

# INSTRUCTION MANUAL

## **Sensoray QuickSense™ for Smart A/D™ Cards**

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# 1. Introduction

QuickSense™ is a 32-bit Windows-based application program that enables you to easily configure Sensoray Smart A/D™ boards, log sensor data to disk, and display sensor data in both spreadsheet and graphical form.

All Sensoray Smart A/D™ products are supported by QuickSense™. Up to eight Smart A/D™ boards may be concurrently supported in any combination. For example, you can seamlessly mix both PCI Smart A/D™ boards and IoNet™ ethernet-based Smart A/D™ boards. Similarly, 8-, 16- and 32-channel Smart A/D™ products may be mixed in any combination.

## 1.1 System Requirements

QuickSense™ requires the following environment for proper operation:

- Intel compatible hardware platform, such as Celeron, Pentium I/II/III, and K5/K6. Recommended minimum CPU clock frequency is 200MHz for best results.
- Windows 95, 98 or NT.
- 8MB available hard disk space, minimum.
- 32MB RAM.
- One or more Smart A/D™ boards.

## 1.2 Installation

The Smart A/D™ hardware and QuickSense™ software may be installed in any order, but both the hardware and software must be installed before QuickSense™ can function properly. Refer to your Smart A/D™ hardware documentation for hardware installation instructions.

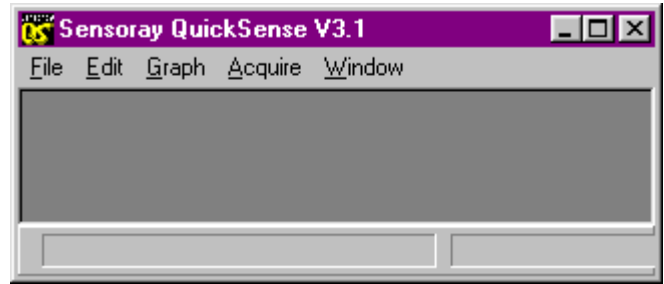
To install QuickSense™ software to your system:

- Insert the QuickSense™ distribution media into the appropriate device. If you are installing from floppy diskettes, insert Disk 1 into your floppy disk drive.
- Run SETUP.EXE. Follow the installation instructions to complete the installation.

## 2. Main Window

The QuickSense™ main window provides a master menu, a client area for child windows, and a status box at the bottom of the window.

Figure 1: QuickSense™ main window and master menu



### 2.1 Master Menu

Menu items are always visible, but each item is enabled or disabled as appropriate for the currently active child window (if any). The menu hierarchy is structured as follows:

#### File

- Open Setup** Reloads a previously saved hardware setup.
- Save Setup As** Saves a hardware setup (i.e., list of installed boards and channel configurations) to disk.
- Print** Prints a graph. This is enabled only when a graph is displayed.
- Exit** Terminates execution of QuickSense.
- [recent setups] A list of recently saved setups appears at the bottom of the File menu. Click on any recent setup to reload it.

#### Edit

- Copy** Copies the currently displayed graph to the clipboard.
- Graph Titles** Enables you to change the titles on the currently displayed graph.
- Hardware Setup** Displays the Hardware Setup window (see Section 3) so that you can declare and configure all of your Smart A/D™ boards.
- Operating Mode** Invokes a special operating mode, such as High Speed or 50 Hertz Rejection Mode, on all declared Smart A/D™ boards.
- Reset All Boards** Invokes a soft reset on all declared Smart A/D™ boards.

#### Graph

- Show Legend** Shows/hides sensor channel legends on the currently displayed graph.
- Show Vert Grids** Shows/hides vertical grid lines on the currently displayed graph.
- Show Horz Grids** Shows/hides horizontal grid lines on the currently displayed graph.
- Use Right Y-axis** Enables plotting of selected channels with respect to the right vertical axis.

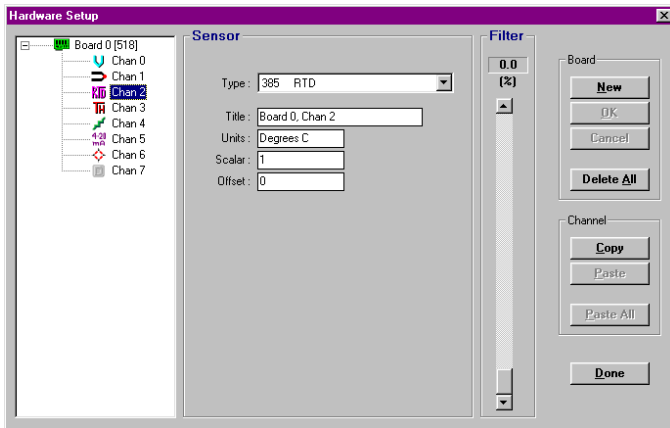
- Refresh Every** Selects the time interval between graph redraws. Defaults to 15 seconds.
- Acquire**
- Start Scan** Displays the Acquisition Window if it is not already displayed, and acquires and displays sensor data in a spreadsheet-like format.
- End Scan** Terminates acquisition and display of sensor data without closing the Acquisition window.
- Window**
- [windows] A list of all child windows appears in this sub menu. Click on any listed window to open it.

### 3. Hardware Setup Window

The Hardware Setup window (Figure 2) enables you to create a new setup, or to view and/or modify the current setup.

When you run QuickSense™ for the first time, you must use the Hardware Setup window to declare all Smart A/D™ boards and configure the sensor channels.

Figure 2: Hardware Setup window



#### 3.1 Functional Regions

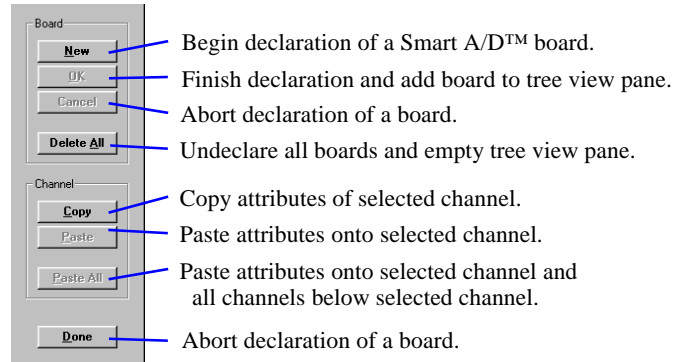
The Hardware Setup window has three functional regions: a “tree view” pane on the left side, control buttons on the right side, and an attributes area in between.

The tree view pane shows the boards and channels belonging to the current setup. Click on any item in this pane to view the item’s attributes in the attributes area. Board attributes, which are not editable, are shown when a board icon is selected. Channel attributes, which are editable, are shown when a channel icon is selected.

Several groups of buttons can be found along the rightmost edge of the window (see Figure 3). The

“Board” group is used for declaring Smart A/D™ boards. The “Channel” group can be used to copy a selected channel’s configuration onto one or more other channels. The “Done” button closes the Hardware Setup window.

Figure 3: Hardware Setup window buttons



#### 3.2 Creating a New Setup

Each board must be declared before its channels can be configured. New boards may be declared at any time without affecting the configuration of previously declared boards.

##### 3.2.1 Declaring a Board

Follow this procedure to declare a board:

1. Click on the “New” button. This will cause the “Model” combo box to appear in the attributes area.
2. Select the Smart A/D™ model number from the drop-down “Model” combo box. This will cause an “Address” field to appear below the combo box.
3. Enter the board’s address. If you have just one PCI or CompactPCI board, you may enter zero for the address; this causes QuickSense™ to automatically find the board and determine its address.
4. Click on the “OK” button. If the board is successfully detected, you will see a new icon for it in the tree view pane and the firmware version number will appear below the board address in the attributes area.

##### 3.2.2 Configuring Channels

Before acquiring sensor data, all channels to be measured must be configured. Follow this procedure to configure one channel:

1. Select the channel for editing by clicking on its icon in the tree view pane. This will cause the channel attributes to appear to the right of the tree view pane.
2. Select the appropriate sensor type in the “Type” combo box. This will configure the channel for the selected

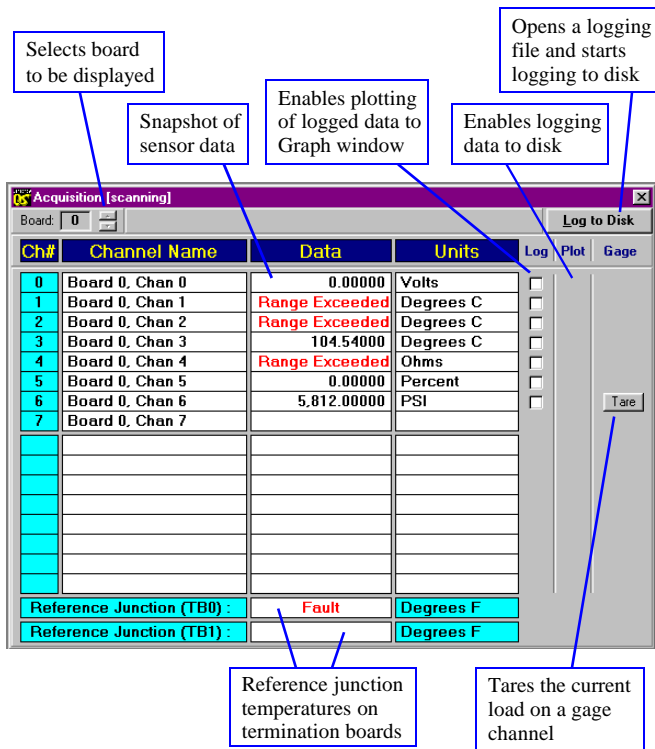
sensor type and force all other attributes to their default values.

3. Enter a meaningful name for the channel in the “Title” field. This name will be used by the acquisition and graph windows and in data logging files.
4. If you will be using custom engineering units, enter the units name into the “Units” field.
5. If you will be applying a linear transformation to the sensor data, enter the appropriate values into the “Scalar” and “Offset” fields. For example, you might want to convert temperature units from °C to °F. In this case, you would set the Scalar to 1.8 and Offset to 32.
6. Set the software filter slider to the desired setting.

## 4. Acquisition Window

The Acquisition window, shown in Figure 4, controls data acquisition and data logging and also displays snapshots of sensor data in a spreadsheet-like format. Snapshot data is acquired and displayed approximately once per second.

Figure 4: Acquisition Window



The window consists of various controls that are distributed along the top and right sides of the window, and a spreadsheet area that displays snapshot data from sensor channels.

## 4.1 Spreadsheet Area

The spreadsheet area is partitioned into two regions. The top region, which occupies the bulk of the spreadsheet area, displays attributes and data from sensor channels. From left to right, each row shows the channel number, channel name, sensor data, and engineering units. The channel name and engineering units are obtained from the associated user-configurable fields in the Hardware Setup window.

The bottom region displays the thermocouple reference junction temperatures on the optional Sensoray termination boards. “Fault” is displayed if no termination board is connected to the Smart A/D™. One or two temperature values will be displayed, depending on whether one or two termination boards are connected to the Smart A/D™.

## 4.2 Controls

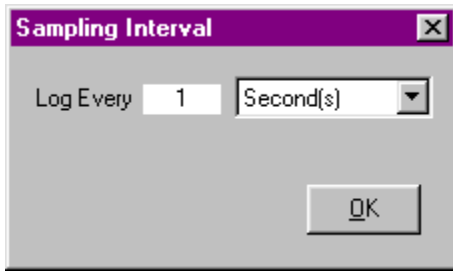
Acquisition window controls have the following functions:

- **Board spinner** selects the Smart A/D™ board to be displayed. This control is enabled only if you have more than one Smart A/D™ board declared in the current setup. The currently displayed board number is shown to the left of the spinner.
- **Log check boxes** enable data logging for the associated channel. These boxes must be checked before logging begins, as they are disabled while logging is active.
- **Plot check boxes** enable the display of logged data in the Graph window. Each Log check box is visible only if the associated channel is currently being logged to disk. Up to four boxes, from any combination of boards, may be checked at a time. When four boxes are checked, all unchecked boxes become invisible.
- **Log to Disk button** displays a dialog box that allows you to designate the path and file to which data will be logged. You will be permitted to open a log file only if one or more Log check boxes are checked.
- **Tare buttons** are displayed only for channels that have been configured for strain or pressure gages. Click a channel’s tare button to tare the current load.

## 4.3 Logging to Disk

Before logging to a disk file, you must first select the channels that will be logged. This is done by clicking on the “Log” enable check boxes displayed to the right of the spreadsheet area. Next, you must specify the path and filename for the log file. Finally, you must specify the sampling interval by entering the appropriate values in the Sampling Interval dialog box as shown in Figure 5.

Figure 5: Sampling Interval dialog box



Follow this procedure to prepare for and begin data logging:

1. Click on the appropriate Log check boxes to select the channels you wish to log to disk.
2. Click on the Log to Disk button to display the File dialog box.
3. Specify the path and filename for the log file, then click on the OK button. This will cause the Sampling Interval dialog box to appear (see Figure 5).
4. Enter the desired sampling interval. The sampling interval you specify will be applied to all channels that will be logged. When you click on the OK button, the log file will be opened and logging will begin.

When data logging is in progress, the “Log to Disk” button is renamed “End Logging.” To terminate logging and close the log file, simply click on the End Logging button.

## 5. Graph Window

During data logging, up to four sensor channels may be selected for plotting on a graph. Only channels that are being logged can be plotted, as graph data points are obtained from the data logging file.

### 5.1 Window State Control

The Graph window changes states in response to the number of channels selected for plotting. When the first channel is selected for plotting, the Graph window will appear automatically. Channel selections may be modified at any time; the graph will dynamically adapt in order to display the currently selected channels. The Graph window will continue to be displayed so long as at least one channel is selected for plotting.

The Graph window is minimized when it first appears so as not to obscure the Acquisition window. The graph can be viewed by clicking on the Graph window Maximize control or by selecting the Graph window by means of the master menu Windows menu option.

The Graph window will automatically close under any of the following conditions:

- No sensor channels are selected for plotting.
- Data logging is terminated.
- The QuickSense™ application is terminated.

### 5.2 Changing Graph Attributes

Various Graph window attributes can be modified by means of the master menu (Section 2.1). Some of the attributes that can be changed are:

- Graph title and axis labels.
- Visibility of vertical and horizontal grid lines.
- Visibility of trace legends.
- Assignment of the right (vs. left) Y-axis as the reference for a specific channel’s data set.
- Graph refresh rate.

### 5.3 Other Graph Operations

The following functions can be applied to the displayed graph by means of the master menu:

- Copy the current graph image to the system clipboard as a Windows metafile.
- Print the current graph image. A printer dialog box is displayed to enable you to select a printer and set its properties, then the graph is maximized (with a fixed aspect ratio) and printed to the target printer.

Figure 6: Graph Window

