Preliminary
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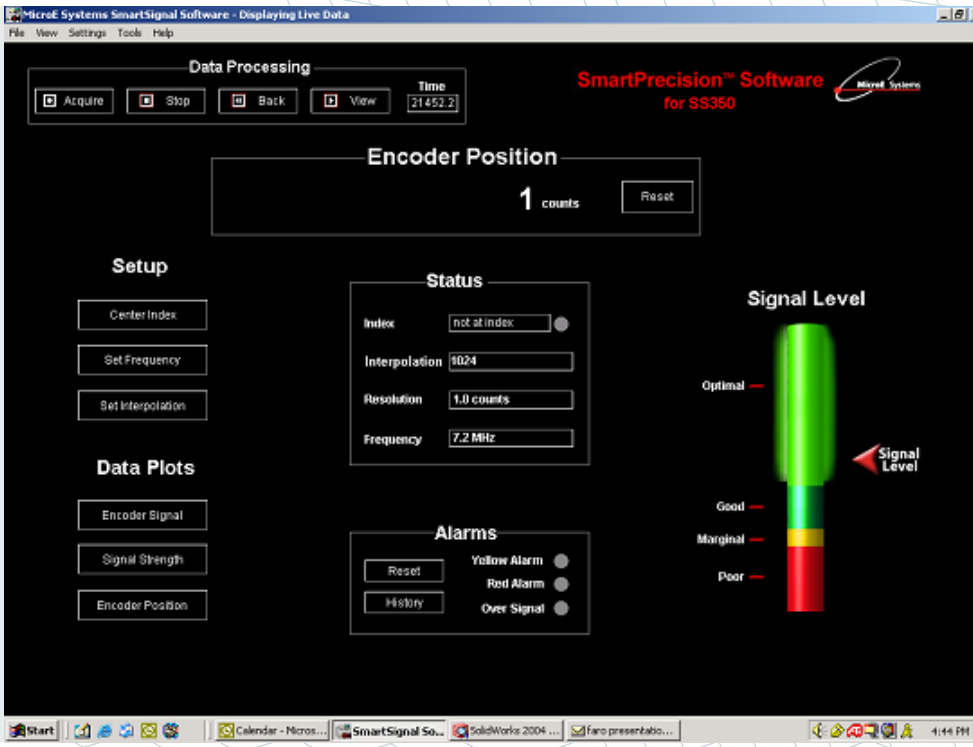
SmartPrecision™ Data Processing Features



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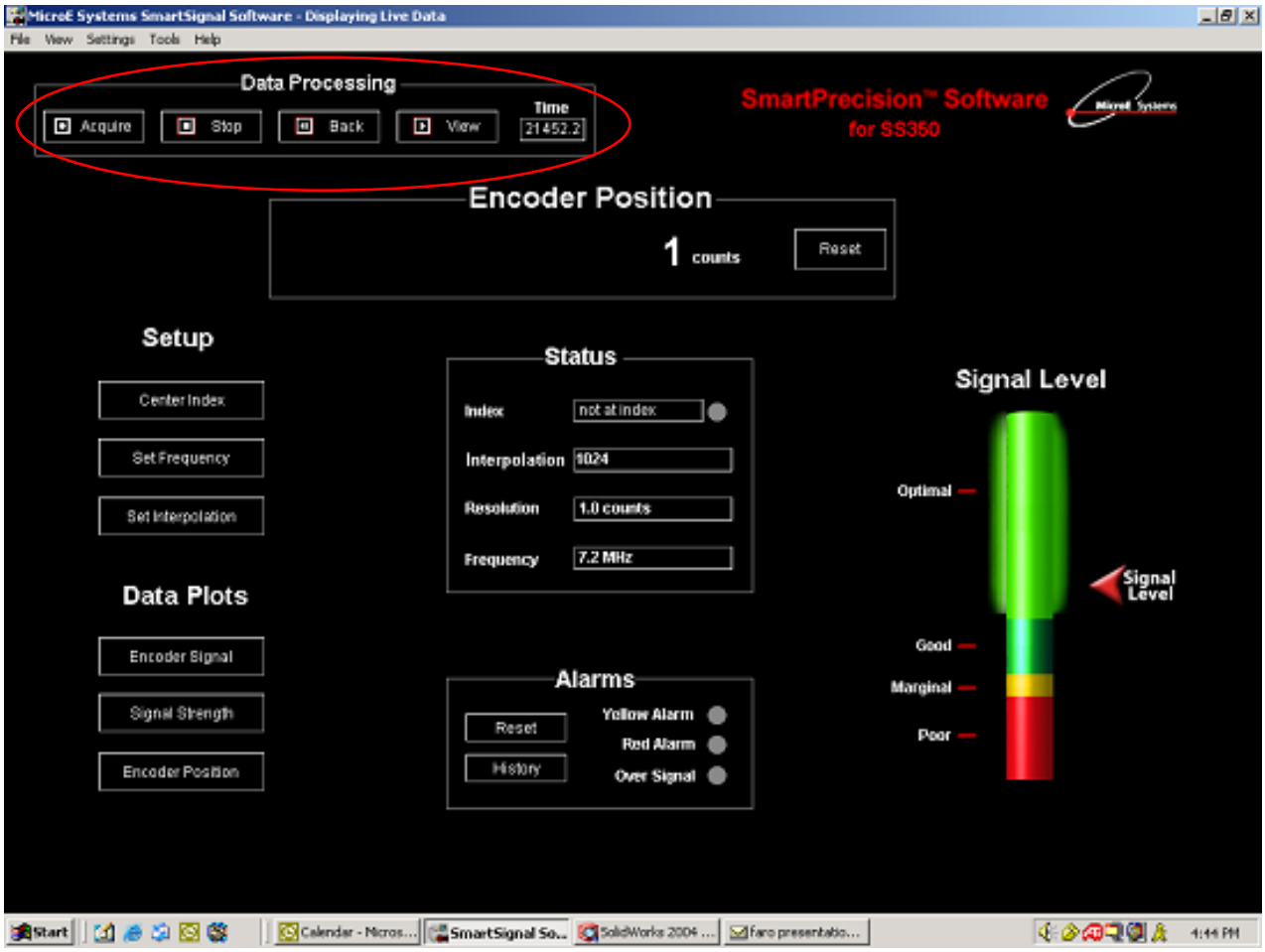
Introduction

SmartPrecision Software has a data buffering system in all displays except the engineering display. This data buffer will store about 70 seconds of data at 38400 Baud. This allows the user to stop viewing live data, go back into the buffered data and view that data in real-time, i.e. just as it was acquired. This data buffer can also be saved to file and reloaded for viewing later, again in real-time.

Each display maintains it's own data buffer so that if data is loaded into the Setup and Status display the contents of the Encoder Signal display data buffer will not be altered. This is true for all display modes.

Each display also maintains it's own data processing 'Mode of Operation' that is independent from the other displays. This means that you can be displaying live data in one display, have the display stopped in another display and be viewing stored data in yet another display. The mode of operation for the active display is shown in the program title at the very top of the SmartPrecision Software window.
Switching from one display to another, for example Setup and Status to Position Display, the mode of operation will automatically change to the mode of operation of the new display.



The SmartPrecision Software Data Processing panel includes the following buttons:

When the **Acquire** button is clicked the SmartPrecision Software will begin acquiring and displaying live data. Newly acquired data is stored in the buffer beginning at the point that data acquisition last stopped, if no previous data has been acquired or if data has just been loaded from a file, then the Software will begin loading data into the beginning of the data buffer. If buffered data is being viewed you must stop the display before you can begin acquiring live data.

When the SmartPrecision Software is started and a display is brought up for the first time, the software will always be displaying live data and thus it is not necessary to click the **Acquire** button. When returning to that display, check the title bar to see what display mode is currently active.

When the **Stop** button is clicked the SmartPrecision Software will stop acquiring and displaying live data and stop viewing buffered data. Use this button to temporarily pause acquisition and display of Live data or to stop viewing buffered data so that acquisition and display of live data can be resumed.

When the **Back** button is clicked the SmartPrecision Software will stop acquiring and displaying live data or stop viewing buffered data and go back 10 seconds in the data buffer. This is required when the user wishes to view data that has been recently acquired or review data that has been loaded from file. The Time display will decrement by 10 seconds so the user can see what location in the data buffer they will be viewing. Buffered data is viewed in the same time format it was collected therefore the data buffer is represented in Time rather than data points. Note that the user must click View for the data in the buffer to be displayed.

Back can be repeatedly clicked until the first point in the data buffer is reached, at which point the Time display will no longer decrement. Note that **Back** must be clicked every time you wish to transition from acquiring live data to viewing data in the buffer. When data is loaded from file it is not necessary to click the **Back** button unless you wish to view the data more than once.

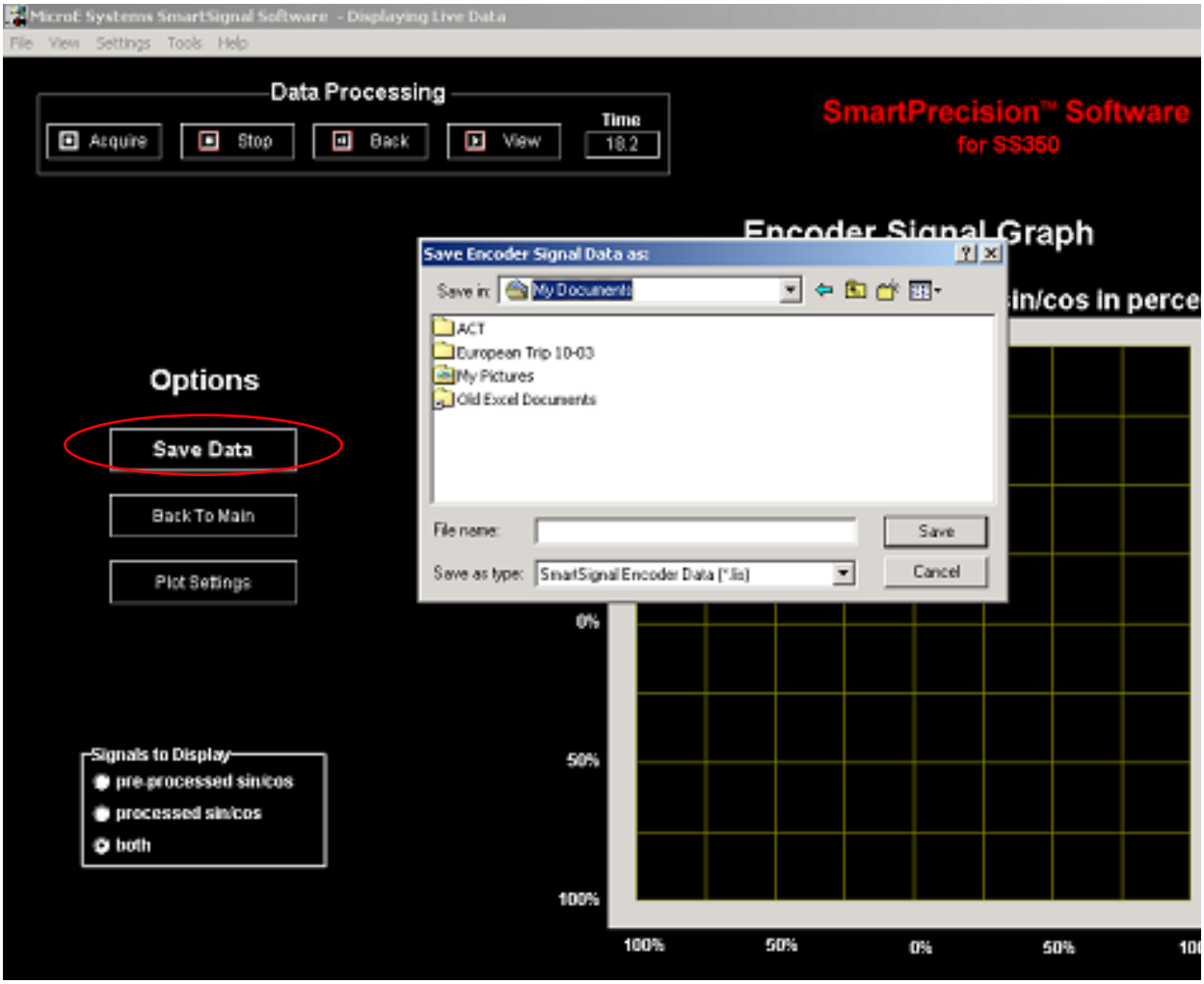
When the **View** button is clicked the SmartPrecision Software will display buffered data beginning at the point shown in the Time display. Buffered data can consist of recently acquired live data or data loaded from a file. In the case of data loaded from a file you can begin viewing the data from the start of the buffer by clicking **View** immediately after the data is loaded. When viewing recently acquired data you will need to click **Back** until the Time display shows the location in the buffered data that you wish to review. Note that all data in the buffer is displayed in the same format that it was collected to simulate replaying or reviewing the data in real-time. While data is being acquired you must first click on **Back** before being able to view any buffered data.

The time shown represents the cumulative time of data acquisition in the display mode if Live data is being displayed, or if buffered data is being Viewed then the time represents the location in the data buffer. This applies to data loaded from file as well as viewing data recently acquired in the buffer.

Saving Data to a File

Data from any display can be saved at any time from the Main Menu by clicking **File** then **Save** and choosing the type of data file to save. You can also save data from any of the data plots with the **Save Data** button. For each display, data is saved to file in columns of data, which represents the raw numbers for the particular field. Each column is tab delimited to allow it to be imported easily, and each data point has a time stamp to show how long it took to read and process the data so that it can be shown in real-time with the SmartPrecision Software.

The complete contents of the data buffer for the particular display are saved to file each time data is saved. To save data beginning at a certain point in time, first clear the data buffer from the Main Menu (click **Tools** then **Clear Data Buffers** then data buffer type) and then begin acquiring data. When finished, save the data and the file will only contain the desired data. Note that the displaying of data will be halted while you are saving data to prevent accidentally including data that was not intended.



Benefits of the Data Processing Features:

The Data Processing features can be used by the customer for the following reasons:

- The Encoder Signal plot or Signal Strength plot can be saved during the initial setup of the system. The customer can use this saved data to compare the encoder function over time. Differences between the original data and data taken over a period of time may indicate that contamination is present on the scale or that the sensor alignment may have shifted.

- Troubleshooting Aid. Data can be saved and sent to MicroE Systems' Applications Group for analysis. The encoder signal plot is a very good indication of encoder alignment and overall function.

- The position plot data can be saved for a known move. This data can be saved over a number of runs to show overall repeatability of the servo system.

Contact MicroE Systems

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