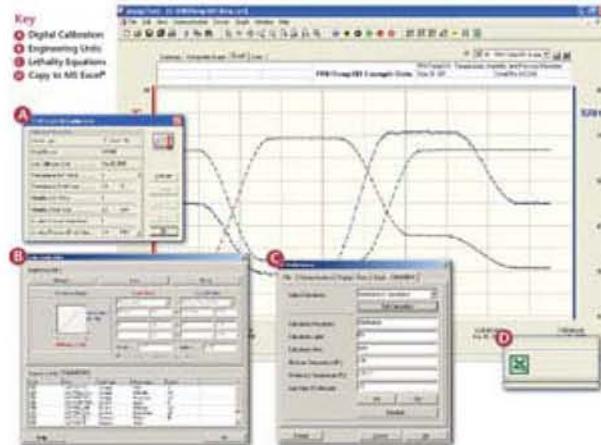# Data Logger Software

The Data Logger Software an easy-to-use Windows-based software permits one to effortlessly collect, display and analyze data. A variety of powerful tools allow the user to examine, export, and print professional looking data with just a click of the mouse.

The cutting-edge software is designed for the continuous monitoring and alarming of all data loggers. The software can record and display real-time data from any logger directly connected to the user's PC, a local area network, or even remotely through the use of PTC's radio frequency transceivers.


The PTC Software well surpasses the basics functions of the start, stop and offload capabilities of the PTC Data Logger. The real sophistication appears with the enhanced capabilities of its tools, the use of engineering units, digital calibration, and automatic export to excel.

Engineering Units

One of the most useful features in the software is the ability to use customizable Engineering Units. Loggers that measure current, voltage, pulse, state, and event can convert the measured data to a more appropriate unit. For example, a 4-20mA flow meter might output 4mA for 0 liters of water and 20mA for 5 liters of water. Using Engineering Units, a user can set up the Logger to display the data in liters rather than milliamps □ a useful feature for presentations! Multiple channel data loggers can have different Engineering Units for each channel. For example, if a QuadVolt is used to study a battery powered system, the Engineering Units could be set as follows: Ch. 1 □ battery voltage; Ch. 2 - charge current; Ch. 3 - discharge current; Ch. 4 - battery temperature.

HACCP Cooling Flags

To satisfy HACCP requirements, the software allows the input of up to five critical control points. Each point is clearly marked on the graph and the summary tab provides the temperature, time elapsed and rate of cool down in degrees per minute, providing instant visual verification they have been met .Records can be printed for auditor reviews, while electronic hard copies can be saved to a hard drive.
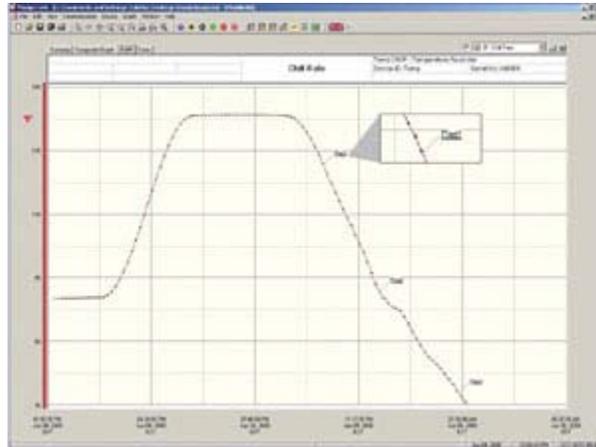
Automatic Reporting

The software's Automatic Report Generator offers the ability to combine and analyze data from multiple loggers into a single report. The delta,minimum, and maximum statistics can be calculated automatically for each parameter. The graph can be printed along with the report to provide the necessary data and process information. The software offers several options for standard reports with prompts to tailor the report by exporting to MS Excel and adding your companys logo.

Real-Time and Wireless Recording and Alarming

The real time recording feature in the software allows a logger that is connected to the PC to report and display data on the PC screen in real time. The wireless series is configured at the PC and placed in a location to monitor. The data logger then transmits data back to the RFC101A receiver. The software can be configured for scheduled automatic saving of the data, minimizing the chance of losing valuable data. Alarm limits can be set for any type of unit. Alarm notifications can be sent via PC screen,e-mail or text messaging in any combination. Email notification may be used with many compatible SMS (Short Messaging Service) cell phones and pagers.

Lethality Equations

For customers validating pasteurization and steam sterilization processes the software automatically calculates the kill factor for either Pasteurization (PU) or Sterilization (F0), depending on the users preferences.This data is displayed in the summary tab and is automatically calculated from the data displayed in the graph tab.

Units of Measure and Analysis

The software effortlessly converts data into the industry standard measurement units. Most common measurement units are available to minimize manual conversion. Users can easily switch from displaying one unit of measurement to another. Unit preferences can be stored such that all data is displayed in the user s preferred unit and range. Complex analyses such as Mean Kinetic Temperature, Sterilization Units and Pasteurization Units can be performed with just one click of the mouse. If custom analysis is needed beyond what the software can perform, the data can be automatically exported to an MS Excel spreadsheet.

Overlay Graphs

Graphs from multiple data loggers can be overlayed onto a single graph for simple, easy comparison. For example, comparing the temperature data from four different data loggers that took data in the basement, first floor, second floor and attic is quickly done on one graph. Switching between viewing one data set and multiple data sets is handled by simply clicking the Graph and Composite Graph tabs located at the top of the screen. The Composite Graph tab shows overlayed data sets, while the Graph tab shows only one data set at a time. The Composite Graph can synchronize the time scales to time-align all data or simply overlay all data to compare data sets from different runs.
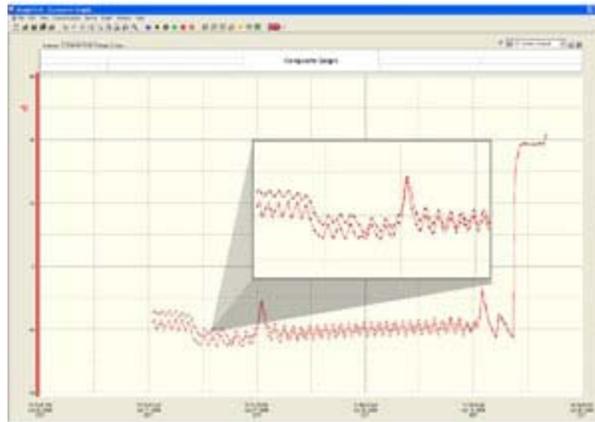

Annotations

The annotation capability allows the user to associate comments (eg. closed door) with specific data points on a graph. This is especially useful for presentations and allows for permanently demarcating salient events in the data.
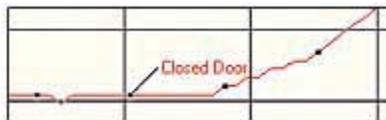
Digital Calibration

The software allows the user to calibrate the sensor channels with either a one-point or two point calibration (sensor and logger dependent). Because this feature is built into the software and is readily accessible, sensors can be calibrated and re-calibrated as necessary. This is especially useful when using probes since calibration parameters can change from one probe to another.

The software has a calibration wizard which asks for the calibration points (e.g. the actual value & measured value of two separate points) and calculates, then inserts the appropriate calibration coefficients automatically
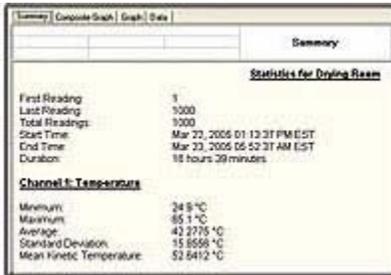
Summary View and Table View

The main software page has two additional tabs: Summary and Data. The Summary tab shows the statistical analyses (as appropriate) for the data visible in the graph window. For example, if the Mean Kinetic Temperature (MKT) of Temp101 data is required on March 13th, the horizontal (time) zoom tool is used to select the 24 hours of March 13th. Then when the Summary tab is clicked, the MKT of the temperature data from March 13th will be calculated and displayed. The table view (Data tab) shows the time stamp and data values of each sample in a matrix format.

Customizable Graphs

There are many ways the data graphs can be customized for presentation. Adding annotations (see above) and graph titles make the graph understandable. Aesthetics can also be addressed; the graphs can change in color (lines, data background), line thickness, data point frequency, data point symbols, and the time and data axis spans are fully configurable.

Software Features	
Alarm Notification:	The software offers a real-time alarm notification function which lets the user monitor user-defined alarm limits. Alarm messages can be sent in real time to your desktop or sent remotely via email or pager.
Overlay Multiple Graphs:	Simultaneously analyze data from several units or deployments; easily switch to a single

	data series.
Automatic Time Synchronization:	Automatically align data from different loggers on the same graph and synchronizes them in time.
Export to Excel®:	Excel button on toolbar allows simple one click data export to Microsoft Excel®. One click of the Excel Icon will automatically open Excel and format the data into a spread sheet. This command will automatically synchronize, in time, data from multiple data loggers and store the data in an Excel spreadsheet.
Export Data:	Data may be exported in the following formats: .dat - This is our own internal ASCII data format which can be viewed by most text editing or word processing software. .txt - Files stored in this format contain tab delimited text and can be viewed by most word processing and spreadsheet programs. .csv - Files stored in this format contain comma separated values and are directly readable by Microsoft Excel® and many other spreadsheet programs.
Real-Time Recording:	Collect and display data in real-time while continuing to log.
Statistics:	Automatically calculates averages, minimum, maximum, standard deviation, and mean kinetic temperature.
Summary:	View statistics and alarm information in a simplified report format.
Data Table:	Instantly access tabular view for detailed dates, times, values, and annotations
Zoom:	Magnify specific data with powerful zoom and drag tools. Supports multiple zoom in and zoom out modes. Features extended zoom capabilities; box zoom, vertical zoom, and horizontal zoom as well as point and click.
Formatting Options:	Choose colors, line styles, plotting options, show or hide channels for desired format.
Scaling Options:	Autoscale function fits data to the screen, or allows values to be manually entered.
Engineering Units:	Define the type of units to be displayed on the graph using the Engineering Units Wizard. User defined engineering units may be applied to voltage, current, pulse, event and state loggers.
Menu Accessibility:	Right click on the graph for easy access to all formatting, measurement units and graphing tools menu options.

Annotation:	Easily annotate specific data points on the graph with a click of the mouse.
Graphical Cursor:	One click displays readings by time, value, parameter or sample number.
Printing:	Automatically print graphical or tabular data.
Communications:	The communications port sets up automatically or user-configured.
Logger Configuration:	Easy installation and launch of data loggers with immediate or delayed start, preferred sample rate, and device ID.
Calibration:	Fully digital calibration function automatically stores parameters in device. A calibration wizard is provided in the software to simplify the calibration procedure.
Uninterrupted Data Retrieval:	Data may be downloaded from the logger without interrupting the operation of the unit as it continues to log data.