's metal protective cover is visible to the left interior of the chassis. The user-accessible screw terminal strip is exposed on the right edge of the power supply section.

The serial data system offers two independent timebases and control groups, for the control of two separate GCs or LCs. It also offers two remote start inputs that are compatible with two-wire switch closure signals typically output by GCs and LCs as a remote start signal. To connect a remote start signal, locate inputs 1 (main group) and 2 (alternate group). Connect one wire to the G terminal (ground), and the second wire to the IN terminal for the desired control group. The remote start capability should then be activated in the appropriate channel's PeakSimple Details screen.

The serial data system is also equipped with eight electromechanical relays that are controlled by the PeakSimple data system. The relays may be turned on and off individually and automatically by means of a timed event table, and manually by direct keyboard control. When a relay event is activated, the serial data system interface board outputs a signal which is sent to the relay driver circuitry in the power supply section. Each relay offers three connections for control versatility - normally open, common, and normally closed. The diagram at left illustrates each relay's knife switch-type operation.

DC power input terminals from AC power supply

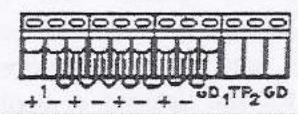
+12VDC Input
Ground
-12VDC Input



Shown at left is the serial port interface board supplied with the 9300 series gas chromatograph. A brief set of test steps are listed following the diagram, and should assist the user in diagnosing suspected difficulties in operation, should any arise during use.

Signal interface Terminal Strip 2

All unused channel inputs should be connected to circuit ground via wire jumpers as shown below



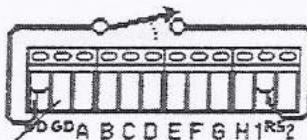
Signal interface Terminal Strip 1

Temperature program outputs 1 and 2 are located here on Terminal Strip 1. Ramp signal from data system is measured with reference to ground

The RS-232 output ribbon cable has an IDC-type plug that must be oriented as indicated above and firmly seated on this 20-pin header.

Two yellow wires connect to ground and Relay A terminals for switched AC outlet control

1 second switch closure between Remote Start 1 or 2 and ground terminals is needed to start run.



Signal interface Terminal Strip 2

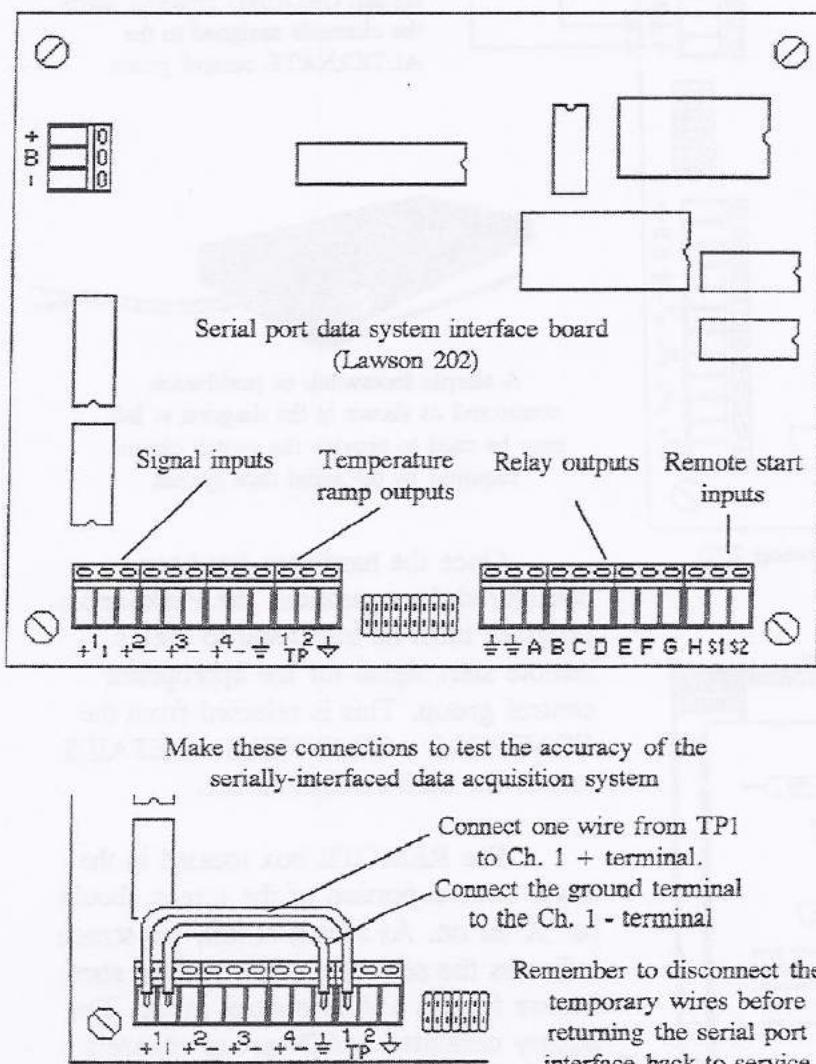
Test Procedure For The Serial Port Interface Board

1. Verify that the software's DETAILS screen shows the Lawson 202 selected as the A/D board type (lower right corner of screen). Verify that the proper COM port number is entered in the PORT ADDRESS box (center left of screen). Do this for each channel in use. Unused channel inputs should be jumpered to ground (as shown above left).
2. Check that the serial cable is plugged into both the computer's appropriate COM port and the serial port interface's serial connector. Make sure that the RS-232 ribbon cable is properly connected to the 20-pin header on the circuit board (see plug orientation above).
3. With the software running, connect a 1.5 VDC battery across the channel 1 + and - inputs. A signal of 1500 mV should be displayed on the screen. Connecting the detector should show a signal.
4. With a DC voltmeter, measure the voltage between TP1 and ground on terminal strip 1. The reading should reflect 10mV per degree of default oven temperature, as entered in the DETAILS screen ($50^{\circ}\text{C} = 500\text{mV}$). This voltage should track a ramping temperature program (if loaded).
5. Plug a lamp or other load into the switched AC outlet on the GC or interface case. Toggling relay A should energize the load. The terminals A and ground should toggle between 0 VDC and 5 VDC.
6. By momentarily jumping terminals RS1 and ground of terminal strip 2 with the REMOTE box clicked on in the DETAILS screen, the data system should switch to RUNNING from STANDBY. The system should not restart after the END key is pressed. If all tests are passed, system is OK.

The SRI serial port data system is equipped with four channels of precision data acquisition. In fact, the signal inputs available on the serial port data acquisition interface offer the precision of a digital voltmeter. Any 0 to 5VDC detector signal may be connected to any one of the channel inputs, and the millivolt reading will be displayed on-screen. This reading should match the readings of any precision meter connected to the same input. No special calibration of detector signal inputs is required.

If it does becomes necessary to verify the precision of the serially-interfaced signal inputs, the following procedure will permit easy confirmation.

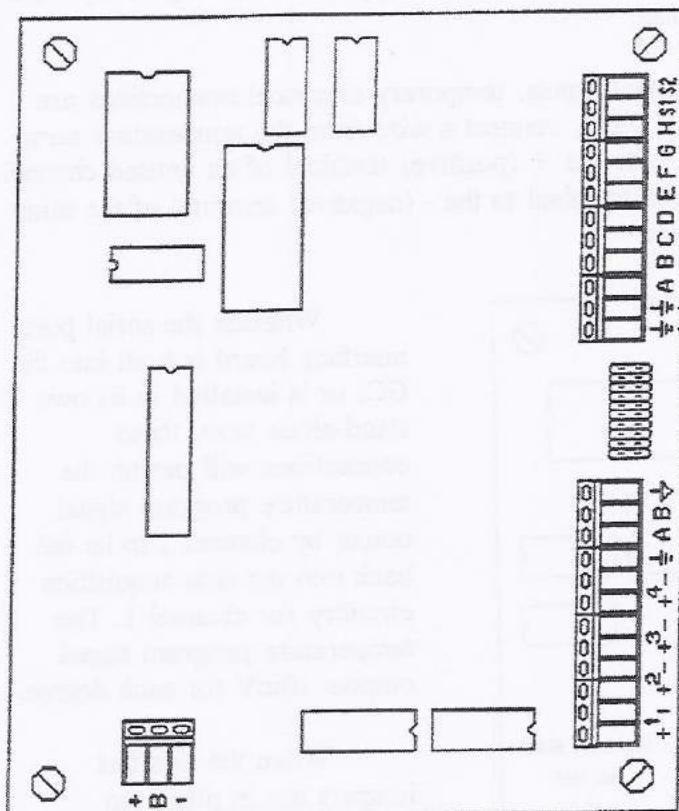
In order to confirm the precision of the signal inputs, temporary electrical connections are made at the serial port interface's terminal strips. First, connect a wire from the temperature ramp output on the serial port interface labelled "TP1", to the + (positive) terminal of an unused channel input. Then connect another wire from the ground terminal to the - (negative) terminal of the same channel input, as illustrated in the diagram below.



Whether the serial port interface board is built into the GC, or is installed in its own stand-alone case, these connections will permit the temperature program signal output by channel 1 to be fed back into the data acquisition circuitry for channel 1. The temperature program signal outputs 10mV for each degree.

When the two test jumpers are in place, an artificial signal is generated by loading the AREATEST.TEM file, included with the PeakSimple software, onto channel 1. When this temperature file has been loaded into the channel 1 temperature programming window, starting a run will send a ramped temperature program signal from TP1 into the channel 1 + input. This signal is plotted, and the user will see that the on-screen readings match those of a reliable digital voltmeter, down to the third decimal place.

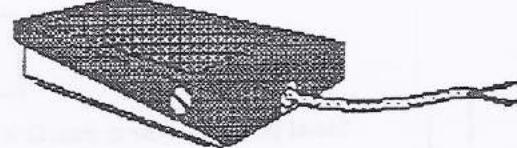
The SRI serial port data system offers a remote starting capability as a standard feature. This permits the user to start the data system (and SRI gas chromatograph, if attached) by means of a switch closure, such as a footswitch. In some applications, such as when a different brand of gas chromatograph is being used with the serial data system, the chromatograph offers a remote start signal output (or switch closure output) that permits starting an integrator or other device when the START button is pressed on the chromatograph's on-board control panel. Typically, this signal can be used to start the serial data system.



Serial port data system interface board (Lawson 202)

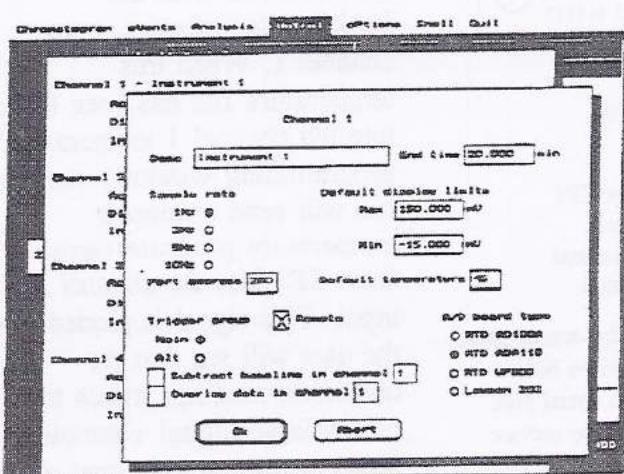
A switch closure between terminal S1 and GROUND remotely starts the channels assigned to the MAIN control group.

A switch closure between terminal S2 and GROUND remotely starts the channels assigned to the ALTERNATE control group.



A simple footswitch or pushbutton connected as shown in the diagram at left may be used to provide the switch closure required by the serial data system

Once the hardware has been configured for operation, the PeakSimple program must be instructed to seek a remote start signal for the appropriate control group. This is selected from the CONTROLS - CHANNELS - DETAILS screen for each channel in use.

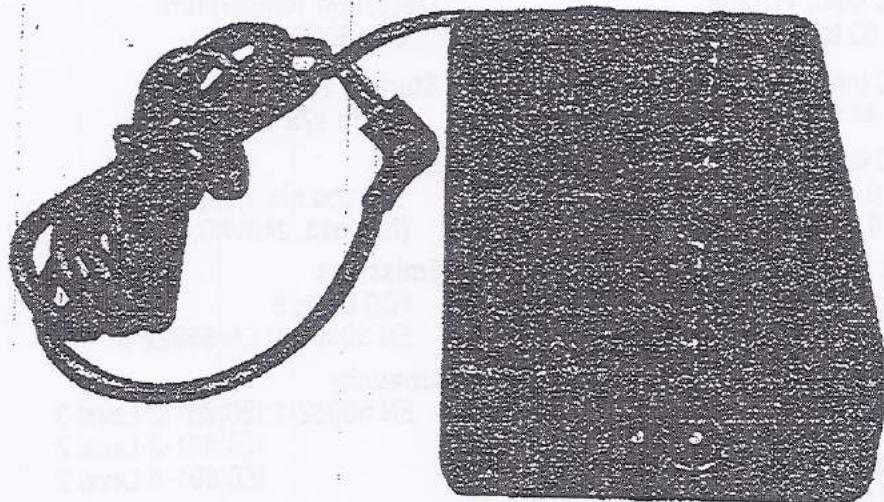


PeakSimple DETAILS screen

The REMOTE box located in the lower central portion of the screen should be "X"ed on. As shown at left, the screen indicates the selection of the remote start feature for the MAIN control group. The factory defaulted MAIN group channels are Ch. 1 and Ch. 2. By default, Ch. 3 and Ch. 4 are set to the ALTERNATE control group.

15W World Wide - Two Wire Universal Input

PSA-15W Low Profile Adaptor Series



Features

- Two Wire Operation
- Zero Minimum Loads
- Slim 1" Height
- <250 μ A Leakage
- ISO 9001 Quality System
- Extended Design Life

Applications

- Networking
- Notebooks
- Peripherals and Terminals
- Portable Instruments

Safety Approvals

- UL1950 [E127643]
- CSA 22.2 234 [LR56927-162]
- TUV IEC 950, EN60950 [S9653583]
- Japan 91-55156

Dimensions: • Length: 110mm (4.33in) • Height: 25.4mm (1.0in)
 • Width: 65mm (2.56in) • Weight: 200gm (8oz)

Output Specifications

Model	DC Output Voltage	Load		Ripple (1) P-P	Regulation	
		Min.	Max.		Line	Load
PSA-15W-050 (P)*	5V	0A	2.5A	50mV	$\pm 2\%$	$\pm 5\%$
PSA-15W-120 (P)*	12V	0A	1.25A	120mV	$\pm 1\%$	$\pm 5\%$

* Indicates center positive DC output

(1) Measured at full load by using a 12 inch twisted pair terminated with a 10mfd capacitor and a 0.1mfd ceramic in parallel



TOTAL P.03

**ISO 9001 • BABT
Facility Approvals**
**15W World Wide - Two Wire Universal Input
PSA-15W Low Profile Adaptor Series**
Characteristics

AC Input Voltage 90 to 264 VAC	Operation Temperature 0 to 50°C
AC Input Frequency 47 to 63Hz	Storage Temperature -25 to +75°C
AC Input Current (Full Load) 0.4Arms (120VAC) 0.2Arms (240VAC)	MTBF 100,000 hrs. minimum (full load, 240VAC, 25°C)
AC Inrush Current (Cold, Full Load) 20A max. (120VAC) 40A max. (240VAC)	Emissions FCC Class B EN 50081-1: EN 55022 B
AC Surge Immunity IEC 1000-4-5; IEC 801-5, Level 3	Immunity EN 50082-1: IEC 801-2 Level 3 IEC 801-3 Level 2 IEC 801-4 Level 2
Leakage Current Less than 250µA	AC Mating Connector Cord, IEC EN 60320/C7 (2 wire)
Dielectric Withstand (Hipot) 3000VAC, 1 min., 10mA	DC Output Connector 2.1mm (ID); 5.5mm (OD) Coaxial Center Positive Standard
Hold-up Time (Full Load) 12msec, 120VAC 20msec, 240VAC	
Overcurrent Protection Short Circuit, Auto Restart	

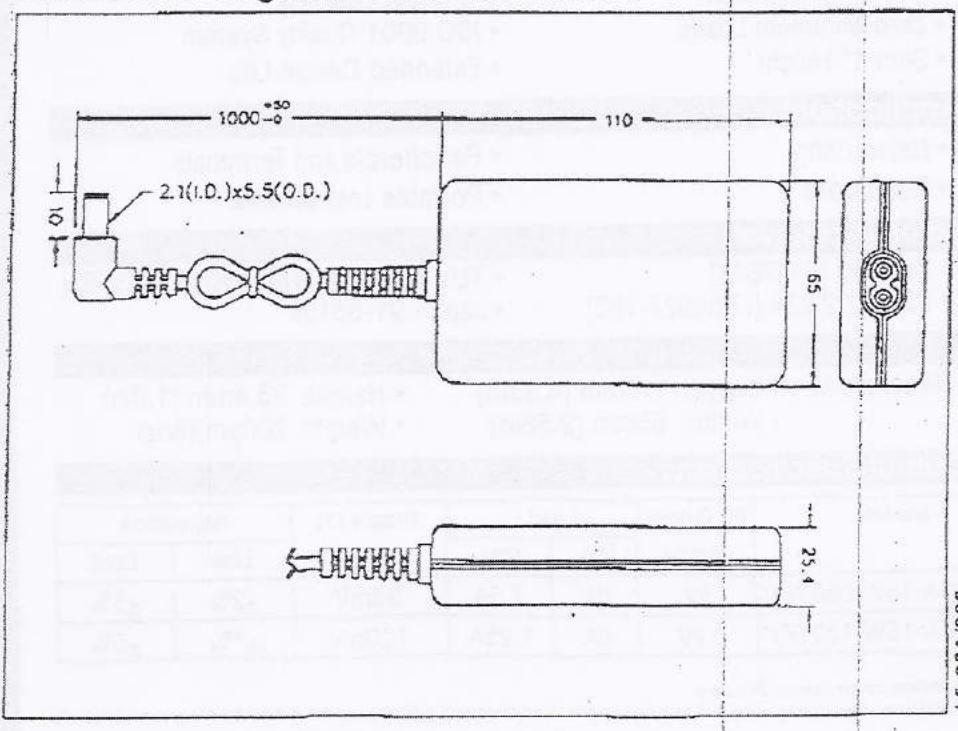

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Fax: (610) 866-9920

Dimension Diagram Unit: mm (inch)


15-050609