Corrosion Data Management Software
Version 4.2.2

Table of Contents

<u>Setup</u>

This section will guide you through the process of installing the Corrosion Data Management Software on your PC. Before installation, make sure that you have read and accepted the License Agreement found in the back of this manual.

System Requirements

To run the Corrosion Data Management Software, you need a PC that meets the following requirements:

- 1 GHz or faster 32-bit (x86) or 64-bit (x64) processor
- Windows 7, Windows 8, Windows 10 or Windows 11 - 32- or 64-bit operating system
- 1 GB of RAM
- 100 MB of available hard-disk space
- VGA monitor with 800 X 600 or greater resolution.
- Mouse or pointing device recommended.
- Available RS-232 serial or USB port (for instrument download)

Installing The Software

To install the Corrosion Data Management Software:

1. Remove any previous installations of the software.
2. Insert the setup disk. If the setup program starts automatically, you may proceed to step 4.
3. Double click on CDMS.msi setup file to start the installation

4. Proceed with the on-screen instructions to continue the installation

5. Click next to proceed with the installation
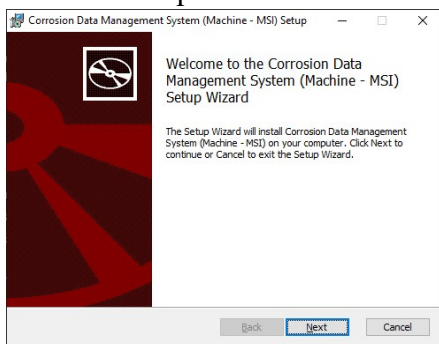
6. You can select the location where you want the installation or leave with the default location and click next to proceed.
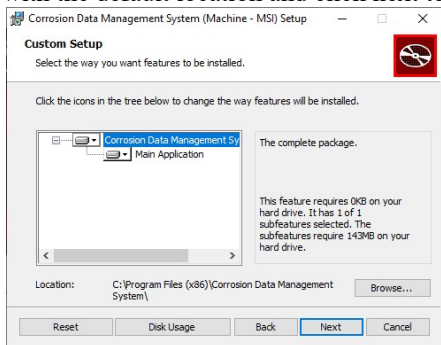
7. Click "Install" to continue with the installation.
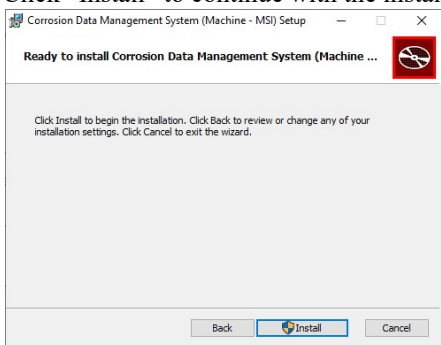
8. After clicking the Install button, the software will be installed on your PC. If any errors occur during software installation, you should uninstall, then reinstall the software.
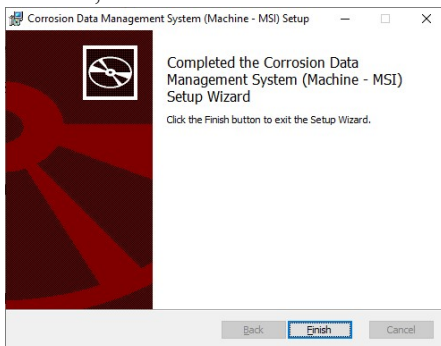
9. When the software installation is complete you should remove the setup disk, then reboot your computer.

Uninstalling The Software

To uninstall the software:

1. Open the Windows® Control Panel > Programs and Features
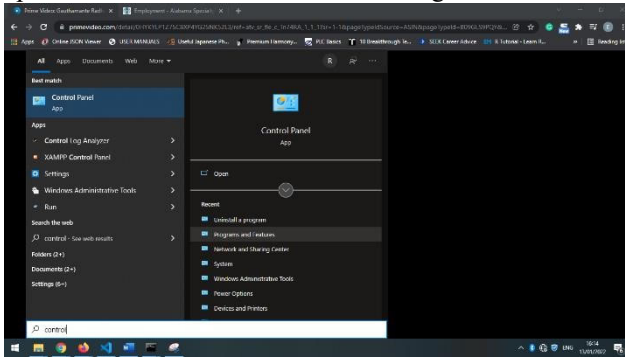
2. Select "Corrosion Data Management System" from the list.
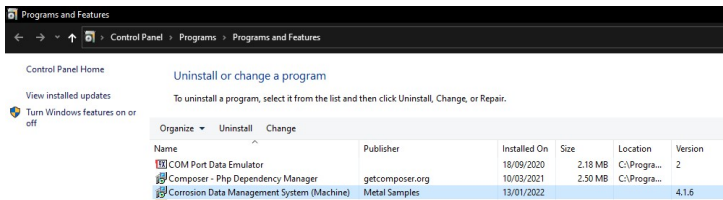
3. Click "Uninstall" button
4. Follow the prompts.

Introduction

Metal Samples Corrosion Data Management Software (CDMS) is a collection of utilities designed to assist the corrosion analyst in gathering and analyzing corrosion data. It includes tools for downloading and charting data from Metal Samples data loggers, calculating LPR alloy multipliers for 2-electrode probes, and for calculating corrosion rate from corrosion coupons.

The Main Menu can be used to launch all the utilities of the CDMS package. To close the program, click on the close icon at the right top of the window.
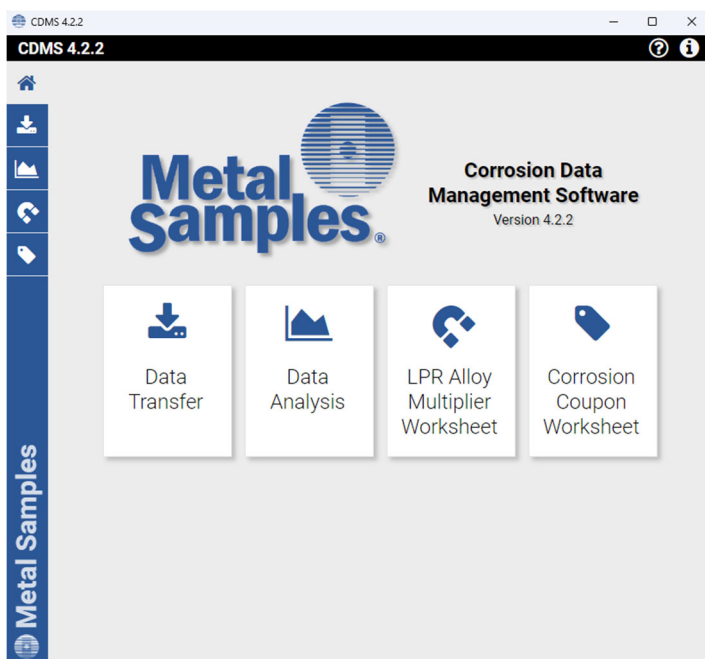
Data Transfer

The Data Transfer is a simple tool for retrieving data from Metal Samples ER and LPR data logger instruments.
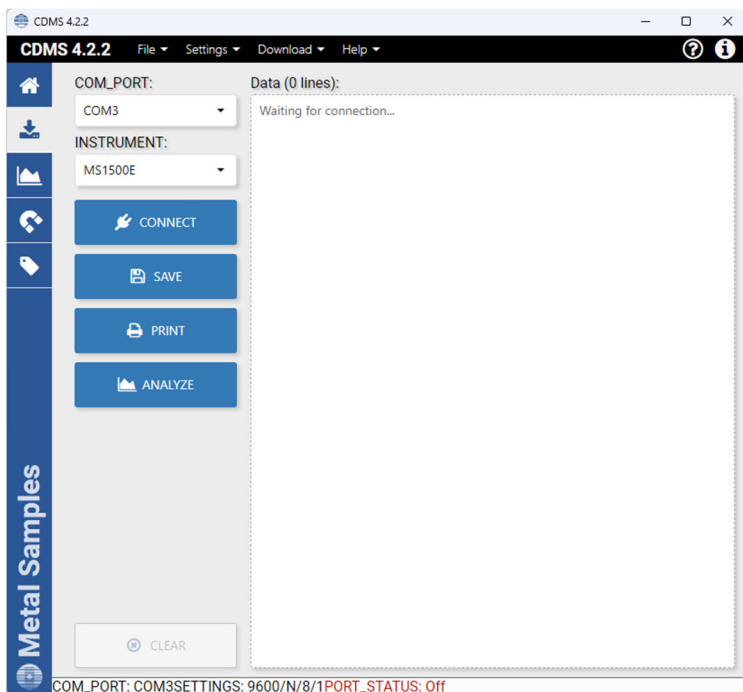
To download data from an instrument:

- Connect the instrument to an available PC serial port (see the instrument manual)
- Run the Corrosion Data Management Software
- Open the Data Transfer
- Select the serial port and instrument.
- Click the *Download* button
- Select the computer upload function on the instrument.

Data will begin to transfer from the instrument to the PC and will appear in the data window of the Data Transfer. If the data appears garbled, the wrong instrument type has been selected. Select another instrument type and try again. If data does not appear in the data window at all, verify that:

- The instrument is connected to a valid serial port.
- All cables are securely connected.
- The message "Port Status: On" appears in the status bar.
- There are no errors on the instrument.

Selecting A Serial Port

Use the *COM Port* option box, or the *COM Port* option in the *Settings* menu to select the port to which the instrument is connected.

Selecting An Instrument

Use the *Instrument* option box, or the *Instrument* option in the *Settings* menu, to select the model of Metal Samples instrument being downloaded. This sets the appropriate communication parameters, which will be displayed in the status bar at the bottom of the window ("*9600,N,8,1*" for an MS1500, "*2400,N,8,1*" for an MS3500).

Downloading Data

To toggle the Connection port on and off, click the Conenect / Disconnect button. On Connect success, data will start displaying in the right-side window.

If a valid serial port has been selected, the status bar at the bottom of the window will display the message "Port Status: On". If an invalid serial port has been selected, an error message will appear, and the status bar will display the message "Port Status: Off". If this happens, another serial port should be selected.

Saving Data

To save the data in the data window, click the *Save* button, or click *Save* in the *File* menu. The data is comma-delimited ASCII text. It can be saved to a standard text (.txt) file, or it can be saved to a comma-separated values (.csv) file, which greatly simplifies the process of importing the data into some spreadsheet programs such as Excel® or Quattro Pro®.

Printing Data

To print the contents of the data window, click the *Print* button, or click *Print* in the *File* menu. A print dialog box will be displayed to allow printer selection and setup.

Charting Data

To chart the contents of the data window, click the *Analyze* button, or click *Chart Data* in the *File* menu. If the data has not yet been saved, the user will be prompted to do so before the charting process begins. For more information on charting data, see the Data Analysis section.

Data Analysis ![chart icon]

The Data Analysis utility is a convenient tool for charting data from Metal Samples ER and LPR data logger instruments. The Data Analysis utility can be opened from the Data Transfer or from the Home screen.

If the Data Analysis utility is opened from the Data Transfer, the contents of the data window will be loaded into the chart. However, if the Data Analysis utility is opened directly from Home menu, a valid data file must be loaded. The *Open File* box will open to allow selection of a data file.

Data Table
After a file has been successfully loaded, the data will be displayed in the Data Table (bottom section of the screen) for review. By default, all data points will be included in the chart. However, data points can be turned off, or excluded, from the chart by clicking on Excluded column against the data point row. If the "Excluded" flag appears in the status column for a data point, that data point will not appear in the chart. To toggle the exclude/include status of a data point, check / uncheck the Exclude column from the data table.
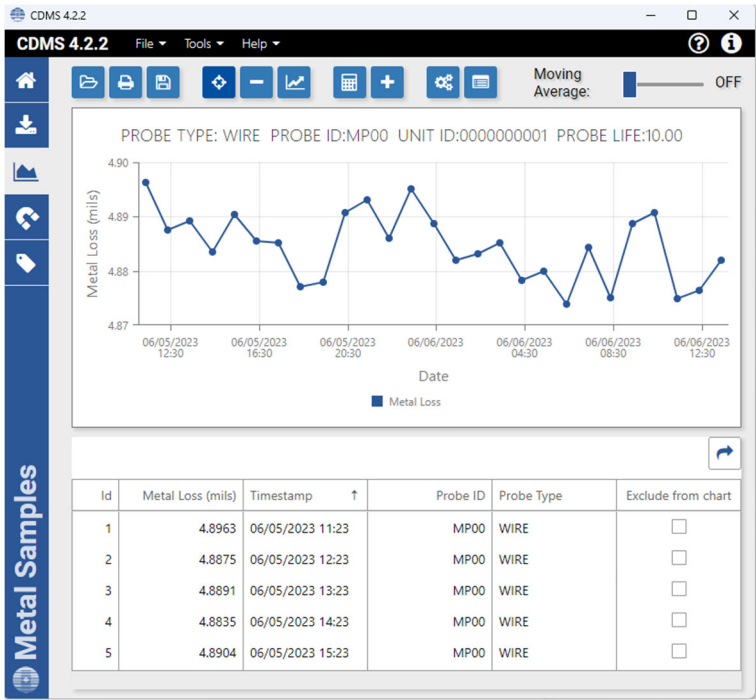
Printing Data

The data table can be printed by clicking *Print* 🖨 in the Top menu. A print dialog box will be displayed to allow printer selection and setup.

Printing Chart

A chart can be printed using the *Print Chart* 🖨 option in the *File* menu. A print dialog box will be displayed to allow printer selection and setup.

Saving Chart

The chart can be saved using the Save Icon in the top menu

Exporting Data Table

The data can be exported using the *Export Chart* option ↱ from the right top the data table. This will export the data as CSV file which can be used in other applications.

Chart Tools

Statistical Data

The *Statistical Data* 🖳 button at the top menu of the Data Chart window will display a page with statistical information about the chart data.

Finding A Data Points Value

While viewing the chart, the value of any data point can be determined by simply hovering the mouse cursor over it. The value will be displayed in the charts tool-tip box (a small text box that is displayed near the mouse pointer).

The Tools Menu

The *Tools* menu at the top of the window contains a collection of utilities for viewing and manipulating the chart.
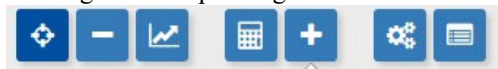
- o **Data Markers (Show / Hide Data Markers)**
  Show Data Markers toggles the data markers on and off.

- o **Mean Value**
  Show Mean Value toggles the mean value line on and off.

- o **Trend Line**
  Show Trend Line toggles the trend line on and off.

- o **Add Annotation**

  Add Annotation Setup displays a window that allows the chart title and footnotes to be toggled on and off, and to be modified.

- o **Chart Setup**

  Chart Setup displays a window that allows Chart title to be updated as required

- o **Zoom In /Zoom Out**

  Zoom In / Out works when mouse wheel is scrolled up / down.

- o **Calculate Corrosion Rate**

  If the chart contains ER data, the *Calculate Corrosion Rate* option will become available under the *Top* menu. This option allows the corrosion rate to be calculated between any two data points on the chart. To calculate the corrosion rate click *Calculate Corrosion Rate*, then click two data points. The corrosion rate between those two data points will be displayed.

  After selecting Calculate Corrosion Rate button click on any of the two data points to get the corrosion rate.

  To cancel a calculation, click *Cancel Calculate* from the *Top* menu.

  A sample calculate corrosion rate is shown below
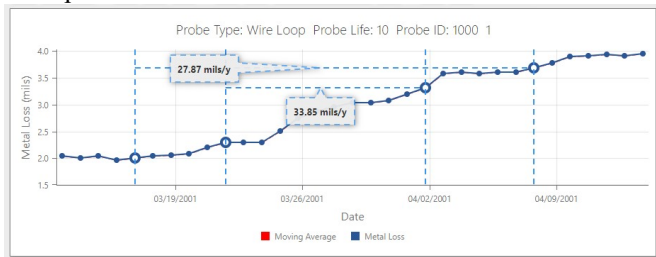
LPR Alloy Multiplier Worksheet

The LPR Alloy Multiplier Worksheet simplifies the process of calculating alloy multipliers for use with the 2-Electrode LPR system.

Calculating An Alloy

To calculate an alloy multiplier, the alloy must be "built" by adding each of its elements to the *Alloy Composition* list. An element is added to the list by selecting it from the drop-down menu, entering its percentage in the *Percentage* field, then clicking the *Add* button. To add the remaining percentage to an element, select that element, then click the *Balance* button. If it is necessary to remove an element from the list, highlight that element in the list, then click the *Remove* button.

After all of the elements for an alloy have been entered, click the *Calculate* button to calculate the alloy multiplier. The *Alloy Multiplier* will be displayed in the *Calculation Results* box, along with the *Equivalent Weight* and *Density* for the alloy. If desired, an identification number or description can be entered into the *UNS/Description* field.

Saving A Worksheet

The LPR Alloy Multiplier Worksheet offers three options for saving a worksheet.

- **Save to New Data File**

    Save to New Data File can be used to save data from multiple worksheets as entries in a data file, which can be opened by spreadsheet programs such as Excel® or Quattro Pro®. The *Save As* dialog box will be displayed to allow selection of a file name. If an existing file name is selected, the data from the worksheet will be saved as a new entry in that data file. If the file name specified does not exist, a new file will be created with that name, and the worksheet data will be saved as the first entry in the new file

- **Add to Data File**

    Add to Data File can be used to save data from multiple worksheets as entries in a data file, which can be opened by spreadsheet programs such as Excel® or Quattro Pro®. The *Save As* dialog box will be displayed to allow selection of a file name. If an existing file name is selected, the data from the worksheet will be saved as a new entry in that data file. If the file name specified does not exist, a new file will be created with that name, and the worksheet data will be saved as the first entry in the new file.

- **Save to Text File**

    Save to Text File can be used to save an individual worksheet. The *Save As* dialog box will be displayed to allow selection of a file name and file location. The worksheet will be saved using the file name and location specified, and can be opened using any text editor or word processor.

Corrosion Coupon Worksheet

The Corrosion Coupon Worksheet is a simple, step-by-step method for calculating metal loss and corrosion rate from corrosion coupons.

Calculating Corrosion Rate

To calculate the corrosion rate of a coupon, enter the requested information in the *Coupon Configuration* and *Exposure Data* boxes, then click the *Calculate* button. The calculated *Surface Area, Total Exposure, Metal* Loss, and *Corrosion Rate* will be displayed in the *Results* box. Any comments or special information can be entered in the *Comments* field.

Many standard Metal Samples coupons are listed in the *Coupon Type* menu. When using one of these coupons, its dimensions can be entered automatically by selecting it from the list. If the coupon being calculated is not found in the list, select *Other*, then enter the coupon dimensions manually.

To reset the worksheet, click the *Clear* button, or click *Clear* in the *Project* menu.

Unit Selection

The measurement units for *Density, Dimensions, Metal Loss/Corrosion Rate*, and *Weight* can all be configured independently using the *Units* option in the *Project* menu.

Saving A Worksheet

The *File* menu offers three options for saving a worksheet.

Add To Data File

    Add to Data File can be used to save data from multiple worksheets as entries in a data file, which can be opened by spreadsheet programs such as Excel® or Quattro Pro®. The *Save As* dialog box will be displayed to allow selection of a file name. If an existing file name is selected, the data from the worksheet will be saved as a new entry in that data file. If the file name specified does not exist, a new file will be created with that name, and the worksheet data will be saved as the first entry in the new file.

Save To Text File

    Save to Text File can be used to save an individual worksheet as a text file. The *Save As* dialog box will be displayed to allow selection of a file name and file location. The worksheet will be saved using the file name and location specified, and can be opened using any standard text editor or word processor.

Start Batch Job

    Start Batch Job can be used to save a batch of coupons to a common data file. *Start Batch Job* is similar to *Add to Data File*, but unlike *Add to Data File*, each coupon is saved automatically upon calculation. For more information read the *Batch Jobs* topic below.

Printing A Worksheet

A worksheet can be printed using the *Print* button, or the *Print* option in the *File* menu. A print dialog box will be displayed to allow printer selection and setup.

Batch Jobs

Start Batch Job (under the *File* menu) allows you to begin a batch job for saving multiple coupons to a common data file. The *Save As* dialog box will be displayed to allow selection of a data file. If an existing file is selected, each coupon will be saved as a new entry in that data file. If the file specified does not already exist, a new file will be created with that name and the coupon data will be saved to the new file.

There are two batch job options that can be configured by the user. They are found under the *Project* menu.

- **Auto-Increment Sequence#**
  When this option is selected, the sequence number will be automatically incremented after each calculation. This is useful when working with a batch of coupons that have consecutive sequence numbers.

  When this option is selected, the cursor will return to the *Installation Date* field after each calculation. If *Auto-Increment Sequence#* is not selected, the cursor will return to the *Sequence#* field after each calculation. NOTE: *Auto-Increment Sequence#* will not work with alphanumeric sequence numbers.

- **Confirm Each Entry**
  When this option is selected, the user will be prompted to confirm each calculation before it is added to the data file.

Support

While every effort has been made to ensure this software product is free from defects, problems may still occur during its use. If you do encounter a problem while using this product, follow these steps to resolve it.

1. Make sure your computer meets the *System Requirements* listed in the *Setup* section of this manual.

2. Visit the Metal Samples web site and search the FAQ's page (http://www.alspi.com/cdmsfaq.htm). Your problem, and a solution, may already be posted there.

3. Visit the Metal Samples web site to see if there is a software update available. Software updates, and a list of the problems they fix, will be posted at http://www.alspi.com/cdmsupdate.htm. If an update is available, follow the directions on the web page to download and install it.

4. If your problem has not been addressed on the FAQ's page, or in a software update, use the support request form on the Metal Samples CDMS web page (http://www.alspi.com/cdms.htm) to request support for your problem. Please provide as much information as possible when describing your problem, and remember to complete the entire form. Your problem will be addressed as quickly as possible.

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