

**DataWorks
AM6387
Operator's Manual**

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Section 1

Introduction

Introduction

The DataWorks – AM6387 software is one element of a system designed for the specific application of measuring tape samples. The entire Tape Measurement System consists of a Windows 95 compatible PC, the DataWorks – AM6387 software, an optional footswitch, an optional inkjet or LaserJet printer, a Beta LaserMike IntelliPak processor, a Beta LaserMike single axis scanner, and a fixture to hold the tape samples.

The DataWorks software functions as a virtual front panel and provides data collection capability on two types of tape samples. The first type of tape sample consists of a single opaque stripe on a transparent background (i.e., the scanner will see three segments: light, shadow, light). For this type of tape sample, the width of the single opaque stripe is the only measurement dimension available for data collection. The second type of tape sample consists of two opaque stripes on a transparent background (i.e., the scanner will see five segments: light, shadow, light, shadow, light). For this type of tape sample, there are four measurement dimensions available for data collection which are the width of the top stripe, the width of the gap between the two stripes, the width of the bottom stripe, and the combined width of all three previous dimensions.

DataWorks provides the capability to configure and save an unlimited number of recipes containing product specifications and product specific IntelliPak settings. As measurement values are collected, they are compared to the user-programmed product specifications, saved to disk, and added to the statistics calculations. Collected data can be viewed, edited, and printed at any time.

Installation

Although DataWorks creates a number of files when it is run, there is only one file needed for installation. To install the DataWorks software, create a directory on the C: drive named C:\DataWorks and copy the file named DataWorks.Exe to that directory

To run DataWorks click Run on the Windows Start Menu and select C:\DataWorks\DataWorks.Exe, double click C:\DataWorks\DataWorks.exe from within Windows Explorer, or create and use a shortcut on the Windows desktop.

Refer to the Beta LaserMike IntelliPak Operator's Manual for connection of the scanner to the IntelliPak and connection of the IntelliPak to ComPort 1 on the PC. Note: If the optional footswitch is used, it must be connected to ComPort 2 of the PC.

Running DataWorks for the First Time

The first time DataWorks is run, the communication parameters of the PC are defaulted to ComPort 1, 9600 baud, no parity, 8 data bits, and 1 stop bit (see Section 11: ComPort Settings). The IntelliPak provided with the Tape Measurement System will come from the factory configured to match the above settings.

If the IntelliPak being used was not shipped as part of the Tape Measurement System, be sure to change the IntelliPak serial port configuration (refer to the IntelliPak Operator's manual) to match the ComPort settings of DataWorks, or change the ComPort settings of DataWorks to match the IntelliPak serial port configuration.

Any changes made to the DataWorks ComPort Settings will be saved to disk and retrieved the next time DataWorks is run.

All application specific IntelliPak settings (e.g., segments expected and measurement equations) are automatically sent to the IntelliPak each time DataWorks is run. So, if the equipment is properly connected and the communication settings match, measurements will be displayed as soon as DataWorks is run.

Section 2 DataWorks Main Display Page

The screenshot shows the DataWorks main display page. The window title is "DataWorks - Part No: None - Work Order: None". The menu bar includes "Menu". The toolbar contains icons for file operations and printer. The main display area shows the following information:

Sample Count: 10 [Add] [Cancel]

Top: 0.494766

Gap: 0.476381

Bottom: 0.540928

Total: 1.512076

Statistical data for each subset:

Subset	Last	Max	Min	Range	Avg	Std Dev	CPK
Top Stats	0.494796	0.504531	0.494773	0.009758	0.496194	0.002724	36.25
Gap Stats	0.476397	0.476397	0.464123	0.012274	0.474183	0.004034	22.66
Bottom Stats	0.540948	0.540961	0.540411	0.000550	0.540889	0.000133	649.50
Total Stats	1.512140	1.512140	1.503660	0.008480	1.511266	0.002089	46.07

Scanner Status: OK Measurement Units: INCH IntelliPak: CONNECTED

Enter Work Order Number

The screenshot shows the "Enter work order number" dialog box. It contains the following elements:

Enter work order number

Work Order No.

Combine Subsets

[OK] [Cancel]

Each time DataWorks is run, the user is prompted to enter a Work Order number. The Work Order number is used to distinguish one data collection session from another. As data is collected, it is saved in the C:\DataWorks directory to a file named *workorder.blm* (where *workorder* is the user specified Work Order number). Work Order files from previous data collection sessions can be retrieved at any time.

To combine all previously collected subsets for a given Work Order, check Combine Subsets (see Section 8: Subsets).

To specify a Work Order number, enter the number (alphanumeric) and click OK.

To begin a data collection session without specifying a Work Order number, click Cancel. Data will be saved to a default file named none.blm.

The Title Bar

DataWorks – Part No: None – Work Order: None

The title bar on the Main Display Page displays the name of the program, the selected Part Number (see Section 3: Recipes), and the Work Order number. If a Part Number has not been specified, **None** is displayed on the title bar in place of the Part Number. If a Work Order number has not been specified, **None** is displayed on the title bar in place of the Work Order number.

Status Indication

There are three areas located along the bottom of the Main Display Page that indicate status.

Scanner Status:

The Scanner Status is displayed in the leftmost status area. Whenever a scanner error condition occurs, the IntelliPak sends a message indicating the nature of the error to DataWorks. These messages are displayed in the Scanner Status area.

OK	The scanner is properly measuring a sample. An error condition does not exist.
MISSING!	The scanner is seeing less than the number of segments expected. Make sure there is a sample loaded on the fixture located within the measurement area and that the number of segments specified within the current recipe matches the type of sample loaded.
EXTRA!	The scanner is seeing more than the number of segments expected. Make sure there is no debris on the scanner windows and that the number of segments specified within the current recipe matches the type of sample loaded.
LOW POWER!	The laser power level is too low to perform accurate measurements. Contact Beta LaserMike Customer Service for service information.
NO SCAN!	The IntelliPak is not receiving scan information from the scanner. Make sure that the scanner is connected properly and the beam shutter is not closed.

??? DataWorks is not communicating with the IntelliPak.
The scanner status is unknown.

Measurement Units:

The selected Measurement Units (see Section 3: Recipes) are displayed in the center status area.

IntelliPak:

The status of communication with the IntelliPak is displayed in the rightmost status area.

CONNECTED DataWorks is properly communicating with the IntelliPak and measurement data is being received.

NOT CONNECTED! DataWorks is not communicating with the IntelliPak. Make sure the IntelliPak is connected properly to ComPort 1 and that the PC communication parameters specified within DataWorks match those of the IntelliPak.

Measurement Data

DataWorks provides the capability to display and collect data on four measurement dimensions for a two stripe sample or one measurement dimension for a single stripe sample. If DataWorks is properly communicating with the IntelliPak, DataWorks automatically configures the IntelliPak to perform the specified measurements and transmit the measurement data each time a reading is completed. (See Section 3: Recipes for specifying Reading Duration.)

Top: Top is the width of the top stripe for a two stripe sample. This measurement dimension is not active for a single stripe sample (i.e., 3 segments selected).

Gap: Gap is the width of the gap between the top and bottom stripes for a two stripe sample. This measurement dimension is not active for a single stripe sample (i.e., 3 segments selected).

Bottom: Bottom is the width of the bottom stripe for a two stripe sample. This measurement dimension is not active for a single stripe sample (i.e., 3 segments selected).

Total: Total is the sum of the Top, Gap, and Bottom dimensions for a two stripe sample. For a single stripe sample, Total is the width of the single stripe.

All active measurement dimensions are updated on the Main Display Page each time a reading is received from the IntelliPak. Data values that are within the user-programmed product

specifications (see Section 3: Recipes) are displayed in green and data values that fall outside the product specifications are displayed in red.

Data Collection

+ Add: Click Add to collect data. Each time the Add button is clicked, the displayed data values are saved to the Work Order file, the Sample Count is incremented, and the Statistics for each active dimension are updated with the added values. If any data value is outside of the product specifications, an alarm beep is sounded.

Note: Once the displayed data values have been added, new measurement values must be received from the IntelliPak before the Add button will work again.

The optional footswitch imitates the Add button and can also be used to trigger data collection.

- Cancel: Click Remove to successively remove the most recent values from the collected data. Each time the Remove button is clicked the most recent data values are deleted from the Work Order file, the Sample Count is decremented, and the Statistics for each active dimension are updated appropriately.

Statistics

DataWorks provides the capability to calculate Statistics on the collected data for each of the active measurement dimensions.

Sample Count: Sample Count is the total number of collected data values for each active measurement dimension.

Last: Last is the most recent data value collected for each active measurement dimension. When data values are added, Last is displayed in green for data values within the product specifications or red for data values outside of the product specifications.

Avg: Avg is the average of all collected data values for each active measurement dimension.

Max: Max is the maximum data value collected for each active measurement dimension.

Min: Min is the minimum data value collected for each active measurement dimension.

Range: Range is Max – Min for each active measurement dimension.

- Std Dev:** Std Dev is the standard deviation of the collected data for each active measurement dimension.
- CPK:** CPK is the CPK of the collected data for each active measurement dimension.

Menu and Tool Buttons

To access the DataWorks Menu, click Menu in the upper left hand corner of the Main Display Page. Tool Buttons are located along the top of the Main Display Page and are provided for most of the Menu items.

- Recipe** Click Recipe to select or edit a Recipe (see Section 3: Recipes).
- Security** Click Security to enable or disable Security. When the Security menu item is checked and the Tool Button is down, Security is enabled (see Section 4: Security)
- Open File** Click Open File to open a Work Order file (see Section 5: Opening a Data File).
- Combine Files** Click Combine Files to combine all Work Order files containing a specified Part Number (see Section 6: Combining Data Files).
- Clear Data** Click Clear Data to clear the collected data (see Section 7: Clearing Data).
- Edit Data** Click Edit Data to edit the collected data (see Section 9: Editing Data).
- Note: When Security is enabled (see Section 4: Security), Edit Data is disabled.
- Print Data** Click Print Data to print a Sample Report or a Summary Report for the collected data (see Section 10: Printing Data).
- ComPort** Click ComPort to configure the ComPort for communication with the IntelliPak (see Section 11: ComPort Settings).
- Calibrate** Click Calibrate to calibrate the scanner (see Section 12: Scanner Calibration).
- Exit** Click Exit to exit from DataWorks.
- About** Click About for information regarding the revision of the DataWorks software.

Section 3

Recipes

Select or edit recipe...

- Product Specifications -

Top

Upper Tolerance

Nominal

Lower Tolerance

Gap

Upper Tolerance

Nominal

Lower Tolerance

Bottom

Upper Tolerance

Nominal

Lower Tolerance

Total

Upper Tolerance

Nominal

Lower Tolerance

- Recipe Selection -

Part No.

- IntelliPak Configuration -

Reading Duration 100 Scans 1.00 Seconds

Segments

Measurement Units

Resolution

Rounding

DataWorks provides the capability to configure and save an unlimited (*limited only by disk space*) number of Recipes.

Click Recipe (see Section 3: Recipes) to display the Recipe Selection Page.

Product Specifications

Within each Recipe, DataWorks provides the capability to enter product specifications for each of the four measurement dimensions.

Upper Tolerance Upper Tolerance is added to Nominal to determine the upper specification limit for each measurement dimension. Data values received from the IntelliPak are displayed in red on the Main

Display Page if they are greater than the upper specification limit.

Nominal

Nominal is the target size for each measurement dimension.

Lower Tolerance

Lower Tolerance is subtracted from Nominal to determine the lower specification limit for each measurement dimension. Data values received from the IntelliPak are displayed in red on the Main Display Page if they are less than the lower specification limit.

IntelliPak Configuration

Within each Recipe, DataWorks provides the capability to specify five IntelliPak configuration parameters.

Reading Duration

Specifies the reading duration for the scanner. At the completion of each reading duration, the IntelliPak transmits the measured data values for each of the four measurement dimensions.

Click the Scans radio button and enter an integer number of scans to compute readings based on a specified number of collected scans.

Click the Seconds radio button and enter the number of seconds to compute readings based on a specified number of seconds.

Segments

Specifies the number of segments expected for the type of tape sample (3 or 5).

Measurement Units

Specifies the units for the measurement data transmitted by the IntelliPak (INCH, MM, or MIL).

Resolution

Specifies the resolution for the measurement data transmitted by the IntelliPak (0 to 6 digits to the right of the decimal point).

Rounding

Specifies the type of rounding of the measurement data transmitted by the IntelliPak (NONE, EVEN, or 0/5).

Recipe Selection

Each time DataWorks is run, there is no Recipe initially selected and all Recipe items are set to their default values. The default values for all Product Specifications is 0. Therefore, until a Recipe is selected (or Product Specifications are entered), all data values will be displayed in red on the Main Display Page. This is intended to remind the user to select the appropriate Recipe before beginning a data collection session.

- Part No** The Part Number is used to distinguish one Recipe from another. Each Recipe is saved in the C:\DataWorks directory to a file named *partno.rcp* (where *partno* is the user specified Part Number).
- To display the Recipe item settings saved to a Part Number file, select the Part Number from the drop down list.
- Save** To save a Recipe, make the desired changes to the Recipe items, enter a new or select an existing Part Number, and click Save.
- Delete** To delete a saved Recipe, select the Part Number and click Delete.
- OK** To employ a Recipe for a data collection session, select the Part Number and click OK. Upon exiting the Recipe Selection Page, the selected Part Number will be displayed on the title bar of the Main Display Page.
- Note: It is not required that Recipe changes be saved in order to be employed for a data collection session. Simply make the desired changes and click OK without specifying a Part Number. **None** will be displayed on the title bar of the Main Display Page.
- Cancel** To exit the Recipe Selection Page without employing any Recipe changes, click Cancel. The data collection session will resume with the previously configured (or selected) Recipe.
- Note: If changes were saved to the previously selected Recipe, those changes will be employed.
- Lock/Unlock** Click the Lock/Unlock button to enable or disable Security (see Section 4: Security).

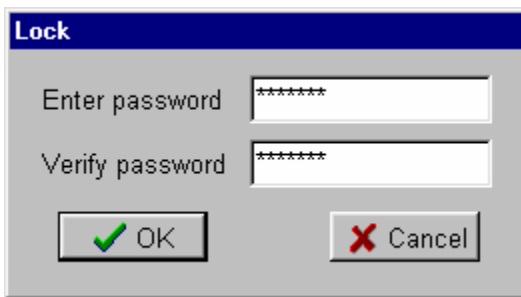
Section 4

Security

When Security is enabled, changes cannot be made to the Product Specifications or the IntelliPak Configuration settings located on the Recipe Selection Page. However, saved Part Number (a.k.a. Recipe) files can be selected. Also, when Security is enabled, Edit Data, ComPort, and Calibration are disabled.

Security status is saved to disk and retrieved the next time DataWorks is run.

Enabling Security



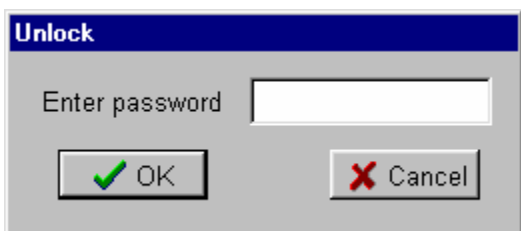
The image shows a dialog box titled "Lock" with a blue header bar. It contains two text input fields: "Enter password" and "Verify password", both containing seven asterisks. Below the fields are two buttons: "OK" with a green checkmark icon and "Cancel" with a red X icon.

When Security is disabled, click the Security menu item or the Lock/Unlock button to display the Lock prompt.

To enable Security, enter a password (up to 8 alphanumeric characters), verify the password, and click OK.

To exit from the Lock prompt without enabling Security, click Cancel.

Disabling Security



The image shows a dialog box titled "Unlock" with a blue header bar. It contains one text input field labeled "Enter password" which is currently empty. Below the field are two buttons: "OK" with a green checkmark icon and "Cancel" with a red X icon.

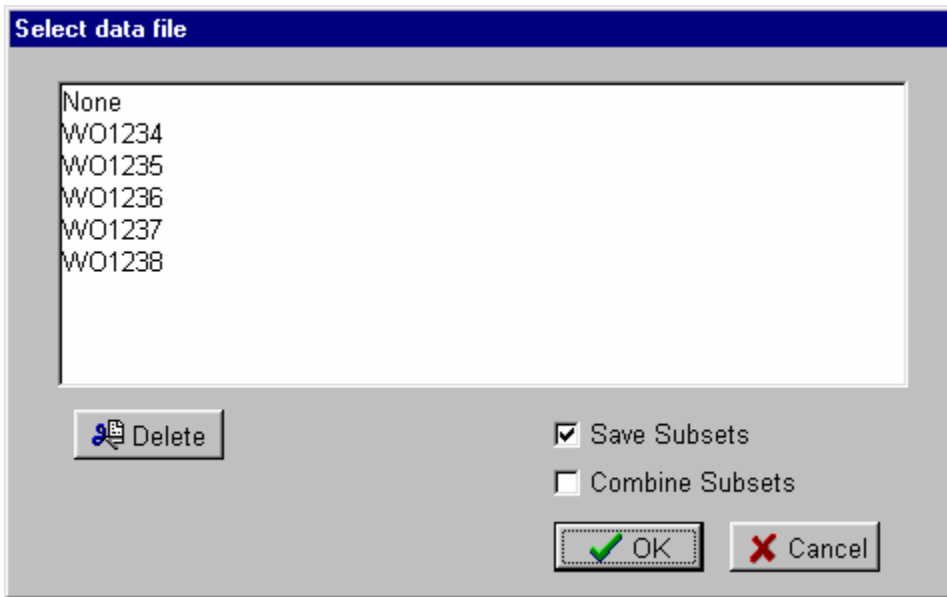
When Security is enabled, click the Security menu item or the Lock/Unlock button to display the Unlock prompt.

To disable Security, enter the same password used to enable Security and click OK.

To exit from the Lock prompt without disabling Security, click Cancel.

Section 5

Opening a Data File



Click Open File on the Main Display Page to display the Select Data File Page.

DataWorks automatically keeps a data file (distinguished by Work Order number) current with the data displayed on the Main Display Page. All data values used to calculate the Statistics for each measurement dimension are stored in the Work Order file. As data values are added or removed, the Work Order file is updated accordingly.

DataWorks also automatically stores Recipe information to the Work Order file. Each time a new Recipe is employed (see Section 3: Recipes), the Part Number (if specified) and Recipe configuration is saved to the Work Order.

To save the current Work Order file as a subset, check Save Subsets (see Section 8: Subsets).

To combine all previously collected subsets for the selected Work Order, check Combine Subsets (see Section 8: Subsets).

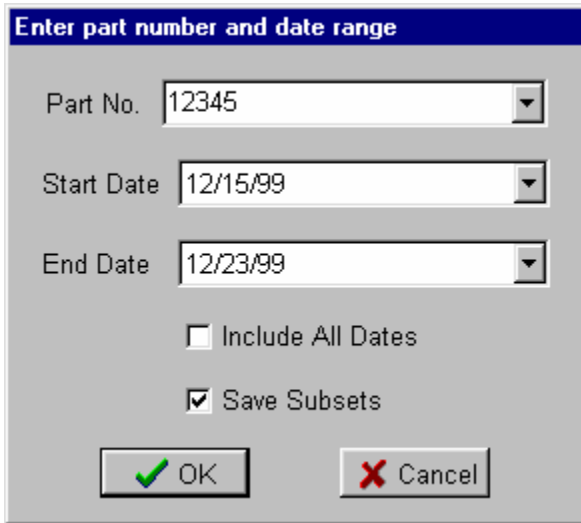
To open a Work Order file, select the Work Order number from the list and click OK. The Sample Count and Statistics on the Main Display Page will be recalculated using the retrieved data from the Work Order file. The retrieved Recipe settings will be employed. And, the selected Work Order number and retrieved Part Number will be displayed on the title bar of the Main Display Page. Once a Work Order file has been opened, the previous data collection session can be resumed or the data can be printed (see Section 10: Printing Data).

To delete a saved Work Order file, select the Work Order number and click Delete.

To exit without loading a Work Order file, click Cancel.

Section 6

Combining Data Files



Enter part number and date range

Part No. 12345

Start Date 12/15/99

End Date 12/23/99

Include All Dates

Save Subsets

OK Cancel

Click Combine Files on the Main Display Page to display the Enter Part Number and Date Range Page .

DataWorks provides the capability to combine all Work Order files that contain selected Part Number and fall within a specified date range.

To save the current Work Order file as a subset, check Save Subsets (see Section 8: Subsets).

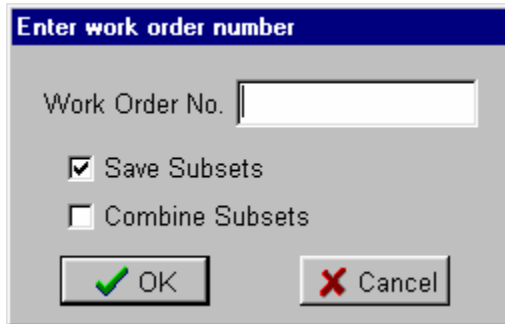
To ignore the date range, check Include All Dates.

To create the combined file, select the Part Number and date range and click OK. The Sample Count and Statistics on the Main Display Page will be recalculated using the retrieved data from the matching Work Order files. The Recipe settings for the selected Part Number will be employed. Since the new file is a combination of multiple Work Order files, **None** is displayed on the title bar in place of the Work Order number. Once the file has been combined, a data collection session can be resumed or the data can be printed (see Section 10: Printing Data).

To exit without combining Work Order files, click Cancel.

Section 7

Clearing Data



Click Clear Data on the Main Display Page to clear all collected data and begin a new data collection session. The Sample Count and Statistics for all four measurement dimensions on the Main Display Page will be reset to 0. However, at this point, the previously collected data saved in the Work Order file still exists.

When Clear Data has been clicked, the Enter Work Order prompt will be displayed.

To save the current Work Order file as a subset, check Save Subsets (see Section 8: Subsets).

To combine all previously collected subsets for the new Work Order, check Combine Subsets (see Section 8: Subsets).

To specify a Work Order number for the new data collection session, enter the Work Order Number and click OK. Data will be saved to *workorder.blm*.

To begin the new data collection session without specifying a Work Order number, click Cancel. Data will be saved to the default file, *none.blm*.

Section 8

Subsets

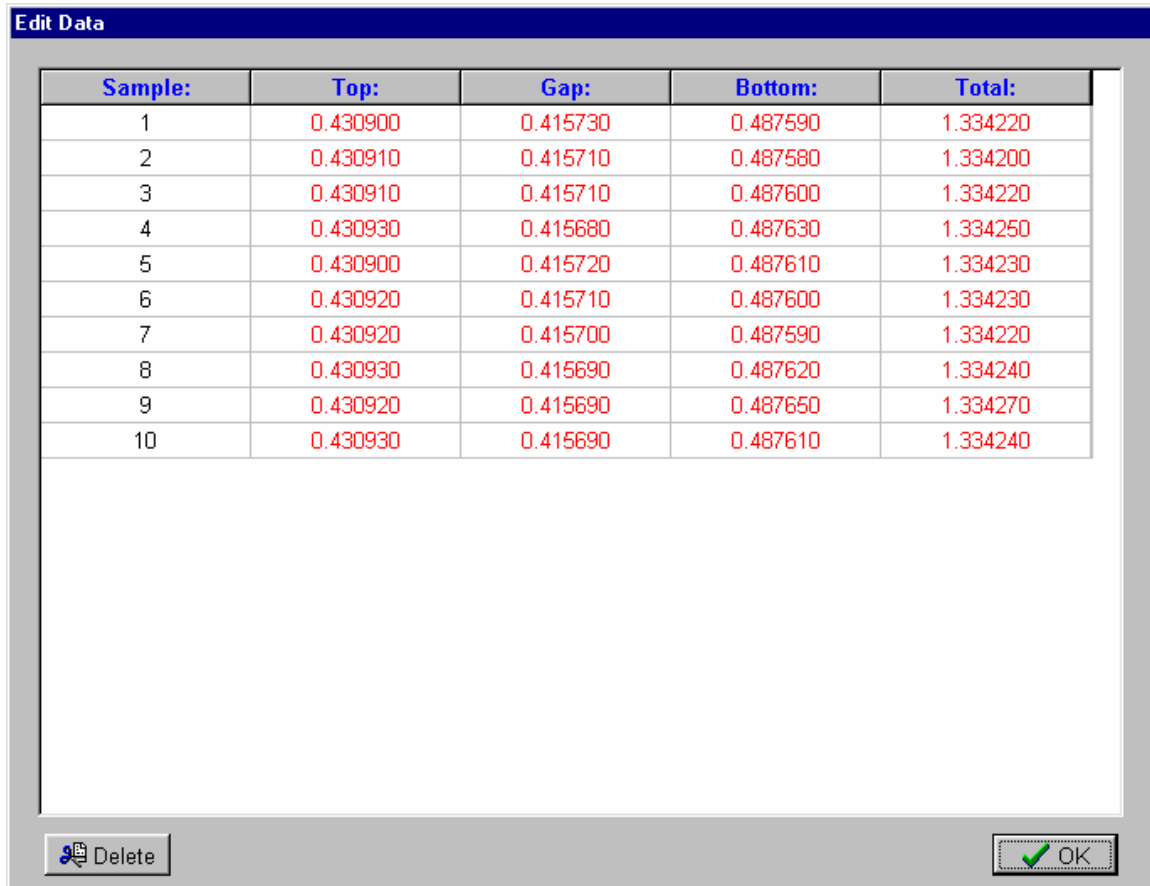
DataWorks provides the capability to save Work Order files as subsets. Subsets are archived files of Work Order data that can be created when data is cleared for a Work Order.

To save Work Order data as a subset, check Save Subsets when opening a file, combining Work Order files, clearing data, or exiting the program. In each of these cases, the current *workorder.blm* file will be saved as the next available subset (e.g., *workorder.001*, *workorder.002*, *workorder.003*,...). If Save Subsets is not checked, all subset files (*workorder.xxx*) will be deleted and only the *workorder.blm* file will be retained.

DataWorks, also, provides the capability to combine all subset files for a Work Order.

To combine subset files, check Combine Subsets when starting the program, opening a file, or clearing data. In each of these cases, all subset files will be combined into one *workorder.blm* file. Once the subset files have been combined, a data collection session can be resumed or the data can be printed (see Section 10: Printing Data). To preserve the existing subsets, check Save Subsets, when opening a file, combining Work Order files, clearing data, or exiting the program. If Save Subsets is not checked, all *workorder.blm* files will be deleted and only the new *workorder.blm* will be retained.

Note: There is a maximum of 999 subsets that can be saved for any Work Order. No subsets can be saved for the default Work Order, **None**.

Section 9**Editing Data**

Sample:	Top:	Gap:	Bottom:	Total:
1	0.430900	0.415730	0.487590	1.334220
2	0.430910	0.415710	0.487580	1.334200
3	0.430910	0.415710	0.487600	1.334220
4	0.430930	0.415680	0.487630	1.334250
5	0.430900	0.415720	0.487610	1.334230
6	0.430920	0.415710	0.487600	1.334230
7	0.430920	0.415700	0.487590	1.334220
8	0.430930	0.415690	0.487620	1.334240
9	0.430920	0.415690	0.487650	1.334270
10	0.430930	0.415690	0.487610	1.334240

Click Edit Data on the Main Display Page to display the Edit Data Page.

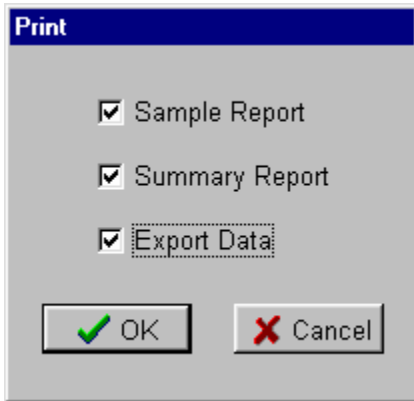
All collected samples for each active measurement dimension are displayed. Data values within the currently employed product specifications (see Section 3: Recipes) are displayed in green and data values that fall outside the product specifications are displayed in red.

To delete a sample from the data, first click the row of the sample to be deleted and then click Delete.

When finished editing the data, click OK. The Work Order file will be updated with the modified data and the Sample Count and Statistics on the Main Display Page will be recalculated using the modified data.

Section 10

Printing Data



Click Print on the Main Display Page to display the Print prompt.

Sample Report

All collected samples for each active measurement dimension are printed. Data values on the high side of the product specifications (see Section 3: Recipes) are printed with an 'H' next to the value and data values on the low side of the product specifications are printed with an 'L' next to the value.

The Sample Report header consists of the date and time of the printout, the page number, the Part Number, the Work Order number, and the measurement units. If the date data was last saved to the Work Order file (i.e., the file is a historical file loaded from disk) is not the same as the current date, the saved date is printed next to the Work Order number.

Summary Report

All Statistics for all active measurement dimensions are printed.

The Summary Report header consists of the date and time of the printout, the page number, the Part Number, the Work Order number, and the measurement units. If the date data was last saved to the Work Order file (i.e., the file is a historical file loaded from disk) is not the same as the current date, the saved date is printed next to the Work Order number.

Export Data

Summary data for the current Work Order file is saved in the C:\DataWorks directory to a comma separated file named exportdata.csv.

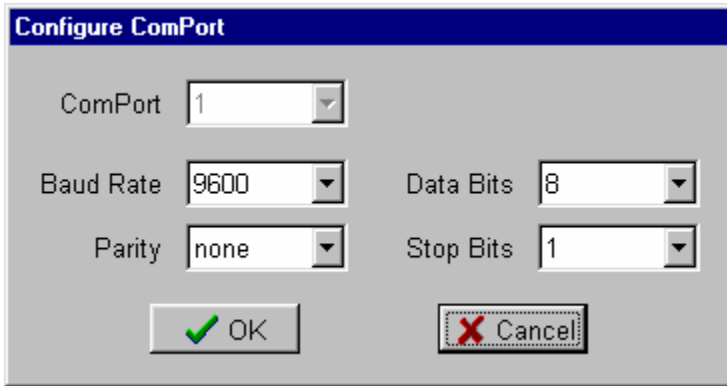
The exported data consists of the Work Order number, the Part Number, the date, the time, the Upper Tolerance values, the Nominal values, the Lower Tolerance values, the Sample Count, the Avg values, the Max values, the Min values, the Range values, the Std Dev values, and the CPK values.

To print or export, check the desired option(s) and click OK.

To exit without printing or exporting, click Cancel.

Section 11

ComPort Settings



Click ComPort on the Main Display Page to display the ComPort Configuration Page.

The displayed settings are for the PC's ComPort. These settings must match those of the IntelliPak in order for the IntelliPak to properly communicate with DataWorks.

ComPort settings are saved to disk and retrieved the next time Data Works is run.

ComPort Specifies the ComPort of the PC to which the IntelliPak is connected.

Note: This setting is always disabled. The IntelliPak must be connected to ComPort 1. ComPort 2 is reserved for a footswitch.

Baud Rate Specifies the baud rate of the serial communication between the PC and the IntelliPak (1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200).

Parity Specifies the parity for the serial communication between the PC and the IntelliPak (none, odd, or even).

Data Bits Specifies the number of data bits for the serial communication between the PC and the IntelliPak (7 or 8).

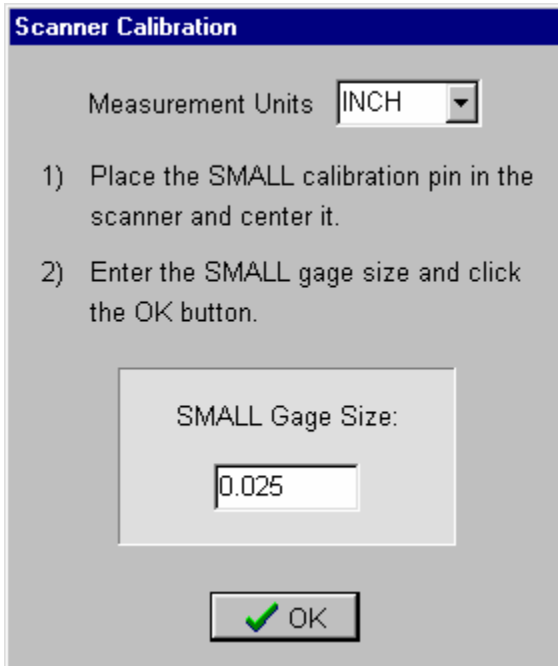
Stop Bits Specifies the number of stop bits for the serial communication between the PC and the IntelliPak (1 or 2).

To accept any changes made to the ComPort settings, click OK.

To exit without changing the Comport settings, click Cancel.

Section 12

Scanner Calibration

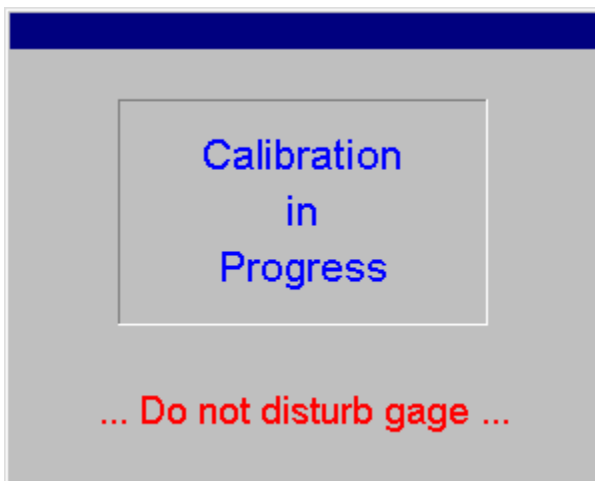


DataWorks provides the capability to calibrate the Beta LaserMike scanner.

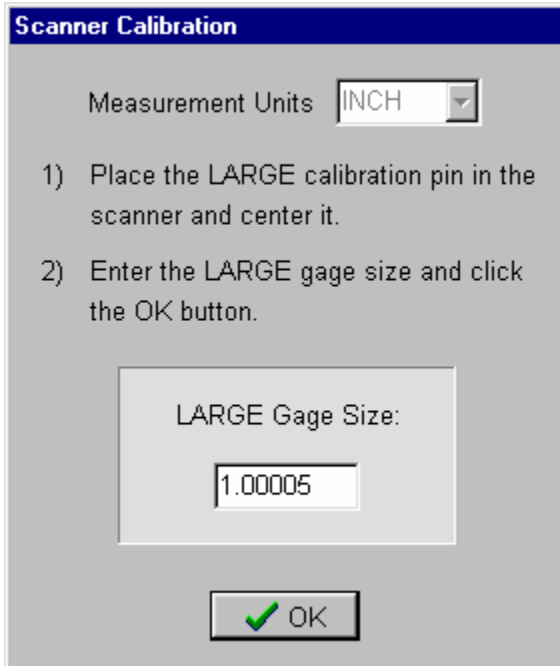
Click Calibrate on the Main Display page menu to display the first of the two Calibration pages.

The measurement units specified by the current Recipe are displayed and can be changed for calibration.

To calibrate using the SMALL gage, place the gage in the center of the scanner's measurement area, enter the size of the SMALL gage, and click OK.

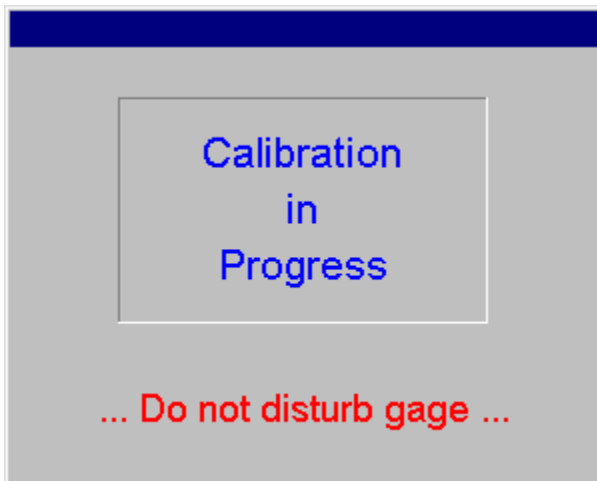


A warning message will be displayed while calibration of the SMALL gage is in progress.



When calibration of the SMALL gage is complete, the second of the two Calibration pages will be displayed.

To calibrate using the LARGE gage, place the gage in the center of the scanner's measurement area, enter the size of the LARGE gage, and click OK.



Again, a warning message will be displayed while calibration of the LARGE gage is in progress.

When calibration of the LARGE gage is complete, the Main Display Page will be displayed. At this point, calibration of the scanner is complete.