3

Front Panel Keys; Functions and Menus

This chapter contains an overview of the functions which are accessed through the System 824 keypad (see Figure 3-1 below):

Figure 3-1 *System 824 Keypad.*

The 14 keys on the System 824 keypad are organized into these four sections: Power, Measurement, Navigation, and Control. These keys are covered in the following order in this chapter:

Power Key

⏻ POWER	Turns on / off the System 824; accesses battery power monitoring and LCD utilities, and is used to close menus.

Measurement Keys

⏭ RUN/STOP	Begins and ends measurements.
⏸ PAUSE	Pauses readings while running, Previews current SPL when stopped. Activates Back Erase function.
⏏ RESET	Displays Reset options menu. (Current, Overall, Options)

Navigation Keys

▲ ◀ ▶ ▼ ARROW	Used to move through System 824 menus, change settings, and scroll through data displays. The ◀ key exits menu's.
✓ SELECT	Selects highlighted menu items (like a button on a mouse), concludes data entry (like the Enter key on a PC keyboard) and activates context specific menus (called *Check* menus).

Control Keys

⊙ VIEW	Displays View menu choices where you can select which data to view.
⏏ DATA	Displays the ***Data Files*** menu. This menu is used to store and recall Data Files.

✐ SETUP	Displays the *Setup* menu. Allows you to view and edit the settings for the active instrument or recall a stored Instrument Definition (ID).
✐ TOOLS	Displays the *Tools* menu. Allows you to change Calibration, Clock/Timer, Memory, Lock, Power Monitor, and Communication settings.
▣ PRINT	Displays the *Print* menu. Allows you to change print settings, and to print data reports and Snapshots.

NOTE: The reference information in this chapter is organized according to functions, rather than by tasks (which can use several functions).

The functions and displays associated with the above keys are described next. In addition, relevant reference material is included for settings and options which may be available for keys on the System 824 keypad.

⏻ Power Key

The purpose of the POWER key ⏻ on the System 824 is to turn the power on or off, close menus, and display the remaining battery life. Once the System 824 is turned on, pressing the ⏻ key again will activate a *PWR* display where you can change screen contrast, turn the backlight on or off, and adjust power options. To turn the instrument off, press and hold down the ⏻ key until prompted to *Please release key*. Release the ⏻ key and the instrument turns off.

This section discusses the following:

• Power-up the Instrument / Viewing *PWR* Display

• Power Settings

• Extra Notes on Power Conservation

To turn on the power:

Step 1   Press the ⏻ key.

Step 2   Allow the instrument to stabilize as indicated by the hourglass symbol in the screen's upper right hand corner.

Step 3   As soon as the hour glass icon disappears, the System 824 is ready to acquire data.

As soon as the System 824 is turned on, you can view the battery life and display settings through the *PWR* display. To do this:

Step 1   Press the ⏻ key so that the following *PWR* display appears:

*Pressing the ◀ or ⏻ key again will return you to the previous display.*

From this display, you can adjust the contrast and turn the backlight on or off. Pressing the ▲ or ▼ key adjusts the contrast. Pressing the ▶ key turns the backlight on or off.

```
PWR                          □
Source:        EXT          ⌐15
Battery:       97%      ┃ → │
External:13.5V         ┃    │
                       ┃    ⌐10
Backlight:→Off         ┃    │
Contrast: ♦ 62         ┃    │
Hold PWR to turn off.      ⌐5
```

This simple display indicates that the System 824 is plugged into an external source which is 13.5 volts; the battery is 97% full; the backlight is off; and contrast is at 62%.

Note: If after powering up the 824 the display is not visible, turn the unit off by holding down the power key. Turn on the power again by pressing the power key and holding it down until you hear three beeps in quick succession.

Step 2   From the *PWR* display, you can adjust the *Power* settings. To do this, press the ✓ key. The following *Power* menu appears:

```
     Power              □
 Status      □┃
 Settings>    ┃
 Charge      □┃
```
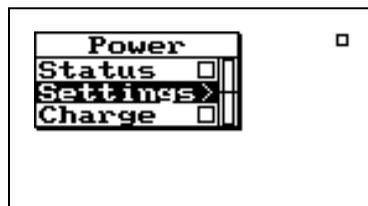
Check menus allow you easy access to system or instrument settings.

The ⬆ or ⬇ arrow keys, allow you to select the desired menu item and by pressing the ▶ key you can make changes to the setting.

The settings menu allows you to adjust the contrast (or viewing angle), turn the backlight on or off, and adjust settings that control the power-conservation features. These power-conservation features allow you to set the instrument to do the following:

- Turn the backlight off after a set amount of time

- Automatically go into a standby mode after a set amount of time (display blanks and serial port turns off)

- Automatically shut off the instrument after a set amount of time

- Conserve internal battery for memory retention

If no keyboard activity is detected for the period of time set by the **Backlight Time** setting, the instrument will turn off the backlight. This conserves battery life since the backlight is a major consumer of battery power. If **Backlight Time** is set to zero (0), then the timer is disabled and the backlight will stay on until turned off manually. If the battery capacity is less than 30%, the backlight will automatically shut off in 3 seconds to conserve power. If the battery capacity is less than 15%, the backlight will not turn on at all.

Power Settings

Use the ⬥ and ⬦ keys to move from one setting to the next. Then use the ▶ key to change the selected setting. The ◀ key is used to return to previous menus.

The Power menu provides the following menu items:

Menu Items	Description
| Status | Display's the Power Monitor display that shows the current battery type and charger status.<br><br>```
Battery              ⚡□
Source:      EXT ┌─┐ ┌15
Battery:      54% │ │ │
External:12.3V   │ │→│
                 │ │ ┌10
Battery:   3.86V │ │ │
          85.4°F └─┘ └ 5
Alkaline
``` |
Settings	Described later in greater detail.
Charge	Activates the smart battery charger.
Type	Select Alkaline or NiMH for individual cells. See Connecting Internal or External Power" on page 1-18

Once the smart charger has been activated the 824 will not allow you to shut it off when the power key is held down. The 824 will beep and give the warning "Charging Battery, Please Wait". Simply press the power key again to force the 824 to shut off.

The charge mode will be activated automatically when external power is applied and the battery is at 75% capacity or less.

Whenever external power is applied, the 824 will trickle charge to keep the battery pack at full charge

WARNING! **The 824 must have external power applied and be left "ON" in order for the battery pack to charge!**

The power *Settings* menu item provides the following eight settings:

Menu Items	Available Setting Options	Description
Power Off Mode	Blank LCD Auto Off Manual Off	**Blank LCD** - The instrument LCD display and serial communication port, will turn off after the keyboard and serial port have been inactive for the period of time set by the ***Standby Time*** setting. **Auto Off** - If the instrument is stopped with no reports printing, and the instrument remains inactive (i.e with no serial interface commands or key presses), for the period of time, set by the ***Auto-Off Time*** setting, the instrument will turn off. **Manual Off** - No automatic power reduction features are enabled.
Auto Off Time	0 - 99 minutes	When *Auto Off* is activated, the System 824 powers down in the specified number of minutes of inactivity.
Standby Time	0 - 99 minutes	*Time (in minutes) when **Standby Time** power save is activated. When activated, the System 824 screen blanks and the serial port turns off. If any key is pressed or if incoming serial activity is detected, the instrument will exit **Standby Time** and become active again.*
Backlight Time	0 - 99 seconds	Time (in seconds) when the backlight is turned off. The backlight is reactivated when any key is pressed.
Backlight	On/Off	Turns backlight on/off.
LCD Contrast	0 - 99% (The default contrast setting is 66%)	Adjusts the contrast or viewing angle of the LCD display. This is done by pressing either the up or down arrow key. The ⬆ key increases the contrast percentage, darkens the display and makes it visible from a higher angle (when viewing from the bottom of the instrument). The ⬇ key decreases the contrast percentage, lightens the display and makes it more visible from a lower angle.

External Power	AC Pwr Battery	**AC Pwr** - Indicates that the external power source is not a battery. If the external voltage is less than the internal battery voltage, then the internal batteries will supply power for the instrument. **Battery** - Indicates that the external power source is a battery (which should not be allowed to deep-discharge).
Min Battery	0 to 15.9 (10.8 volts is the default setting)	Sets the external cutoff voltage when a battery is used for external power. 10.8 volts DC is the recommended setting for a 12 volt battery.

Extra Notes on Power Conservation

NOTE: To exit the Power display, press the left ◀ arrow key or use the view key to the select desired view.

If you are using an external power supply, the ⏻ key will display the constant voltage coming from the power supply. If the external battery supply ever drops below 10.8 Volts, set by the *Min Battery* setting, the 824 will automatically turn off. Discharging some types of batteries (such as lead acid) deeply will greatly shorten their service life.

For detailed information on the use of external power, see "Power/Current Draw of 824 Using External Power" on page C-49

WARNING! Battery life is reduced by approximately 25% with the backlight on.

WARNING! Loss of power may cause loss of memory

WARNING! Turn off power to change the microphone or preamplifier. Sensitive electronics can be damaged by voltage spikes.

⏯ Run/Stop Key

Use the ⏯ RUN/STOP key to toggle the data gathering mode of the instrument from stop to run, or from run to stop. The mode of the instrument is indicated on the display in the upper right hand corner by a running man symbol if the

instrument is running, or a box symbol if the instrument is stopped.

NOTE: The Indicator Box in the upper right hand corner of the display will be solid if data is present, or open if no data has been taken.

Repeatedly pressing the ⊕ RUN/STOP key after beginning a measurement will stop, then restart the measurement without resetting the data buffer. As a result, the time will continue to increase for the overall measurement.

⊕ Reset Key

The ⊕ RESET key allows you to clear the data of the current measurement.

If you are using the simple sound level meter (SLM) instrument and wish to reset the data, simply press the ⊕ RESET key. This will reset all the data including the accumulated measurement values such as L_{eq}.

The SSA, ISM, and LOG instruments within the System 824, contain two independent data buffers that can separately accumulate data. In essence, the instrument becomes two sound level meters in one. The data in the primary buffer is referred to as the "overall" measurement, while data in the secondary buffer is referred to as the "current" measurement.

For the other instrument types, the System 824 gives additional flexibility when resetting the data. If you press the ⊕ RESET key *while the instrument is running,* the instrument will reset its data buffer for the current measurement and set the elapsed time for the current measurement to zero without affecting the data in the overall measurement.

If you press the ⊕ RESET key *while the instrument is stopped,* a menu will appear that will give you the choice of resetting the current data or the overall data together with the appropriate elapsed time counters.

When editing system or instrument settings containing a string of numbers or characters, the ⊕ RESET key can also be used to clear the characters from the current position of the cursor to the end of the string.

⏸ Pause Key

The ⏸ PAUSE key has 3 basic functions in the ISM and SSA instruments: To Pause a measurement to avoid unwanted noise from entering into the measurement data. To erase unwanted data from the measurement and to preview the data coming into the instrument without registering the data.

Pause

The first function of the Pause key will cause the instrument to not accept any incoming data. Unlike pressing the stop key, pressing the pause key will not start a new measurement, but rather will simply pause the existing measurement for a moment. After the desired pause period, press the pause key ⏸ again to resume the measurement. The following screen will appear.

Pause, Back Erase

The second function of the pause key is to remove unwanted data from the measurement. The cursor is used for this funciton. The ◀ and ▶ arrow keys move the cursor across the graph.

NOTE: Moving the cursor bar left is like moving back in time.

Once it is at the desired point, press the ✓ key to delete the data to the right of the vertical bar. After the instrument has deleted the unwanted data, the measurement will resume automatically.

Preview

Pressing the ⏸ PAUSE key when an instrument is "stopped" brings up a ***Preview*** display which allows you to view the SPL without affecting measured data. Pressing the ⏸ PAUSE key again will exit this screen or simply press the ⏵ RUN/STOP key to exit this screen and start taking a measurement.

```
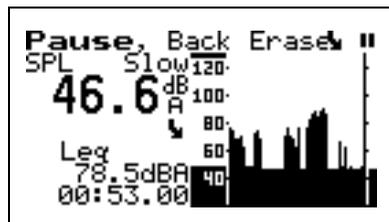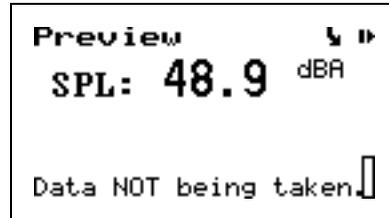Preview              ↘ ⏸
   SPL: 48.9  dBA



Data NOT being taken.
```

◀ ▶ ▲ ▼ Arrow Keys

The ▲ and ▼ (Up and Down) arrow keys navigate from one item to another in a menu, or from one record to another when displaying history data. Pressing and holding an arrow key will repeat the actuation of the key. These keys are also used to modify settings. Use the ▲ key to step to the next higher number or character value, and use the ▼ key to step to the next lower number or character value.

Pressing and holding an arrow key will repeat the actuation of the key. The repeat rate increases as the key is pressed for a longer period of time. Key pressure also has an effect on the repeat rate as does the amount of data available to view.

The ◀ and ▶ (Left and Right) arrow keys move between data displays, to move between characters of a setting being modified and to move through menus. Use the ▶ arrow key to move from the current menu into a sub-menu or to modify a setting. Use the ◀ arrow key to move out of a setting, to move from a sub-menu back to its parent menu, or to move back to a previous menu or display. The ◀ and ▶ (Left and Right) arrow keys will also move the vertical cursor bar within certain measurement displays.

✓ Check Key

The ✓ key allows you to choose an item from a menu or to confirm the entry of a setting.

Pressing ✓ in many displays will bring up a menu from which you can make changes to settings appropriate to that display.

⊙ View Key

The display of data on screen of the System 824 is controlled by the ⊙ VIEW key. Each instrument type (e.g. SSA, ISM, or LOG) has its own set of available data displays which are selected using this key. When you press the ⊙ key, a menu containing the available data displays will appear. The following example is a *View* menu for the SSA instrument:

```
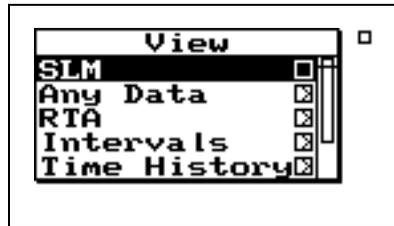           View          □
 SLM                 □
 Any Data            ☒
 RTA                 ☒
 Intervals           ☒
 Time History☒
```

The ▲ or ▼ keys and ✓ key allow you to select the desired display. While viewing data, often more than one display screen is available. You can use the ◀ and ▶ arrow keys to move from one screen to another.

The data displays available under the ⊙ key depend on the instrument type used to measure the data. These will be described in more detail in later chapters dedicated specifically to each instrument type.

⏸ Data Key

The ⏸ DATA key controls the storing and recalling of measurements, or data files from memory. Each file may contain cumulative data, time history, interval history, calibration data and histogram tables that can be stored as distinct measurements from other measurements with their data and histories. A list of all stored measurement data is shown and individually recalled by selecting it using the arrow keys and check key.

To access the *Data Files* menu press the ⏸ DATA key. A screen similar to the following appears:

If no data files have been saved, the Recall option will not be available for recall.

```
┌─────────────────┐  □
│   Data Files    │▐
│ Store File      │▐
│ Recall Files□   │▐
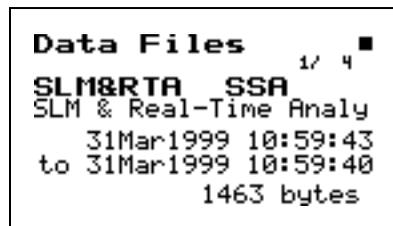└─────────────────┘
```

From this menu you can store data or view and recall stored data.

If the instrument is running when you try to store a Data File, you will be prompted to stop the measurement before storing the file.

To store measurement information into a *Data File*, highlight *Store File* using the ▲ or ▼ keys. Press the ✓ key to select. The instrument will beep once to signify that the measurement has been stored.

To view a data file, use the ▲ or ▼ keys to select the desired data file. Each data file is marked with a number and the instrument used (e.g.: SLM&RTA SSA).

Press the ⏸ Data key again and select **Recall File**s to view a summary of the stored data files. The following screen appears:

```
┌─────────────────────┐
│ Data Files      1/ 4 ■│
│ SLM&RTA  SSA         │
│ SLM & Real-Time Analy│
│    31Mar1999 10:59:43│
│ to 31Mar1999 10:59:40│
│          1463 bytes  │
└─────────────────────┘
```

To move from one record to another, use the ▲ or ▼ keys.

To exit the Data Files view, press the ◀ to return to the previous display or select a new view using the ⊙ VIEW key.

Pressing the ⱱ key from the Data Files display, brings up a menu that allows you to recall data, jump to beginning or end of all records, find a specific data file, or purge all data files.

The **Data Files** screen shows the currently selected record number (*1/4*), start & stop dates and times, and the total bytes used by the record.

Pressing the ⱱ key and selecting **Recall File** from the *Data Files* menu, allows you to recall that measurement. An active data display will be shown.

When recalling a data file, the System 824 will switch to the instrument definitions (ID) that the data file was stored as (i.e. SLM&RTA to Logging, if the user was currently using the SLM&RTA instrument and recalled a Logging data file). If the run key ⏵ is pressed while a recalled data file is active, the data is reset and the new data is taken using all of the settings that were stored with that data file.

The data file also contains calibration information that may be different than the current calibration. When Run is pressed, the recalled calibration is replaced by the latest /current calibration.

✐ Setup Key

To the left of each ID is a symbol giving information about that ID: The '>' symbol indicates that the ID is currently active or that the ID is currently in memory. The lock symbol indicates that the ID is locked which protects the ID from being easily deleted. Press TOOLS to write protect or un-protect an ID. The 'p' symbol indicates that the ID is permanent and pre-defined. The '✱' symbol indicates that the ID has changed and has not yet been saved.

Use the ✐ SETUP key to access the **Setup** menu where you can select, create, and manipulate groups of instrument settings known as "instrument definitions" (ID). The **Setup** menu presents a list of pre-defined IDs (marked with a "p") and user-defined IDs (if previously configured) that are available for use. To access the **Setup** menu, press the ✐ key. A screen similar to this appears:

An ID defines the data that is to be measured for a particular project or type of application. The defined project IDs are listed in the **Setup** menu. You can create, edit, copy, and delete these project settings within this menu. You can also

define a project ID on a computer using the 824 Utility software and then install it into the instrument where it may be selected for use. For example, one project may require the "simple SLM" where no data logging is performed and the weighting and detector controls are available in the data display (rather than in a menu). Another example may be an hourly statistical measurement set to run for 8 hours using a LOG ID.

If data from a previous ID was not saved, you will be prompted to do so at this time. If settings to the current ID have been made, you will be prompted to save the ID at this time. The ISM and AUD instruments do not issue these prompts.

To select an instrument definition (ID), use the ▲ or ▼ keys to highlight the desired ID. Press the ⓥ key to select and activate the it. The **Setup** menu then closes and the main display appears.

The modification of a selected ID to meet the requirements of a particular measurement application is an entire topic in itself which will be addressed in general in the next chapter and in detail in later chapters individually describing the setup and operation of each of the instrument types available for the System 824. However, once these modifications have been made, the new ID is named and stored as described in the following section.

Use the **Setup Tools** menu to create new IDs. To do this, press the ⓘ SETUP Key and highlight the **Edit Settings** menu option. Press the ⓕ TOOLS key to display the following screen:

With the **Setup Tools** menu you can create and/or modify instrument definition (ID) settings. The **Setup Tools** menu provides the following three options, which are later described in greater detail.

:

Menu Items	Description
Save ID	Saves/Creates an ID
Title	Description of ID
ID Name	Name of ID

Save ID

The *Save ID* menu item saves or creates an ID. Use the ⏶ or ⏷ keys to highlight *Save ID*, then press ✓. You will then be prompted to verify the name for the ID. (See ID Name below)

Title

You can attach a description to your ID with the *Title* menu item. This description can be used on printed reports and other items. The *Title* field is capable of holding up to 30 characters.

ID Name

You use the *ID Name* menu item to give an ID a unique name that represents the ID in the *Setup* menu. The *ID Name* field is capable of holding up to 8 characters.

Name format: "cccccccc.ccc" The first 8 characters form the name and the last three are the extension that indicate the instrument type (e.g. "SSA"). The name does not have to be a full 8 characters long. Leading spaces and symbols will be removed from a name. Case is preserved but ignored when finding names. Embedded spaces will be converted to underscore. The name should start with a letter or number. The characters generally used in a name are A to Z, 0 to 9, and _ - (underscore, and dash) but may also be " ' ( ) [ ] !@ # % $ ^ &.

The allowed characters in names for IDs are compatible with PC filenames. The following characters are NOT allowed:

$* + , . / : ; < = > ? [\ ] |$

Write Protect, Delete, Write Enable IDs

NOTE: Within a given active instrument definition (ID), write protect or delete operations cannot be performed on files that were stored using that same ID. In order to protect or delete these files, the active ID must be changed. For example, stored FFT files can be protected or deleted by switching from the FFT ID to an ISM, LOG, or RTA ID.

The ID that is active, with a ">" by it, cannot be deleted.

Permanent IDs (marked with a 'p' in the Setup menu) cannot be write protected, modified, or deleted.

Write protected IDs (marked with a locked symbol on the Setup menu) cannot be deleted. The icon will not be displayed if the currently active ID is being used. Also, the currently active ID cannot be deleted.

After an ID has been created, it can be protected (or locked), or deleted if necessary. To do this, use the ▲ or ▼ keys from the **Setup** menu to highlight the desired ID.

Press the Ⓕ TOOLS key, and the following screen appears:

```
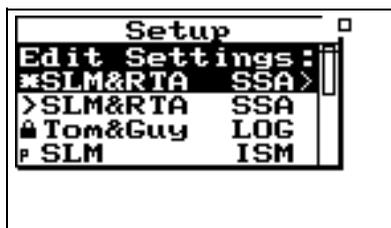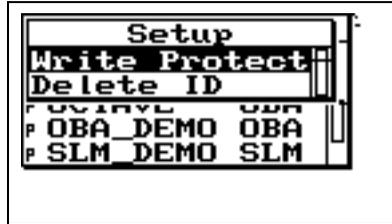         Setup
 Write Protect
 Delete  ID
P OBA_DEMO   OBA
P SLM_DEMO   SLM
```

To write protect (or lock) an ID, use the ▲ or ▼ keys to highlight **Write Protect**, and then press the Ⓥ key. A locked symbol appears next to locked IDs in the Setup menu (except for the current running ID) and symbolizes that this ID is "Write Protected". Once the ID is write protected, it cannot be changed or deleted until it is "Write Enabled".

To delete an ID that has not been write protected, use the ▲ or ▼ keys to highlight **Delete ID**, then press the Ⓥ key. The ID is removed from memory and the ID name is removed from the **Setup** menu.

To write enable (or unlock) an ID, use the ▲ or ▼ keys from the **Setup** menu to highlight the desired write protected ID (marked with a locked symbol). Press the Ⓕ TOOLS key. Press the Ⓥ key on the highlighted **Write Enable** menu option. The locked symbol disappears next to the ID shown in the **Setup** menu, symbolizing that this ID is write enabled.

f Tools Key

The *f* TOOLS key allows you to access controls and operations such as calibration, battery usage, memory usage, setting date and time, timer, or computer port settings. You press the *f* TOOLS key to access the **Tools** menu. To modify settings press the ▶ key on a menu item from the **Tools** menu. Pressing the ✓ key on a menu item from the **Tools** menu allows you to view system settings and other displays.

NOTE: From any of the following displays, the ▲ and ▼ arrow keys will step to the next or previous display in the list.

The **Tools** menu provides the following seven options, which are afterwards described in greater detail:

Menu Item	Available Settings Options (▶ key from *Tools* menu)	Setting Screens (✓ key from *Tools* menu)
About	Name (company name) Name (address line 1) Name (address line 2) Title (30 characters) Date Format (Normal or ISO-8601) Takt (enables Takt functionality) Yes or No	a - System revision information b - User information c - Installed instrument options
Calibration	Check Change Cal Level Calibrator S/N Noise Floor (not all versions)	Calibration - dates, times, and measurement when checked or changed

Clock/Timer	Current Time Current Date Day of Week Timer Mode Run Date Stop Date Run Time 1 Stop Time 1 Run Time 2 Stop Time 2	a - Current time, date, and time of next action b - Timer mode status and settings
Memory	Delete Last Purge All Data Files Allocated IDs Create EEPROM Backup	a - Memory status & current instrument record information b - Overall record status
Power Monitor	Display Power Status Power Settings > -Power Off Mode -Auto-Off Time -Standby Time -Backlight Time -Backlight -LCD Contrast -External Power -Min Battery Activate Battery Charger Type	Battery and external power status, battery type, and internal temperature
Communication	Baud Rate (300 - 115 K) Serial Address Flow Control Modem> -Modem Mode -Dial Out Mode -Phone # -Monitor Number -Modem Init	Lists command characters received and data characters sent by the instrument. Also shows the current standby timer status. The serial port and display are turned off when the timer reaches 0.

About

To access information about the System 824 use the ⏶ or ⏷ key to select *About* from the *Tools* menu, then press the ⓥ key. The following screen appears:

Instrument model number

Instrument serial number
Internal firmware revision number and date
Internal SLM firmware revision number and date

```
About-a                    □
🄻 System 824
Serial Number:  A0000
Rev:  3.661 06Mar2003
SLM:  3.520 30Jan2001
©2000 LARSON•DAVIS INC.
```

The *About-a* display shows the instrument's model number and serial number as well as the firmware revision number and date.

The revision number indicated by "REV:" is changed when any firmware code change is made. The revision number indicated by "SLM:" is changed only when a firmware code modification is made that affects the accuracy of any SLM measurement data, and is used as an indicator to those who use third party verification (NIST or PTB, etc.) of instrument performance that testing should be performed.

Pressing the ▶ key moves to the *About-b* screen. The following appears:

The *About-b* display shows the instrument's custom name and title fields printed on System 824 reports. The fields are generally set to the owner's name and address. The name is displayed at "power on" and printed on reports to customize them to your business.

*About Settings edit mode can also be edited by pressing the ⓥ key from the **About** display screens (previously described).*

To modify the *About* settings, use the ⏶ or ⏷ key to select *About* from the *Tools* menu, then press the ▶ key. The *About* setting offers three *Name* fields and one *Title* field for use on System 824 reports.

Company Name, Address Line 1, Address Line 2- There are three lines available for user specific data. Each field

```
┌─────────────────────────────────────────────────────────────┐
│                    ┌──────────────────────────────┐          │
│                    │ About-b (User)          □     │          │
│                    │ ───────────────────────────── │          │
│ Company name and address ──┐│ Enter Company Name           │          │
│ (Customized by user)       ││ Enter Address Line 1         │          │
│                            ─┤│ Enter Address Line 2         │          │
│                            ││ Simple Integrating SL        │          │
│                             │ ───────────────────────────── │          │
│                             │ ⌐System 824                   │          │
│                             └──────────────────────────────┘          │
└─────────────────────────────────────────────────────────────┘
```

provides 30 alpha/numeric characters, and is used to describe the instrument or the organization to whom it belongs.

Title - Like the *Company Name* field, the *Title* field is capable of holding 30 alpha/numeric characters. It allows you to title the ID (Instrument Definition) you have created, and to describe your measurement.

Date Format - Displays the date in Normal or ISO-8601 format. Normal has the form of **ddmmmyyyy** and ISO-8601 has the form **yyyymmmdd** where dd is the two digit date of the month 1 to 31, mmm is the month (i.e. JAN) and yyyy is the year (i.e. 2000).

See the section "Any Impulse Format" on page 5-8 for optional Takt views.

Takt - Enables Takt functionality to give you taktmaxmal values.

Press ◀ twice to exit the menu.

Pressing the ▶ key again moves to the *About-c* screen. The following screen appears:

```
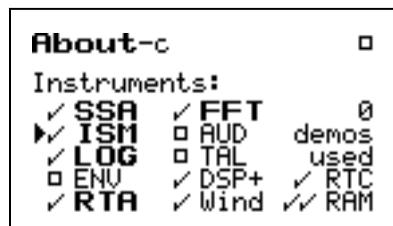┌──────────────────────────────┐
│ About-c               □       │
│                               │
│ Instruments:                  │
│ ✓ SSA  ✓ FFT          0       │
│ ▶✓ ISM  □ AUD       demos     │
│ ✓ LOG  □ TAL         used     │
│ □ ENV  ✓ DSP+       ✓ RTC     │
│ ✓ RTA  ✓ Wind      ✓✓ RAM     │
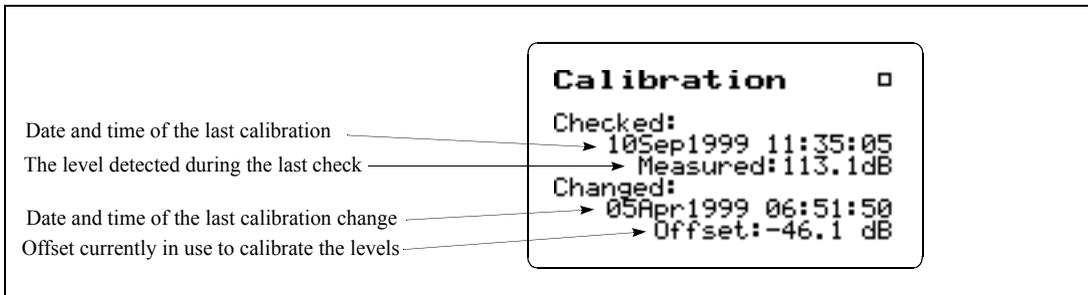└──────────────────────────────┘
```

The *About-c* display shows the system's currently available instruments. Additional instruments can be added to the System 824 through firmware upgrades as they become available.

Checked instruments are installed and available for use. The number of demos used is indicated. Only 20 demos are allowed. When "demos used" equals 20, options not purchased are no longer available for use. If you have found them useful, they can be installed permanently without restrictions. Call Larson Davis for details.

Calibration

To calibrate the System 824, or to view previous calibration information, use the ⬆ or ⬇ key to select *Calibration* from the *Tools* menu, then press the ⓥ key. The following screen appears:

```
Calibration        ▫

Checked:
  ➤ 10Sep1999 11:35:05
    Measured:113.1dB
Changed:
  ➤ 05Apr1999 06:51:50
    ➤ Offset:-46.1 dB
```

Date and time of the last calibration

The level detected during the last check

Date and time of the last calibration change

Offset currently in use to calibrate the levels

The *Calibration* display shows the date and time of the last calibration change and the offset being used to calibrate the levels. It also shows the date and time of the last calibration check and the level detected during that check.

To utilize the calibration tool or modify the *Calibration* settings, use the ⬆ or ⬇ key to select *Calibration* from the *Tools* menu, then press the ▶ key. The *Calibration* menu provides the following settings:

Check - Activates the calibration check (level verification) process.

Change - Activates the calibration change (adjust) process.

Cal Level - Enables the user to enter the sound pressure level generated by the calibrator.

Calibrator S/N - Enables the user to record the serial number of the calibrator (for reference).

Noise Floor - Enables the user to enter a noise floor value. Optimum values will depend on the type of measurement being performed. For a more detailed description, See "Entering the Noise Floor Values" on page 9-4.

Clock/Timer

To display the time and date, or to view the timer settings, use the ▲ or ▼ key to select *Clock/Timer* from the *Tools* menu, then press the ✓ key. The following appears:

Current time ——————————————→

Current day of the week and date ——————→

The time of the next timer function ————→

```
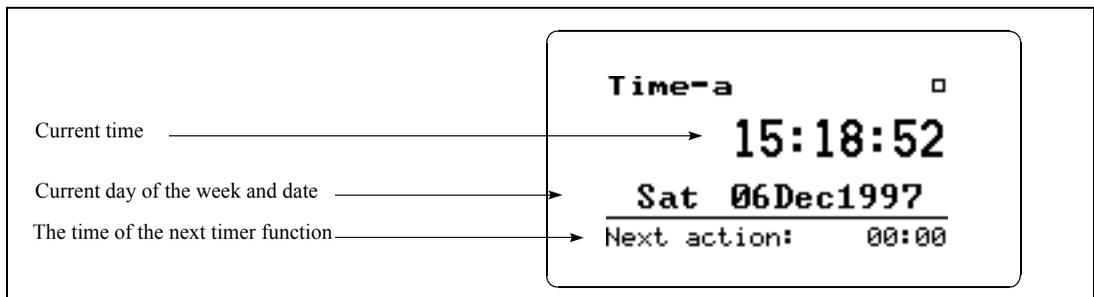┌─────────────────────────────────┐
│  Time-a              □           │
│          15:18:52                │
│      Sat  06Dec1997              │
│   Next action:      00:00        │
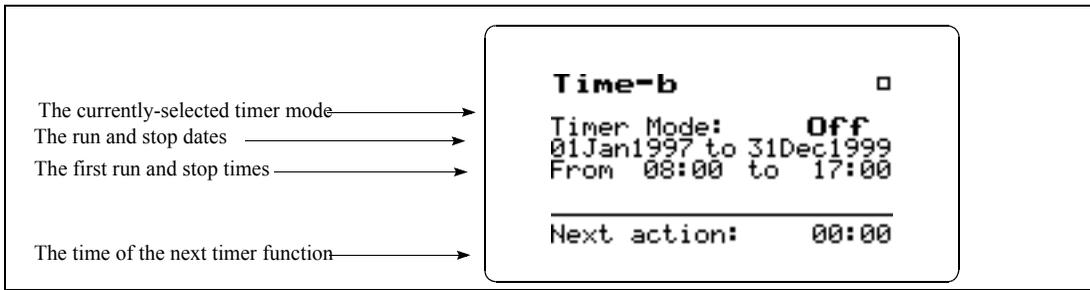└─────────────────────────────────┘
```

The *Time-a* or clock display shows the current time, day of the week, date and the time of the next timer action.

Pressing the ▶ key again moves to the *Time-b* screen. The following appears:

The *Time-b* or timer display shows the current timer programming including the mode and the appropriate run and stop times and dates.

Clock/Timer Settings can be changed by pressing the ✓ key from the Clock/Timer display screen.

To modify the *Clock / Timer* settings, use the ▲ or ▼ key to select *Clock / Timer* from the *Tools* menu, then press

The currently-selected timer mode
The run and stop dates
The first run and stop times

The time of the next timer function

```
Time-b                □

Timer Mode:        Off
01Jan1997 to 31Dec1999
From  08:00 to  17:00
_____
Next action:      00:00
```

the ▶ key. A screen similar to the following will appear:


```
Clock/Timer        □
Current Time
  (15:20:52)
Current Date
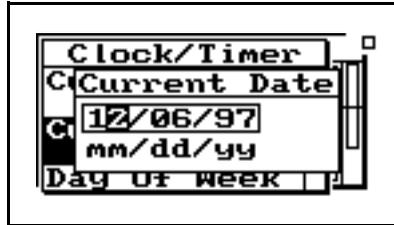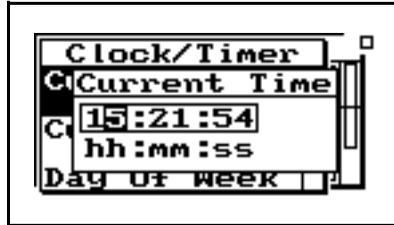  (12/06/97)
Day Of Week
```

The clock in the 824 uses a 24 hour format with hours 0 through 11 being a.m. and hours 12 through 23 being p.m. For example, 5 p.m. will be displayed as 17:00:00.

With the *Clock / Timer* menu you set the instrument's clock/calendar and timer. The first three menu items allow you to set the current time, date, and day respectively, while the remaining items (Run/Stop Date, Run/Stop Time 1, Run/Stop Time 2) allow you to control the timer function.

IF the date has not been set (month shows as???) then the message "Time not set!" will be shown when the Run key is pressed.

Current Time / Date - To set the current time and/or date, highlight the desired item (i.e. *Time* or *Date)* and then press the ▶ key. Modify the setting using the ◀ or ▶ key to select the digit desired to modify, then use the ▲ or ▼ key to modify.

Day Of Week - Allows you to change the current day of the week. Use the ▲ or ▼ key to highlight the desired day, then press the ✓ key to select.

Timer Mode - The timer is used when you want to have the 824 automatically turn on, gather data, and stop at pre-determined date(s) and time(s). The System 824 has four timer modes automating the start and end of measurements:

Off - The timer is disabled.

Block - The timer will automatically turn the instrument on and initiate a single measurement beginning at a certain time on one day and ending at a certain time on the same or another day.

1/Day - The timer will automatically turn the instrument on and initiate one run/stop cycle per day from the run date until the stop date.

2/Day - The timer will automatically turn the instrument on and initiate two run/stop cycles per day.

The three "enabled" modes (i.e. 1/Day, 2/Day, and Block) use the dates set by the ***Run Date*** and ***Stop Date*** menu items to determine the range of "valid" days on which to make measurements.

Run Date - Specifies the starting date to take measurements.

Stop Date - Specifies the date to end the measurement and disable the timer mode.

Run Time 1 / **Stop Time 1** - These settings allow you to specify the beginning and ending times of a measurement.

NOTE: If the run time is later than the stop time, then a measurement will start on the stop date and end at the stop time on the date AFTER the stop date.

*NOTE: If you have selected the **Block, 1/Day** or **2/Day** mode, the timer will automatically turn the instrument on one minute prior to the run time.*

Run Time 2 / Stop Time 2 - These settings are used to specify a second measurement's beginning and ending time in the 2/day timer mode.

Memory

To access the *Memory* display, use the ⬆ or ⬇ key to select *Memory* from the *Tools* menu, then press the ⓥ key. The following appears:

Available memory (as a percentage of total data memory)

Available memory (in bytes)

Number of various types of history records for a given ID (SSA in this example)

For detailed information on the usage of memory (e.g. bytes for each type of record stored), see "Memory Usage" on page E-1

The **Memory-a** display shows the amount of memory available for storing data. This information is given both in bytes and as a percentage of the total memory that can be used for storing data. (This "total memory" does not include the memory allocated for ID registers.)

Only those records enabled for the active instrument type are displayed.

In addition, the **Memory-a** display shows the number of previously-stored records (of various types) for the active ID.

Pressing the ▶ key again moves to the **Memory-b** screen. The following appears:

Available memory (as a percentage of total data memory)

Available memory (in bytes)

Total data files in memory

Number of setup registers allocated for storing instrument definitions (IDs)

Total memory, including both data and setup register memory

```
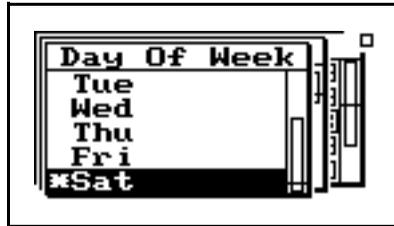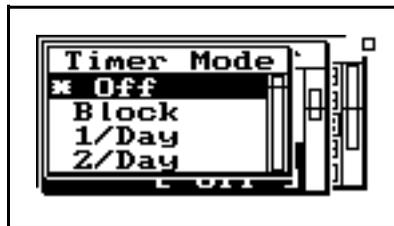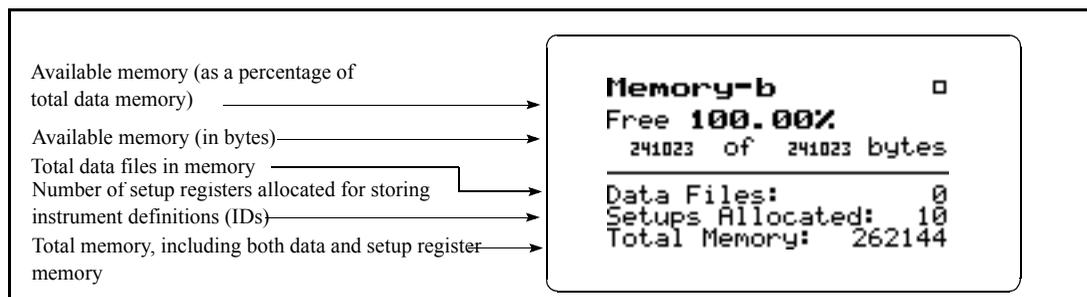Memory-b          □
Free 100.00%
  241023  of  241023 bytes
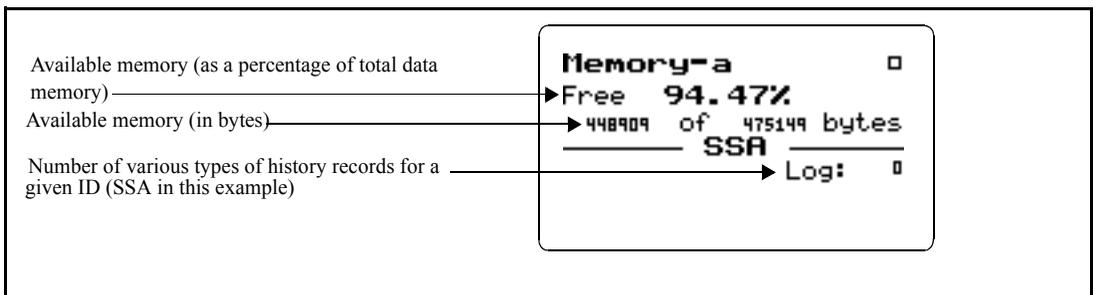
Data Files:            0
Setups Allocated:     10
Total Memory:     262144
```

The top portion of the **Memory-b** display shows the same "available memory" information as in the **Memory-a** display. In addition, the **Memory-b** display shows the number of data files in memory; number of setup registers allocated; and the total amount of memory, including that memory allocated for setup registers.

*Memory Settings can also be accessed by pressing the ✓ key from the **Memory** display screen.*

To modify the **Memory** settings use the ▲ or ▼ key to select **Memory** from the **Tools** menu, then press the ▶ key.

See next page for detailed information on the "Delete Last" feature.

Delete Last - The Delete Last feature will allow the user to delete the very last record stored in memory from any instrument type. To delete the last stored record, highlight **Delete Last** and press the Check c key.

"Purge All Data Files" is also available from the reset menu under the RESET ⊕ key.

Purge All Data Files - Pressing the ▶ or ✓ key when the **Purge All Data Files** menu item is highlighted, allows you to purge all data files in memory. This clears the memory.

The default value of this setting is 10 allocated setup registers (which uses 5120 bytes of memory). The System 824 has ten permanent ID registers. These pre-defined ID registers cannot be changed or deleted and do not reduce the amount of data memory available. They are to be used primarily as templates for new, user-defined IDs.

Important: In order to not lose your customized settings in the event of memory loss or firmware upgrade, follow these steps.

Allocated ID's - Determines the number of setup registers that are allocated in memory for storing IDs. In essence, this setting determines how much memory is allocated for storing instrument definitions. Setting this to a higher value allows more IDs to be created, but reduces the amount of memory available for data storage by 512 bytes per allocated ID.

Create EEPROM Backup - Stores the most recently used SSA, ISM, and LOG IDs so that they may be recreated in the event of a memory loss.

1. Alter the permanent IDs as desired and save your customized setting using a name of your choice.

2. Enter the unit Name and other system settings in the TOOLS>About menu

3. Bring your favorite ISM, LOG and SSA ID to the top of the SETUP ID menu by selecting them one at a time. Alter a permanent ID and save your customized setting using a name of your choice.

4. Store these settings permanently using the TOOL>Memory>Create EEPROM Backup menu item.

Your settings will not become permanent.

Repeated whenever you update any of the system settings or IDs that you want to be permanent.

Deleting Stored Data

Delete Last Function

The **Delete Last** feature will allow the user to delete the very last record stored in memory from any instrument type. It also allows you to recall a file, delete individual records within that file, run the instrument again and append new data to memory. Essentially the record is **unstored** from memory.

824 Memory Structure

The memory structure of the 824 is a forward and reverse linked list. This means that for each type of data there is a pointer to the first record and a pointer to the last record and

that each record points to the next record and the previous record. This structure makes the memory very efficient (compared to fixed sector, file allocation table based memory structures) and sequential forward and reverse data retrieval is very fast.

This memory structure does not allow us to delete data in the middle of used memory in a way that would allow it to be reused. However, there is no problem deleting data from the last to the first.

Deleting the Last Stored Record

If "View Back" is selected you will be returned to the last view screen displayed.

If nothing is selected after a 30 second time period, this screen will disappear and return to the previous display.

Step 1 To delete the last stored record, press the TOOLS Ⓕ key to access the TOOLS menu. The following menu appears:

```
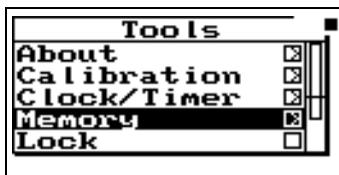┌─────────────────────┐
│      Tools        ■ │
│About           ⊠   │
│Calibration     ⊠   │
│Clock/Timer     ⊠   │
│Memory          ⊠   │
│Lock            □   │
└─────────────────────┘
```

Step 2 Highlight "Memory" and press the right ▶ arrow key.

```
┌─────────────────────┐
│     Memory        □ │
│Delete Last     ■   │
│Purge All           │
│       Data Files   │
│Allocated ID's      │
│          (010)     │
└─────────────────────┘
```

Step 3 Highlight "Delete Last" and press the Check Ⓥ key.

```
┌─────────────────────┐
│Delete Last       ▣ │
│Data File    [LOG]  │
│ 01Sep1999 16:19:02 │
│          7419 bytes│
│                    │
│      Free Memory   │
│98.07%   466013/ 475149│
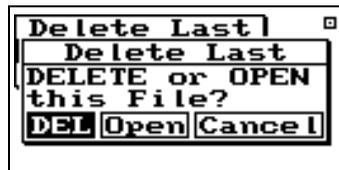└─────────────────────┘
```

This display shows the last record that was stored along with the date and time of the data, the instrument type it is

recorded for, the bytes used by that record and how much memory is available.

Step 4   Press the Check ✓ key to delete this file. The following menu will appear:

```
┌──────────────────────┐
│ Delete Last    ▫      │
│ Delete          ▯     │
│ View Back □     ▯     │
│                       │
│                       │
└──────────────────────┘
```

Step 5   Highlight "Delete" and press the Check ✓ key. The record is deleted. If the last record was a data file then the following choices will appear:

```
┌──────────────────────┐
│ Delete Last   ▫       │
│   Delete Last         │
│ DELETE or OPEN        │
│ this File?            │
│ DEL Open Cancel       │
└──────────────────────┘
```

DEL - Choosing "DEL" will erase the file and all of its contents.

Choosing "Open" also allows you to delete individual records from the file after it has been opened. See the next page for instructions on deleting individual records. In essence this will UNDO the storing of a data file.

Open - Choosing "Open" recalls the file into memory, the File record is deleted, and the data in memory marked as if it had never been stored. This allows you to run the instrument again and store the old data and the new data just acquired into a new file.

Cancel - Choosing "Cancel" cancels you out of the Delete File function and returns you to the previous display.

Deleting Individual Records

After selecting "Open" in Step 5 above, the file record is deleted and now you are allowed to look at each individual record and decide whether to delete or store it with new data appended to it. Follow these steps to delete individual records:

Step 1   The last display that was viewed will appear after selecting "Open".

Step 2 Press the TOOLS ⓕ key and the following appears:

```
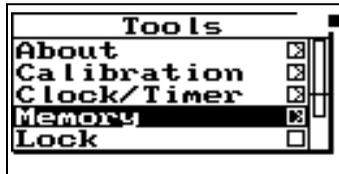┌─────────────────────────┐
│ ═══ Tools ══════    ■    │
│ About              ▣    │
│ Calibration        ▣    │
│ Clock/Timer        ▣    │
│ Memory             ▣    │
│ Lock               □    │
└─────────────────────────┘
```

Step 3 Highlight "Memory" and press the right ▶ arrow key to access the "Delete Last" function.

```
┌─────────────────────────┐
│ ═══ Memory ═══      □    │
│ Delete Last        ■    │
│ Purge All          │    │
│         Data Files │    │
│ Allocated ID's     │    │
│         (010)      │    │
└─────────────────────────┘
```

Step 4 Highlight "Delete Last" and press the Check ⓥ key.

The records will appear one at a time. Below are examples of some of the records.

```
┌──────────────────────┬──────────────────────┬──────────────────────┐
│ Delete Last      ■   │ Delete Last      ■   │ Delete Last      ■   │
│ Excd         [LOG]   │ Interval     [LOG]   │ RunLog+TH    [LOG]   │
│ 07Sep1999 10:02:31   │ 02Sep1999 08:51:35   │ 02Sep1999 08:51:39   │
│ 00:03.93    57 bytes │ 00:03.96    58 bytes │             20 bytes │
│ ───────────────────  │ ───────────────────  │ ───────────────────  │
│    Free Memory       │    Free Memory       │    Free Memory       │
│ 97.25%  462082/475149│ 97.99%  465632/475149│ 97.99%  465610/475149│
└──────────────────────┴──────────────────────┴──────────────────────┘
```

To delete them press the Check ⓥ key. The following will appear:

```
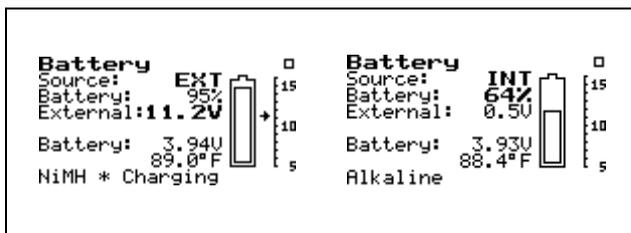Delete Last
Delete
View Back □
```

With "Delete" highlighted, press the Check $\bigcirc$ key again to delete the record. The next record will appear. Continue this process until you have deleted all of records that you don't want.

Power Monitor

This menu option allows adjustment of the auto-power off, the contrast (or viewing angle), turns the backlight on or off and adjusts settings that control the power-conservation features. Refer to the section "$\bigcirc$ POWER key" on page page 3-3 for a full description of the *Power Monitor* settings. In the following example of the Power Monitor display, the battery indicates 3.49 V while charging. When the instrument is running, this will typically be 3.6V or less.

Communication

The *Communication* display shows the status of the serial port (i.e. how many minutes until the standby mode is automatically enabled) and the last characters received and transmitted and is used when troubleshooting communication problems and as an aid when writing programs to control the instrument.

To access the *Communication* display, use the ▲ or ▼ key to select *Communication* from the *Tools* menu, then press the ✓ key. The following appears:

Shows the last characters received (none in this example)

Shows the last characters sent (none in this example)

Shows the minutes of inactivity remaining before the serial interface powers down

Indicates current address status.

Indicates 824 is ready to receive commands

Indicates controlling device (computer, modem, etc.) is

```
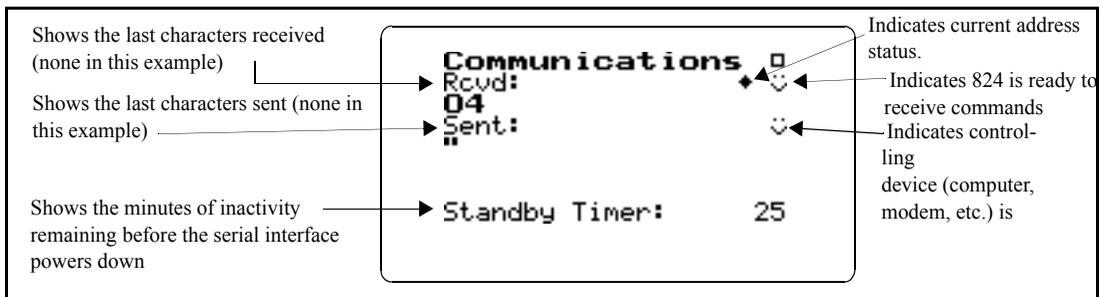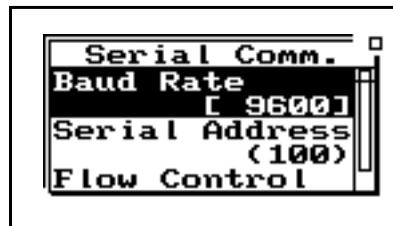Communications    □
Rcvd:            ♦  ♡
04
Sent:               ♡
▪
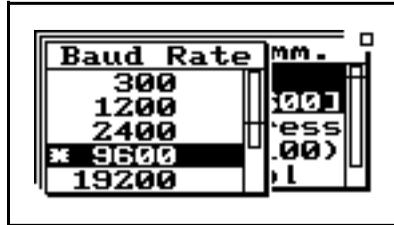
Standby Timer:    25
```

This menu can also be accessed by pressing the ✓ key on the communications display.

Use the right and left arrow keys to toggle between the Communication display and a list of Errors or Warning Messages. These messages are useful when troubleshooting I/O command problems.

To access the *Communication* settings, use the ▲ or ▼ key to select *Communication* from the *Tools* menu, then press the ▶ key. A menu similar to the following appears:

```
   Serial Comm.  □
Baud Rate
           [ 9600]
Serial Address
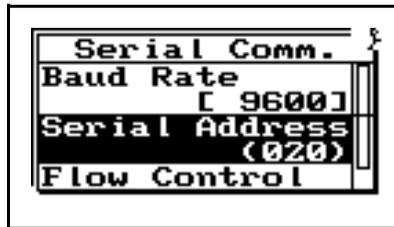            (100)
Flow Control
```

The printer has its own baud rate for printing reports and is not affected by this setting.

Baud Rate - Speed at which the System 824 communicates with controlling devices (computer, modem, etc.) through the serial port. The baud rate has a range from 300 to 115200 baud.

Default is set to the value of the last 2 digits of the serial number and can be set within the range of 1 to 100.

Serial Address - Address of instrument. This setting identifies the instrument within a network of instruments by assigning it a network or serial address.

Flow Control - Flow control of the serial connection. Flow control can be changed to None, Hardware, Xoff, or Both. Flow control prevents the loss of data when either the instrument or controller's input buffer becomes full. Hardware flow control is recommended.

See the section "Modem Control Mode (All Instruments)" on page A-74 for more detailed information on modem communication.

Modem Mode - Turns the modem mode on or off to allow communication to a telephone modem.

```
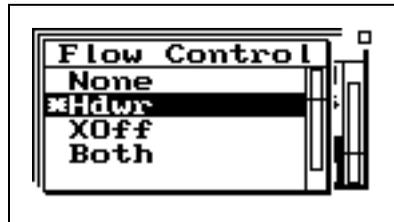┌─────────────────────────┐
│ ══════════════════   □  │
│   Serial  Comm.         │
│ Modem  Mode             │
│            [ No]        │
│ Dial  Out  Mode         │
│            [None]       │
│ Phone  #                │
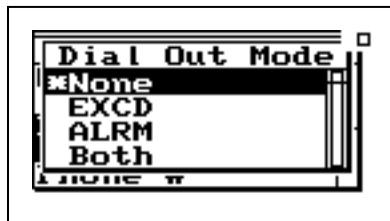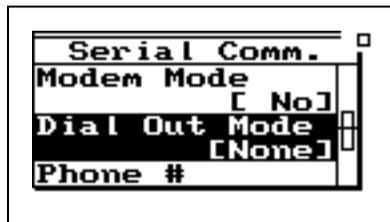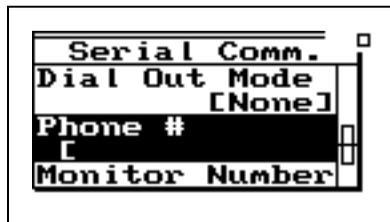└─────────────────────────┘
```

Dial Out Mode - The 824 will dial out on an Exceedance or an Alarm or both.

```
┌─────────────────────────┐
│ ══════════════════   □  │
│   Serial  Comm.         │
│ Modem  Mode             │
│            [ No]        │
│ Dial  Out  Mode         │
│            [None]       │
│ Phone  #                │
└─────────────────────────┘
```

```
┌─────────────────────────┐
│ ══════════════════   □  │
│  Dial  Out  Mode        │
│ *None                   │
│  EXCD                   │
│  ALRM                   │
│  Both                   │
│  none  #                │
└─────────────────────────┘
```

Phone Number - The 824 will dial the phone number entered here on the events selected in the dial out mode.

```
┌─────────────────────────┐
│ ══════════════════   □  │
│   Serial  Comm.         │
│ Dial  Out  Mode         │
│            [None]       │
│ Phone  #                │
│  [                      │
│ Monitor  Number         │
└─────────────────────────┘
```

Monitor Number - The monitor number is used to identify which 824 is being queried and is sent with the 824's initial announcement.

```
┌─────────────────────────┐
│    Serial  Comm.    □    │
│              [None]      │
│ Phone #                  │
│   [                      │
│ Monitor  Number    ▐     │
│              [003] ▐     │
└─────────────────────────┘
```

Modem Init - The modem initialization string is entered here.

```
┌─────────────────────────┐
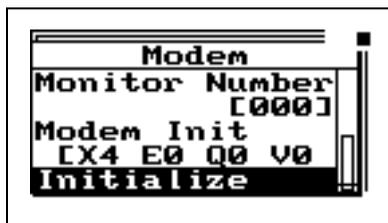│    Serial  Comm.    □    │
│   [                      │
│ Monitor  Number          │
│              [003]       │
│ Modem  Init        ▐     │
│   [X4 E0 Q0 V0     ▐     │
└─────────────────────────┘
```

Initialize - The modem initialization string is sent out the RS232 port.

```
┌─────────────────────────┐
│         Modem       ■    │
│ Monitor  Number          │
│              [000]       │
│ Modem  Init        ▐     │
│   [X4 E0 Q0 V0     ▐     │
│ Initialize         ▐     │
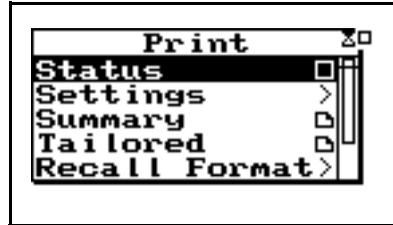└─────────────────────────┘
```

⌨ **Print Key**

Refer to the section "Printing Reports" on page 8-2 for more information on printing.

The ⌨ PRINT key displays the printing options menu. These options enable printing of graphical and tabular data reports directly from the instrument to a serial printer. You can create high-resolution presentation-quality reports when printing to a laser printer because of the instrument's PDL-3 (Page Description Language) capabilities. Draft-quality tab-

ular data reports can also be printed on virtually any serial printer.

The *Print* menu provides the ability to output reports containing all the data gathered for the measurement to an attached printer. The main *Print* menu is activated by pressing the ⬜ PRINT key.

The Print menu changes depending upon the specific instrument being used.

```
┌─────────────────────────┐
│    Print          ⏳□    │
│ Status           □       │
│ Settings         >       │
│ Summary          ▯       │
│ Tailored         ▯       │
│ Recall Format>           │
│                          │
└─────────────────────────┘
```

With an appropriate printer connection, you can print a number of reports. The "Recall Format" sub-menu option is used to enable various reports. Do this by highlighting the corresponding menu item and pressing the ✓ key.

Use "Tailored Report" to print the custom reports that are defined as part of an instrument definition (SSA and LOG IDs only).

Use the *Customize* sub-menu to further customize the report settings. In this sub-menu you can select the specific elements to include in the report and also the various data ranges for histograms, time histories, etc. To access this sub-menu, highlight *Customize* and press the ▶ key.

```
┌─────────────────────────┐
│    Customize       □     │
│ Unformatted              │
│            [ No]         │
│ Data Report              │
│            [ No]         │
│ Log Report               │
└─────────────────────────┘
```