

WeldLog Plus™

Weld Data Logger Statistical Analysis Program

Operation / Installation Manual

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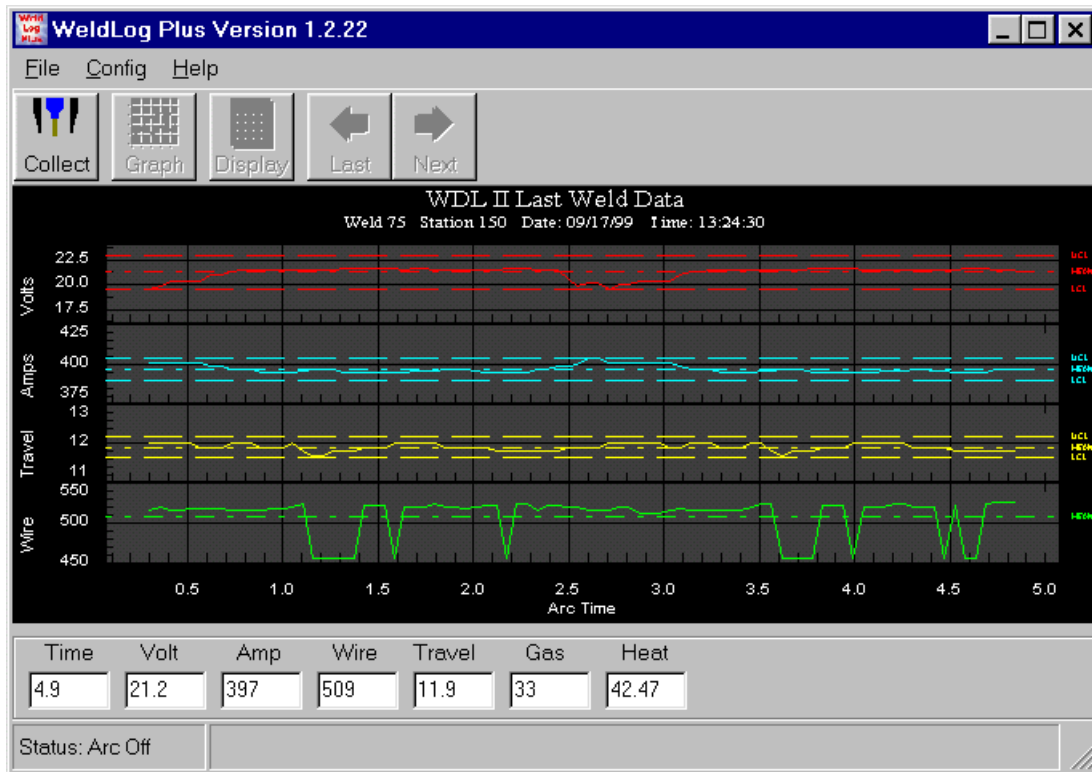


Table of Contents

1.0	SYSTEM OVERVIEW WELDLOG PLUS™	1
2.0	SYSTEM REQUIREMENTS.....	1
3.0	OPERATING SYSTEM.....	1
4.0	INSTALLATION OF SOFTWARE	2
5.0	FILE PULL - DOWN MENU	3
6.0	CONFIG PULL-DOWN MENU.....	4
7.0	SPEED BUTTONS.....	4
8.0	STATUS BAR WINDOWS	6
9.0	GRAPH CHART CONFIGURATION	6
10.0	SYSTEM CONFIGURATION PARAMETERS	8
11.0	WELD DATA COLLECTION.....	10

1.0 SYSTEM OVERVIEW WeldLog Plus™

WeldLog Plus™ is a product of Computer Weld Technology, Inc. and is designed to operate in conjunction with our WDL™ and WDL II™ weld data loggers. The program provides a serial communications program, which is used to communicate with the WDL's via the RS-232 serial port. It provides weld data collection routines that allow the user to collect run-time weld data and store this data for future analysis. The program also provides a Graphical and statistical program to display and analysis stored weld data files.

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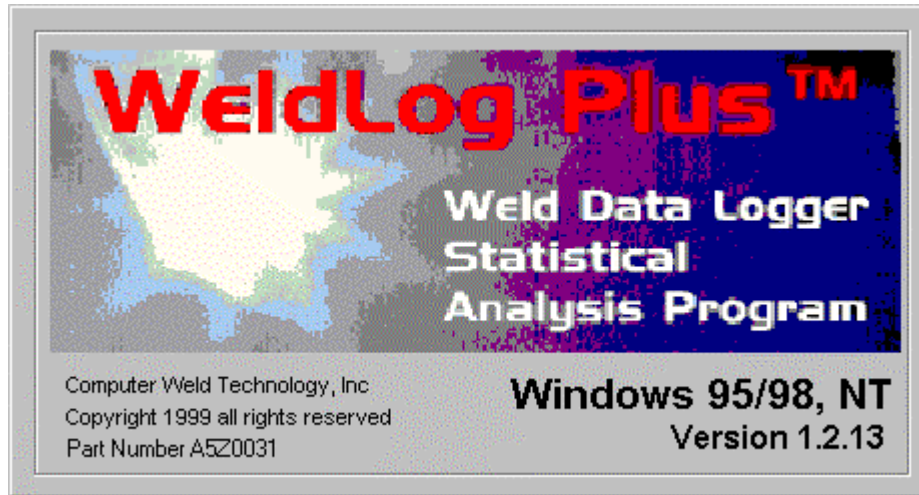
2.0 SYSTEM REQUIREMENTS

Processor:	150mhz Pentium™ or higher microprocessor
Memory:	24 Megs minimum for Windows 95/98®, 32 Megs for Windows NT®
Hard Drive:	25 Megs of available hard drive space
Graphics:	Minimum SVGA graphics. XVGA recommended
Serial Port:	RS-232 serial port

3.0 OPERATING SYSTEM

The WeldLog Plus™ program is designed for use with Windows 95/98® or Windows NT® 3.51 or later platforms. The program has been tested with Windows 95®, Windows 98® and Windows NT® 4.0.

4.0 INSTALLATION OF SOFTWARE



The following steps will guide you through the installation process.

1. Power on your computer and start Windows.
2. Insert Disk 1 of WeldLog Plus™ into the computer's floppy drive.
3. From the **START** Button, choose **RUN**.
4. In the **OPEN** field, type **A:Setup.exe** and press **Enter** or click **OK**.
5. Follow the instructions on screen.
6. If the system requires you to restart Windows, remove the floppy diskette and restart the system. Once Windows has restarted repeat the installation procedures for this program starting with **Step 2**.
7. Once installation is complete you may start the **WeldLog Plus** Program by Clicking the **START** button on the Windows screen then selecting the **PROGRAMS** folder, **WeldLog Plus** folder, and then the **WeldLog Plus** file.

5.0 FILE PULL - DOWN MENU

The following Menu items are available under the File Pull-down Menu:

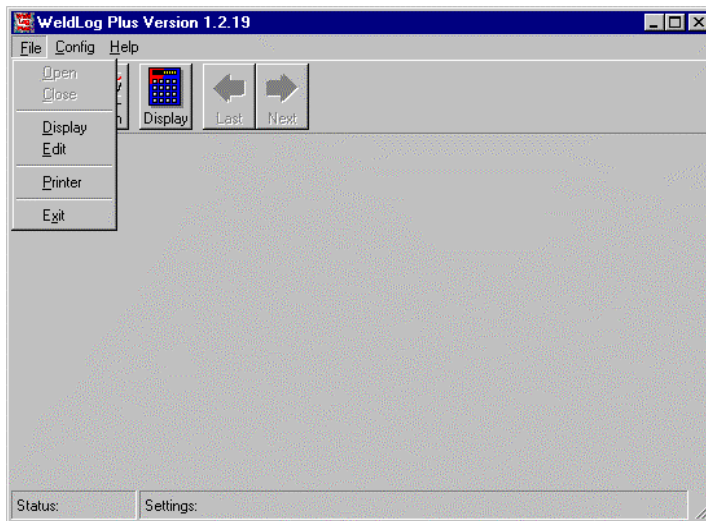


Figure 1 - File Pull-down Menu

- | | |
|-----------------------|--|
| Open Log File | Opens weld data file only if the Collect Welding Data mode is active. Weld data collected will be saved to the user-specified file. |
| Close Log File | Close any opened Weld Data File while in the Collect Welding Data mode. |
| Display | Invokes the Read Weld Data File dialog. Select the weld data file to be displayed and press the Open key. The program will display the selected data in two formats. The “Weld Summary” Tab will display all of the collected data. Use the vertical Slide Bars to scroll through the actual weld data. A summary of the weld will be displayed in the Weld Average Window at the bottom of the Tab. The “Weld Statistics” Tab will display the statistical data for each weld. The program calculates the Standard Deviation, Mean, Max, Min, Range, and control limits base on the start and end time specified in the System Configuration parameters. Additional Calculations are displayed in the Weld Calculation window at the bottom of the Tab. The “Weld Process Sheet” tab is used to display any additional information about the weld process being conducted. This Tab is used to document the other weld parameters used to document the users weld procedure. Use the NEXT/LAST buttons to display the next weld saved in the file. |
| Edit File | Invokes a Text Editor that can be used to View, Edit or Print any Weld Data File. |
| Print | Opens the Printer Setup Dialog box. |
| Exit | Terminates the WeldLog Plus program. |

6.0 CONFIG PULL-DOWN MENU

The following Menu items are available under the Config Pull-down Menu:

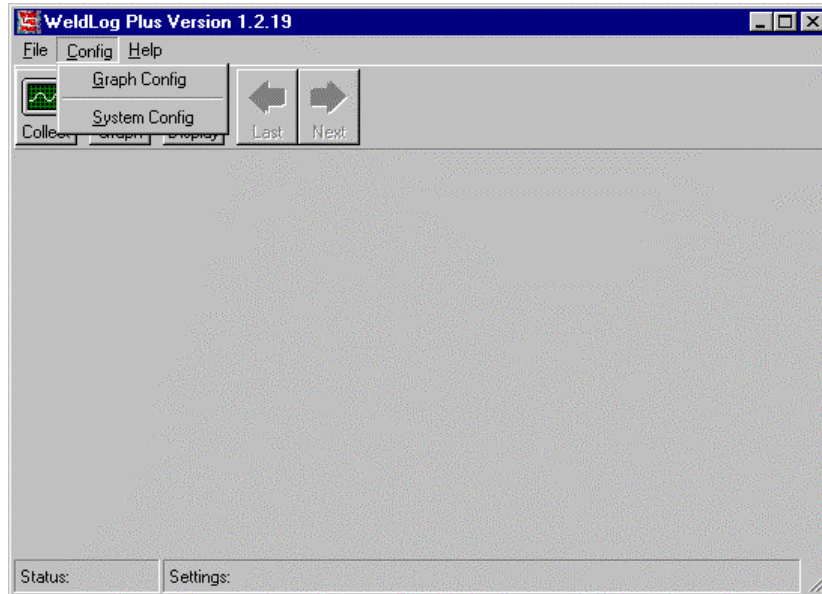


Figure 2 - Config Pull-down Menu

Graph Configuration Opens the Set Graphical Parameters Dialog. See the Set Graphical Parameters (Section 9.0) for additional information.

System Configuration Opens the Statistical Configuration Parameters and System Setup Dialog. See the System Config (Section 10.0) for additional information.

7.0 SPEED BUTTONS

The following Menu items are available under the Tool Bar Speed Buttons:

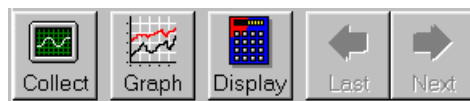


Figure 3 - Tool Bar

Collect Speed Button invokes the Weld Data Collection Graph Chart function using the graph chart configuration parameters. To save data to a file click the File function. Then select the Open function and the Open Weld Data File dialog box will appear. Enter a file name or select one of the file names listed. All collected data will be saved into the selected file. The file will

automatically close when the specified number of welds has been collected. To exit press the Collect Weld Data speed button on the control bar. While collecting data it is possible to zoom an area on the chart.

Zooming is the process of using the mouse to select new extents of the chart grid.

- To Zoom:**
1. Press the left mouse button and drag the cursor to select the new extents.
 2. Release the mouse button.

To Undo the Zoom press the 'Z' key, or use the pop-up menu to select the Undo Zoom menu item.

Graph ... Speed Button invokes the Open Weld Data File dialog. Select the weld data file to be graphed and press the Open key. The program will display the selected data as defined by the Graph Configuration dialog. Use the NEXT / LAST arrow buttons to scroll through the weld data files. Click the right mouse button to open the graph pop-up menu. Press the Graph Welding Data speed button on the control bar to exit.

Display ... Speed Button invokes the Read Weld Data File dialog. Select the weld data file to be displayed and press the Open key. A tabbed dialog box will appear. Data can be displayed in two formats. Click on the tab of the required format. The "**Weld Summary**" Tab will display all of the collected data. Use the vertical Slide Bars to scroll through the actual weld data. A summary of the weld will be displayed in the Weld Average Window at the bottom of the Tab. The "**Weld Statistics**" Tab will display the statistical data for each weld. The program calculates the Standard Deviation, Mean, Max, Min, Range, and control limits base on the start and end time specified in the System Configuration parameters. Additional Calculations are displayed in the Weld Calculation window at the bottom of the Tab. The "**Weld Process Sheet**" tab is used to display any additional information about the weld process being conducted. This Tab is used to document the other weld parameters used to document the users weld procedure. Use the NEXT/LAST buttons to display the next weld saved in the file.

Last... Speed button is enabled only in the graph mode and allows the user to scroll to the previous weld stored in the selected file.

Next... Speed button is enabled only in the graph mode and allows the user to scroll to the next weld stored in the selected file.

8.0 STATUS BAR WINDOWS

The status bar is divided into two windows. The first window displays the current status of an operational program. The second will display current settings or any fault or control messages generated by the operating routine.

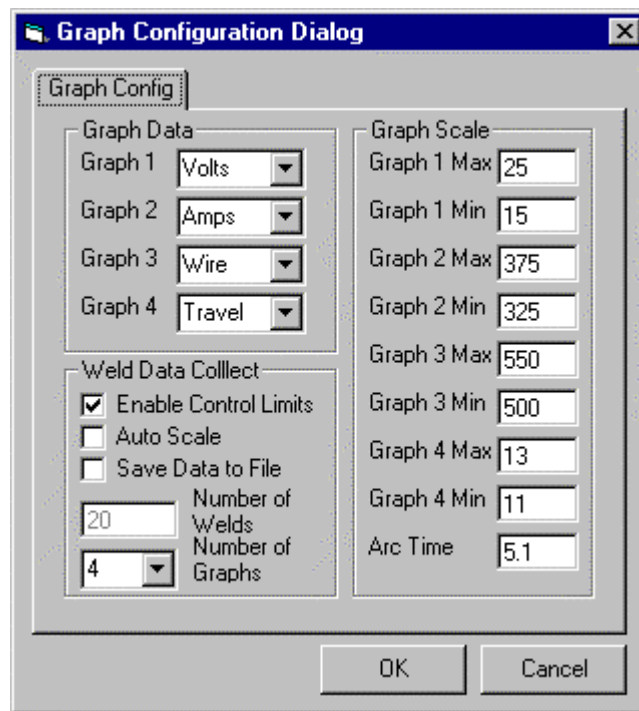


Figure 4 - Status Bar

Example: During the Collect Data routine The Status will display the Arc on or Arc off Prompt and the Settings window will display the weld number being saved during the weld data collection cycle.

9.0 GRAPH CHART CONFIGURATION DIALOG

Graph Configuration Dialog Window



Graph 1

This allows the user to select the parameters to display on the first (Top) Graph.

- Graph 2** This allows the user to select the parameters to display on the second Graph.
- Graph 3** This allows the user to select the parameters to display on the third Graph.
- Graph 4** This allows the user to select the parameters to display on the fourth Graph.

To select a parameter use the Down button to display the available options. To select the Item, click the parameter window. The selected Item will be highlighted.

Weld Data Collect Window

- Enable Control Limits** If checked the graph will display upper and lower limits based on standard deviation calculations. If not checked the Graph will use the values set in the Graph Scale window.
- Auto Scale** if checked will automatically re-scale the Graph based on actual weld data. If not checked the Graph will use the values set in the Graph Scale window.
- Save Data to File** if checked the user will be prompted for a file name when the user clicks the Collect Button or Collect Weld Data speed button. If not checked a file name will not be requested and the weld data will be displayed but not saved.
- Number of Welds** if the Save Data to File button is checked the value in this window indicates the number of welds to be collected in the weld data file. If not checked this function is inoperative. A number must be entered to collect and save weld data even when the Save Data to File function is disabled.

Note: This window is only active and can only be changed if the Save Data to File box is checked.

- No. Of Graphs** Specifies the number of parameters to display on the Graph. The user can specify from 1 to 4 parameters

Graph Scale Window

- Graph 1 Max** Defines the maximum scale value for Graph 1.
- Graph 1 Min** Defines the minimum scale value for Graph 1
- Graph 2 Max** Defines the maximum scale value for Graph 2.
- Graph 2 Min** Defines the minimum scale value for Graph 2
- Graph 3 Max** Defines the maximum scale value for Graph 3.
- Graph 3 Min** Defines the minimum scale value for Graph 3
- Graph 4 Max** Defines the maximum scale value for Graph 4.

Graph 4 Min	Defines the minimum scale value for Graph 4
ARC Time	Defines the total ARC Time for the Graph in seconds. The Graph Scale values can be modified only if the Auto Scale option is not checked.

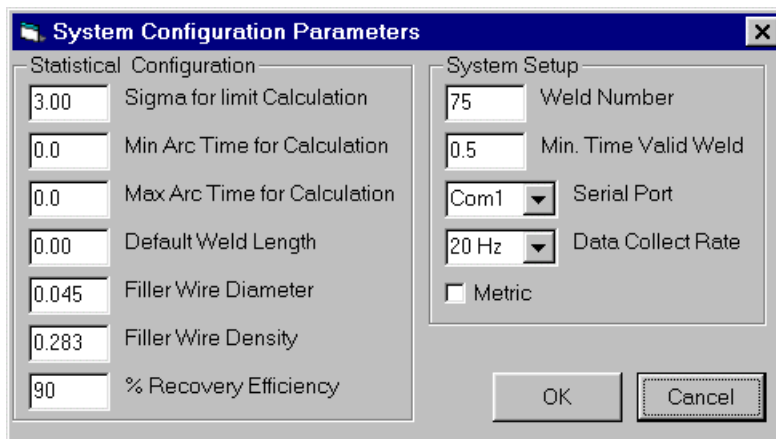
Graph Configuration Command Buttons

To exit the dialog without saving any changes press the Cancel button. To save the new configurations press the OK button. Pressing either button will terminate the dialog.

10.0 SYSTEM CONFIGURATION PARAMETERS DIALOG

Statistical Configuration Window

Specifies the standard deviation values that will be used to calculate the control limits from stored weld data files. To enter new values click on the window and type a new value.



Sigma for limit Calculation The standard deviation is defined as the positive square root of the variance of a data set. The variance for a data set of n items is equal to the sum of the squared distances from the mean divided by (n-1). You can think of the standard deviation as the average of all distances of each data point from the mean.

Max Arc Time The value entered here will be used to exclude weld data samples collected after the specified arc time. The value is specified in seconds. This eliminates the crater fill data from being included into the limit calculation.

Min Arc Time The value entered here will be used to exclude weld data samples collected before the specified arc time. The value is specified in seconds. This eliminates the arc start data from being included into the limit calculation.

Default Weld Length	If the travel speed sensor is not used with the WDL this weld length parameter and the arc time will be used to calculate an average travel speed.
Filler Wire Diameter	Enter the diameter of the filler wire being used for the weld. This value is used to calculate the volume of weld deposited.
Filler Wire Density	Enter the density of the filler wire bring used for the weld.
% Recovery Efficiency	Enter percent recovery efficiency for the weld transfer mode being used.

System Setup Window

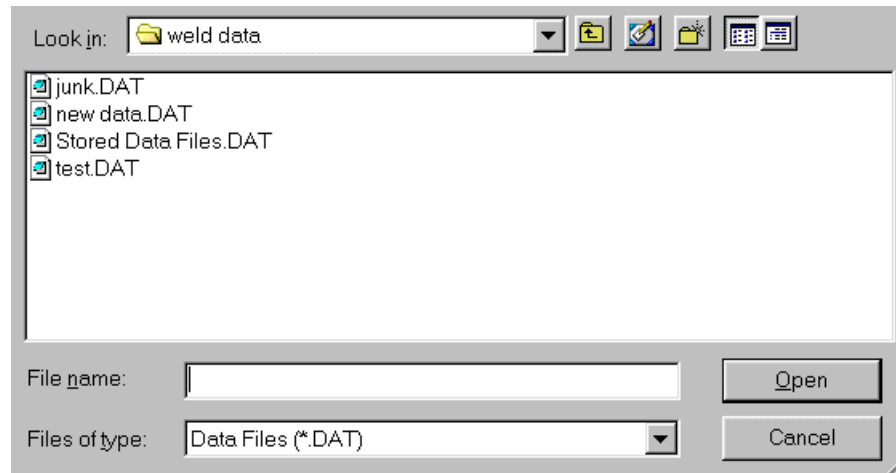
Weld Number	Displays the total number of welds. The Number can be set to any value by placing the cursor in the box and entering the desired number.
Min Time Valid Weld	Sets the minimum time that a weld must be active to be considered a valid weld. The Number can be set to any value by placing the cursor in the box and entering the desired number.
Serial Port	Sets the serial port for use. Default is Com1. To change the serial port configuration, click on the down arrow key to the right of the box. Scroll down to the desired Com setting and click on it.
Data Collect Rate	Sets the Data collection rate. To change the setting, click on the down arrow key to the right of the box. Select the desired setting and click on it.
Metric	Click on this box if the system is set for metric.

To exit the dialog without saving any changes press the Cancel button. To save the new configurations press the OK button. Pressing either button will terminate the Dialog.

11.0 Weld Data Collection

Weld Data File Open Window

To collect welding data press the Collect speed button. If the Save to file option is selected the following Open File dialog will appear. To save the collected data enter a new file name then press the Open button. To not save the data press the Cancel button.



If the Save to file option is not selected, this window will not appear. A Save data file can be opened from the Collect Data window by clicking the File command on the menu bar. From the File Menu click on the Open command and the Open File Window will appear. Select an existing file by clicking on the file name and then click Open or type in a new file name in the File name box and click Open.

Once a file has been opened weld data will be collected and saved until the weld process is terminated, the collect function has been terminated by clicking the "Collect" Speed button or until the number of welds matches the number of welds requested in the Weld Data Collect box of the Graph Config dialog.

A change to the number of welds to be collected can be made during the collection process by going to the "Graph Config" dialog and changing the number of welds.

The number of completed welds saved will be displayed in the "Settings" window of the Status bar. The number will change after a complete weld has been saved.