Model 9xx-Series Analyzers
System 200 Configurator Software

User's Guide

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Personnel and Equipment Safety Information

This section describes important safety information to avoid personal injury and damage to the equipment while establishing communication with the analyzer. The following Warnings also describe safety measures to follow while communicating with the analyzer to review or modify Calibration and/or Configuration parameters, or while performing maintenance on or troubleshooting the analyzer. All safety regulations, standards, and procedures at the analyzer location must be followed.

All personnel involved with the installation, start-up, operation, maintenance, service, or troubleshooting of the analyzer must review and follow these Warnings and Cautions.

Refer also to the analyzer manual for complete safety details on working with the analyzer.

Warnings

Review and follow these Warnings to avoid personal injury or environmental contamination.

WARNING

Always disconnect main AC power and/or external power sources to the analyzer before opening any covers or doors on the analyzer to check or perform maintenance on any components within the enclosures.

If it is necessary to open the analyzer's covers or doors while the circuits are live, test the area for flammable gases (and proceed only when the area is safe).

Purged Analyzer (Hazardous Location) Applications
*To work on the analyzer with it powered up and its Electronics Enclosure door open, the Purge Bypass Switch must be in the "**BYPASS**" position.*

When the Electronics Enclosure door is open, take appropriate precautions to avoid electrical shock. Hazardous voltages are present inside.

WARNING

Follow appropriate regulatory and/or company procedures to lock out the analyzer while working on its electronics.

WARNING

Purged Analyzer (Hazardous Location) Applications
[Special Conditions for Safe Use]
The analyzer may only be energized by using the Purge Bypass Switch with permission of the works manager or his proxy. The permission may only be given when it is made sure that during the time the system is energized by using this switch an explosive atmosphere is not present or when the necessary protective measures against explosion hazard have been taken ("hot permit").

The analyzer enclosure may not be opened when an explosive atmosphere is present.

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OVERVIEW

The primary use of AMETEK's System 200 Configurator Software is to configure the analyzer's operating parameters, control the analyzer functions, view real-time and historical data, and modify configuration and calibration parameters. The software can also be used to perform maintenance and troubleshoot the analyzer. The majority of these functions are performed from the **M*9XX* Properties** dialog box. Details of these tasks are described in Chapters 1–4.

The software also provides advanced software features, such as graphing and scanning data. Details of how to perform these tasks are described, primarily, in Chapters 5–11.

Familiarize yourself with the software operations (see Chapter 4) before using the software to work on the analyzer.

WARNING

Hazardous Locations
Before working with the software, test the area around the analyzer for explosive gases and proceed only when the area is found to be safe.

Do not connect the computer to the analyzer's serial communication port and do not power up the computer if there is an explosive gas atmosphere present.

About This User's Guide

This guide describes the communication functions for the following AMETEK analyzers:

- Model 900 and 930 Analyzers
- Model 909 and 919 Analyzers
- Model 910 and 920 Analyzers

Information that is greyed out on certain screens is not applicable to the analyzer you are currently working with, or must be enabled by entering CALibration and ConFiGuration passwords in the **Info** (Analyzer Information) dialog box.

NOTE

IMPORTANT
*References to "M9XX" or "9xx" in this guide refer to analyzer Models 900, 909, 910, 919, 920, and 930, **except if noted**. In the software, the model reference is specific to the analyzer you are working with (i.e., **M900**).*

The Configurator Software screens in this manual are example screens only. The actual screens for your analyzer can be viewed in the appropriate Configurator Software for your analyzer.

Minimum PC Requirements for Configurator Software

The Configurator Software requires the following:

- DVD drive (for installation).
- Pentium 166 or faster.
- 16 MB RAM.
- 3 MB of available hard disk space.
- Sound Card (for alarms) recommended, not required.
- Windows 7 Professional Edition and later. The System 200 Configurator Software is not certified to operate with Windows Home Editions.
- 800 x 600 resolution or higher recommended.
- 256-color display, 32767 colors (HiColor, 16-bit) recommended.

Installing the Configurator Software

AMETEK recommends having Admin Rights when installing this software (preferred but not required). Consult with your IT Administrator before installing the software.

AMETEK recommends installing the software and program icons in the default directory.

To install the Configurator Software on your computer:

1. Insert the Configurator Software DVD in the DVD drive. The auto-setup program will run and begin the installation by displaying the **Setup Wizard** screen.

   Click **Next** to continue. The **Select Installation Folder** screen will appear. By default, the software will be installed in **C:\Program Files (x86)\AMETEK\AMETEK *9XX* Configurator**. To install the software in a different folder, click **Browse** to view the **Change current destination folder** screen and navigate to the alternate folder. Select the folder and click **OK**.

   Click **Next** to continue with the setup. The **Ready to Install** screen will appear.

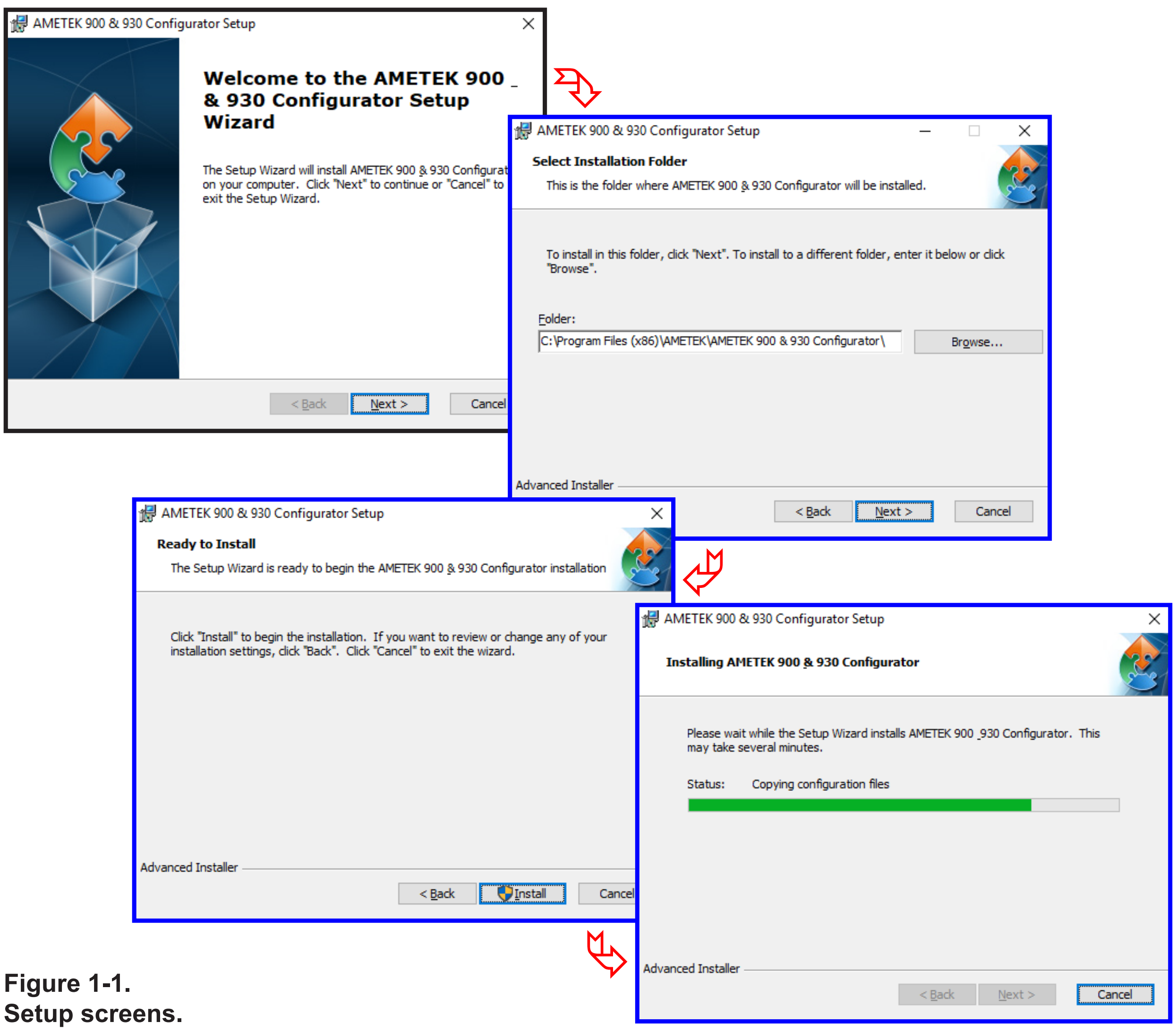


Figure 1-1. Setup screens.

2. Click **Install** to initiate the setup. The software will install and the **Setup Wizard "Finish"** screen will appear. Click **Finish** and then remove the DVD from the DVD drive.

NOTE

*The software will create a shortcut icon on the desktop to start the software (called **Ametek 9XX Configurator**).*

To start the software, navigate to **C:\Program Files (x86)\AMETEK\AMETEK *9XX* Configurator** and double-click "**M900**" (or "**M920**", etc.). Or, from the computer's desktop, double-click the **Ametek *9XX* Configurator** icon.

For details about using System 200 Configurator Software to communicate with the analyzer, refer to "Establishing Communication Between the Analyzer and Computer" in this chapter.

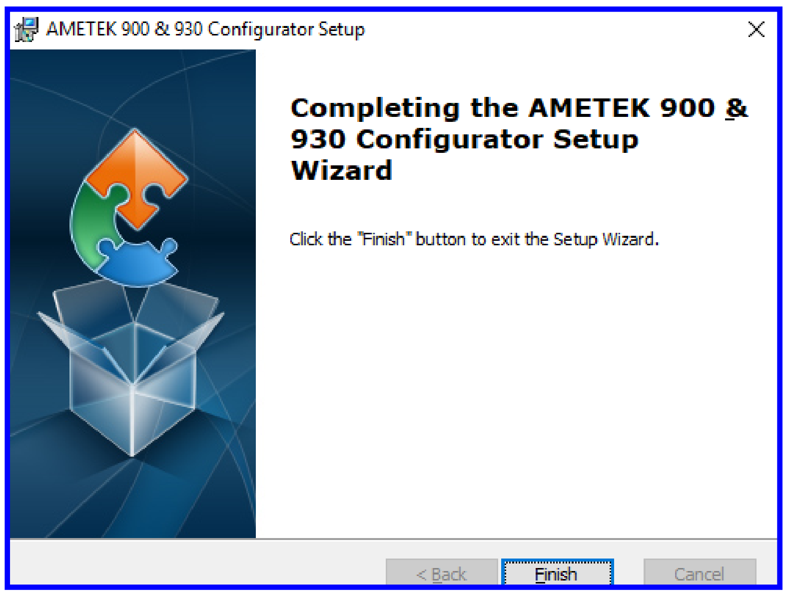


Figure 1-2.
Setup Wizard Finish screen.

Removing the Configurator Software

To remove the Configurator Software from your computer:

1. From the Windows **Start** menu, select **Settings** (⚙) and then **Apps**.
2. Click **Apps & features**.
3. From the **Apps & features** list select **AMETEK 9xx Configurator** and click **Uninstall** to automatically remove it.

NOTE

*If any System 200 Software files remain in the **C:\Program Files (x86)\AMETEK\AMETEK 9XX Configurator** folder, delete all remaining folders and files.*

Configuration Software Overview

This section reviews the Configurator Software setup that is required to begin working with the software. Before beginning, you should have already installed and commissioned the analyzer as explained in the analyzer manual.

The general system configurations and calibration changes can be made after establishing communications with the analyzer and working from one main dialog box (**M*9XX* Properties**, Figure 1-3). This dialog box contains numerous screens (tabs) that allow you to set up the analyzer and view live data.

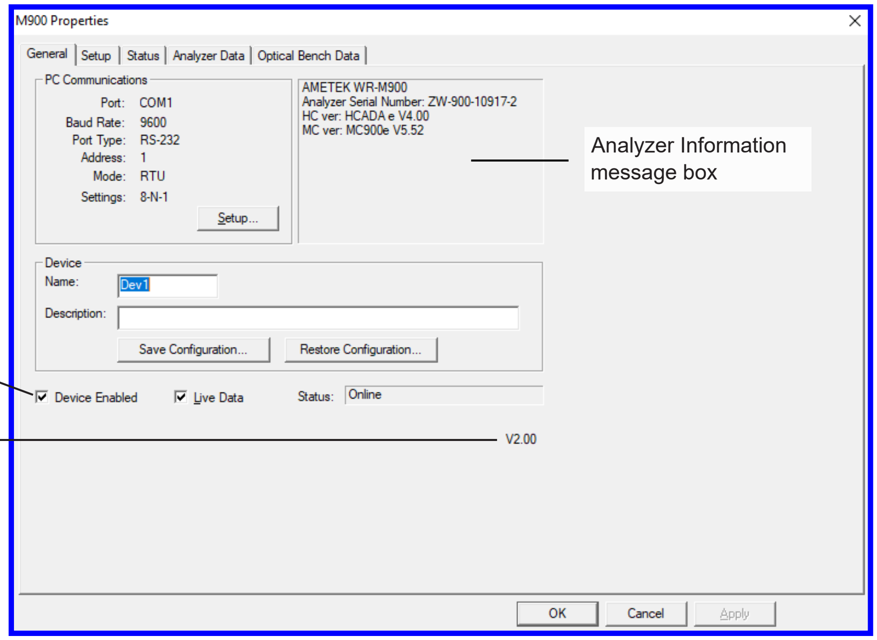


Figure 1-3.
M*9XX* Properties dialog box (General tab).

Navigating in the Software and Manual

While working with the software, the following rules apply:

- From the **Setup** tab (Figures 1-4, 3-1) navigate to the various configuration and calibration screens by pressing the corresponding **Modify** (Setup) button. For information about saving changes to these screens, see "Working From the Setup Tab" in Chapter 3.

  If a button is greyed out, the function is not available for the analyzer. If all buttons are greyed out, the software is not communicating with the analyzer.

- To view live concentration values or information about the Optical Bench or analyzer, choose the **Status**, **Analyzer Data**, or **Optical Bench Data** tab from the ***M9XX* Properties** dialog box.

- To return to the **Setup** tab from any screen, click **OK** or **Cancel**.

- Live values on the screens are updated at one-second intervals. When switching to a different screen, it may take up to one second for a new set of values to be displayed.

- While working with the software, use the following navigation buttons:

	Press this button to view the **Devices & Log** window.
	Press this button to start a new Custom Configuration mode.
	Press this button to navigate to the computer’s hard drive to locate files, such as the Configurator file (“9XX.dyc”).
	Press this button to save the configuration data.
	Press this button to print scanned data (such as **Measure/Reference PMT** signals) from the analyzer.

Example:
AMETEK recommends installing the software and program icons in the default directory.

Reminder icon:
The reminder icons in this manual indicate related information about the topic, certain actions that are necessary before continuing with the current procedure, or information that is recommended by AMETEK. See example at left.

Example:
AMETEK Configurator window→Dev1 (Devices & Log window)→Setup tab→Gas Calibration dialog box <<ManZero button>>

Configurator Software navigation icon:
The navigation icons in this manuals indicate the menu structure to follow to view a menu, sub-menu, or analyzer information while working from the software.

In the example at left (see Figure 1-4), after the Configurator Software is first started, the **AMETEK Configurator** main window will appear (**Devices & Log** window is active in this window). To initiate a Manual Zero, double-click **Dev1 (<<Device Name>>)** on the **Devices & Log** window to view the ***M9XX* Properties** dialog box. From here, view the **Setup** tab and click the **Gas Calibration** button to view the **Gas Calibration** dialog box. Finally, if all requirements have been met to initiate the Zero, click the **ManZero** button.

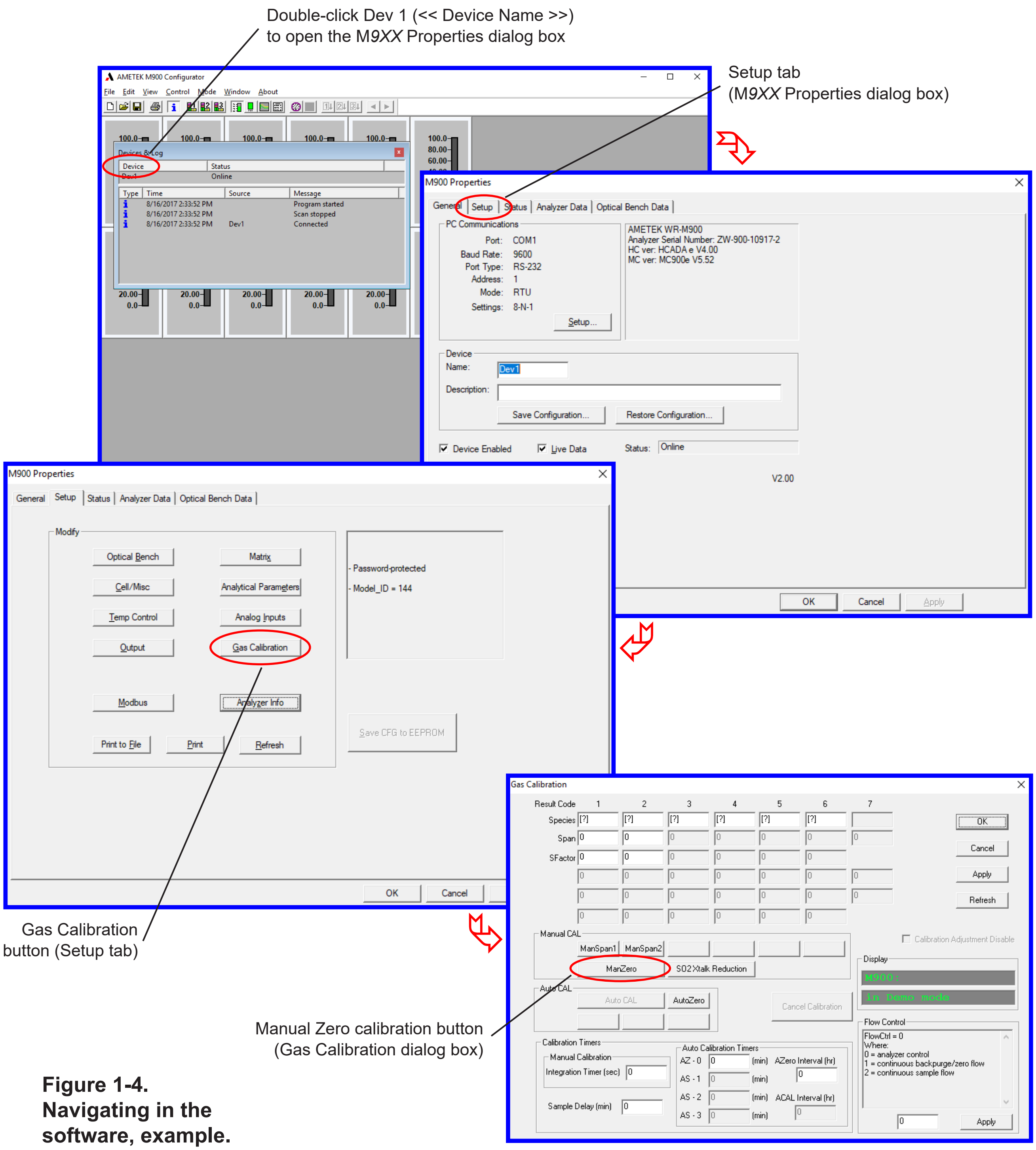


Figure 1-4.
Navigating in the software, example.

Starting the Configurator Software and Establishing Communication Between the Analyzer and Computer

You establish communication with the analyzer by using a computer running AMETEK's Configurator Software.

WARNING

Hazardous Locations
Before attempting to connect the serial cable between the analyzer and the computer, take all necessary safety precautions and test the area around the analyzer for explosive gases and proceed only when the area is found to be safe.

Do not open the analyzer enclosures and do not power up/down the analyzer or computer if there is an explosive gas atmosphere present.

To establish communication with the analyzer:

1. Connect the supplied serial communication cable between the computer and the RS-232 serial communication port (located at **P100** on the **Termination** board inside the analyzer Electronics Enclosure).

2. Power up the computer and start the Configurator Software using one of two methods:

   - Navigate to **C:\Program Files (x86)\AMETEK\AMETEK *9XX* Configurator** and double-click "**M900**" (or "**M920**", etc.).

   - Click the **AMETEK *9XX* Configurator** icon on the computer's desktop.

   The software will start and the **Devices & Log** window will appear in the **AMETEK M*9XX* Configurator** window (Figure 1-4). If the **Add Device** dialog box is displayed, ensure a device is selected and click **OK**. From the **Edit** menu, click **Device Properties**. The **M*9XX* Properties** dialog box (**General** tab) will appear (Figures 1-3, 1-4).

NOTE

*The **M9XX Properties** dialog box is your main interface with the analyzer when viewing live data, or when modifying or viewing the analyzer's configuration or calibration parameters.*

   By default, **Device Enabled** and **Live Data** are enabled. When **Live Data** is enabled, the software automatically attempts to establish communication with the analyzer. If the communication attempt fails, the communication settings may be incorrect and/or the serial cable may not be connected properly (or it may be damaged), or you may be attempting to communicate with the wrong model of analyzer. Check the **Status** message and see "Configurator Software Troubleshooting" in this chapter for information about how to resolve communication problems.

For Modbus Serial or TCP setup information, see Chapter 2.

3. Confirm or configure communication settings by clicking **Setup** to view the **Communication Settings** dialog box. Select the appropriate communication parameters required to establish communication with the analyzer, either **Modbus Serial** or **Modbus TCP** (see Chapter 2).

   After configuring analyzer communication parameters, click **OK** to initiate communication with the analyzer. The software will revert to the **M*9XX* Properties** dialog box (**General** tab, Figure 1-3) and the analyzer will be "**Online**" as indicated in the **Status** message box.

NOTE

*If at any time you close the **M9XX Properties** dialog box (by clicking **OK** or **Cancel**), the software will revert to the **AMETEK M9XX Configurator** window. Return to the **Setup Properties** dialog box by clicking **Edit** and then **Device Properties**.*

Closing the Configurator Software

WARNING

Hazardous Locations
Before proceeding, test the area around the analyzer for explosive gases and proceed only when the area is found to be safe.

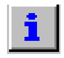
After you are finished communicating with the analyzer, close the Configurator Software and disconnect the computer from the analyzer:

1. From the **M*9XX* Properties** dialog box, click **OK** or **Cancel**.

2. From the **AMETEK M*9XX* Configurator** window, select **File/Exit**. Click **Yes** to exit the software.

3. Power down the computer and disconnect the serial cable from the analyzer's communication port.

Configurator Software Troubleshooting

This section describes problems (alarms or "errors") that may be encountered while attempting to establish communication between the analyzer and the computer, or when starting the software. Communication error messages can be displayed in the **Status** field on the **General** tab (Figure 1-3) and in the **Devices & Log** window (Figure 1-8). If this window is not displayed in the **M*9XX* Configurator** main window, select **View\Devices & Log** or click  to display it.

If communication problems occur, review this section and perform the corresponding corrective action to fix any problems.

Problem Encountered

The "**Wrong Device**" message is displayed on the **Devices & Log** window.

Corrective Action

Check the analyzer markings to ensure the model number is the same as indicated in the Configurator Software. The software is intended for specific analyzer models and cannot communicate with other models of analyzers.

The **Communication Protocol** or **Settings** may be incorrect. Review the settings in the **Communication Settings** dialog box (**Modbus Serial** or **Modbus TCP**) and verify or change them to the proper settings. The **Slave ID** (address) in this dialog box must also match the analyzer **Address** setting in the **Modbus** dialog box (from the **Setup** tab). See also Chapter 2.

Problem Encountered

"**Connected**" is displayed on the **Devices & Log** window, but the software is not communicating with the analyzer.

Corrective Action

Enable **Live Data** (**General** tab) to establish communication.

Problem Encountered

"**DEMO Online**" is displayed in the **Status** field on the **General** tab. This message will be displayed if **Live Data** is not selected (but **Device Enabled** is).

Corrective Action

Enable **Live Data** to establish communication.

Problem Encountered

"**OFFLINE**" is displayed in the **Status** field on the **General** tab.

Corrective Action

Ensure both **Device Enabled** and **Live Data** (**General** tab) are selected to establish communication.

Check the serial cable for proper connections and for damage such as cuts, nicks, or burn marks. Also, check it to ensure the internal wiring is terminated at the connectors.

Problem Encountered

"**DISABLED**" is displayed in the **Status** field on the **General** tab. This message indicates the computer is connected to the analyzer but not communicating with it.

Corrective Action

Enable **Device Enabled**, if necessary, to establish communication.

Check the analyzer markings to ensure the model number is the same as the **Configurator Software**. The software is intended for specific analyzer models and cannot communicate with other models of analyzers.

Problem Encountered

Device Properties under the **Edit** menu is greyed out (access to the **M*9XX* Properties** dialog box is not available). If this occurs, the analyzer configuration and calibration parameters cannot be viewed or modified. This problem suggests that the "M*9XX*.dyc" file has become corrupt.

Corrective Action

Delete the "M*9XX*.dyc" file from the **C:\AMETEK\M*9XX*** folder. The software will restore this file (and correct the problem) the next time it is started.

General Tab

When the analyzer is connected to the PC, the current **Host Controller Firmware Version Number** and analyzer **Serial Number** will be displayed in the *analyzer information message box* to the right of **PC Communications** under the **General** tab.

Other parameters include:

PC Communications
Displays information that has been configured from the **Communication Settings** dialog box.

Setup
Allows you to choose the communication option required to establish communication with the analyzer, either **Modbus Serial** or **Modbus TCP** and enter or select the appropriate information. Detailed descriptions about these communication options are discussed under "Modbus Serial / Modbus TCP Communication Setup" in Chapter 2.

Device

Name
Enter a tag number or tag name.

Description
Enter a description to further define the analyzer, such as a location or area where it is installed in the plant.

This can be useful if using a Multi-Drop system, where multiple analyzers are wired together on the same line. In this case, you can assign different names and descriptions for each analyzer.

Save Configuration button
Saves the current analyzer configuration parameters to a file that can be used later to restore the settings. See "Saving Analyzer Configuration Parameters" in this chapter for details about how to save configuration settings to a file.

Restore Configuration button
Retrieves previously saved analyzer configuration parameters from a ".dev" file on the computer. See "Restoring Analyzer Configuration Parameters" in this chapter for details about how to restore configuration data to an analyzer.

Device Enabled

Checked (default)	Allows communication with the analyzer, and allows the user to set up system configurations.
Not Checked	Device communication is disabled.

Live Data

Checked (default)	Software uses live data from the analyzer.
Not Checked	Software uses demonstration data.

Status

Displays the status of the analyzer (device) you are communicating with. Refer to "Configurator Software Troubleshooting" in this chapter for information about how to correct the problem.

"OFFLINE"	Displayed if the PC is not communicating with the analyzer (one or both of the **Device Enabled** and **Live Data** check boxes are not selected).
"Online"	Displayed if the PC is communicating with the analyzer (**Device Enabled** and **Live Data** check boxes are selected).
"DISABLED"	Displayed if the PC is connected to the analyzer but is not communicating with it (**Device Enabled** and **Live Data** check boxes are not selected).
"Device Not Found"	Displayed if the analyzer′s Serial Port Configurations do not match the computer′s.
"DEMO Online"	Displayed if the PC is not connected to the analyzer (or the **Live Data** check box is not selected and the **Device Enabled** check box is selected).

Configurator Software version

Displays the version of Configurator Software running (located to the right of **Live Data**).

User Interface

The software allows you to customize how data is viewed and to set up your display. This is done from the **Main Window**.

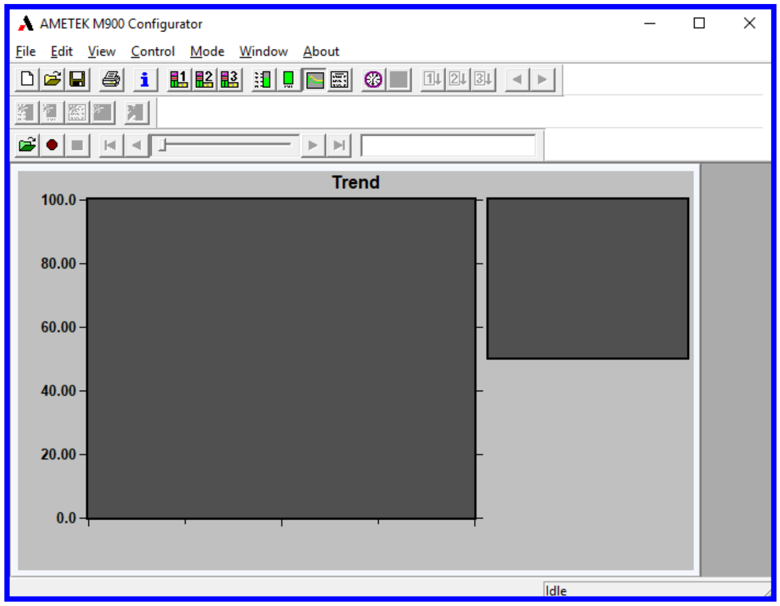


Figure 1-5. Configurator Software main window (Trend mode display active).

Setting Up Your Screen

Using the **View** menu items, set up your software by selecting the toolbars you want displayed. If the option has a check mark beside it, the toolbar is active. To toggle these functions on/off, select the menu option again. The areas that make up the **Main Window** include:

- **Standard Toolbar**
  Contains icons that are used most often including the main display modes.

- **Custom Mode Toolbar**
  Contains icons that are used to create Custom mode displays.

- **Data File Toolbar**
  Contains icons that are used to save data files.

- **Status Bar**
  Located at the bottom of the window, the Status Bar displays system messages, including information such as if the system is currently scanning.

View / Configure Analyzer Parameters and Data

The **M*9XX* Properties** dialog box – which is your primary interface with the analyzer – contains several tabs (screens of information) that allow you to set up communications, view real-time and historical data, and modify configuration and calibration parameters for the analyzer. When the software is first started, this dialog box defaults to the **General** tab. The descriptions of the parameters on this and other screens can be found throughout this manual.

Similar to working from the analyzer User Interface Panel, the Configurator Software also operates in RUN, ConFiGuration (CFG), or CALibration (CAL) modes.

- In **RUN** mode, analyzer parameters and variables can only be viewed; they cannot be deleted or modified. When in RUN mode, the message “**Password protected**” is displayed in the message box next to the **Modify** buttons on the **Setup** tab.

- In **CFG** mode, you can make changes to operation constants and configuration parameters. A password is required to make configuration changes.

CAUTION

Access to the CFG mode should be restricted to trained technicians or electricians. Contact your local administrator for passwords.

The settings for your analyzer have been configured at the factory to meet specified customer requirements. Changing the factory-set configuration could cause the analyzer to operate incorrectly.

- In **CAL** mode, you can make changes to variables required to tailor the analyzer for a specific application and to calibrate the instrument. A password is required to make changes to calibration functions.

NOTE

*When in CFG mode, the message “**in CFG access mode**” is displayed in the message box next to the **Modify** buttons on the **Setup** tab. When in CAL mode, the message “**in CAL access mode**” is displayed here. When in both CAL and CFG mode, the message “**in CAL+CFG access mode**” is displayed here.*

*Passwords for CFG and CAL modes are in effect until you click the **Back to Run Mode** button from the **Info** (Analyzer Information) dialog box. Clicking this button reverts the software back to RUN mode.*

Entering CFG and CAL Mode Passwords

To enter CFG and CAL mode passwords:

1. Select **Analyzer Info** from the **Setup** tab to view the **Info** dialog box.

2. Enter the password for each mode, in the **Enter CAL mode password here** and **Enter CFG mode password here** text fields.

3. Click **OK** to return to the **Setup** tab and select the configuration buttons to make the required changes.

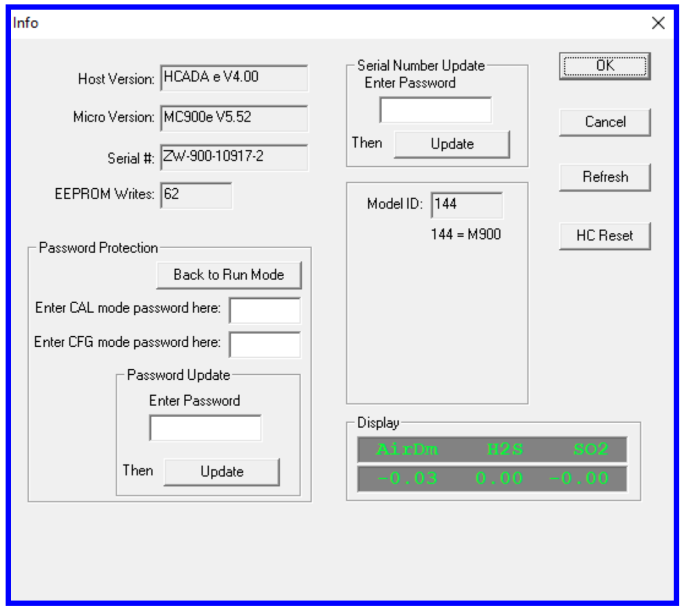


Figure 1-6. Analyzer Information dialog box.

Changing Passwords

The factory-default password is '• •' for both CAL and CFG modes.

Passwords can be a maximum of nine characters. Since this password is also updated in the analyzer's EEPROM, use only the same characters for passwords as those used to enter passwords from the User Interface Panel (•, –, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0). Do not use letters, since the keypad on the User Interface Panel does not use letters.

To change a password:

1. Select **Analyzer Info** from the **Setup** tab to view the **Info** dialog box (Figure 1-6).

2. In the **Enter Password** text field (**Password Update** group), enter the password that will allow you to change CAL and CFG mode passwords.

   Then, click the **Update** button to view the **CAL and CFG Password Update** dialog box.

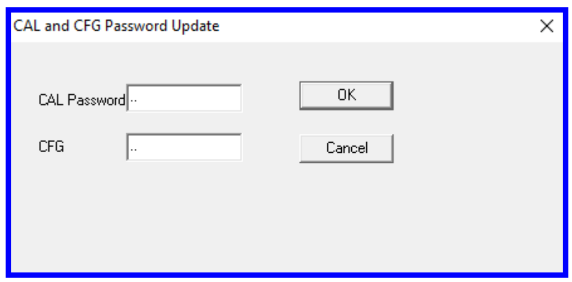


Figure 1-7. CAL and CFG Password Update dialog box.

3. Enter a new password for CAL and CFG mode. Be sure to record the passwords and keep them in a safe place for reference.

4. Click **OK** to accept the changes.

Viewing Device Activities

The **Devices & Log** window displays the status of all analyzers (devices), plus a system event log of all analyzer operations. This window, which is displayed within the ***M9XX* Configurator** main window (Figure 1-4), can help you diagnose problems with the analyzer.

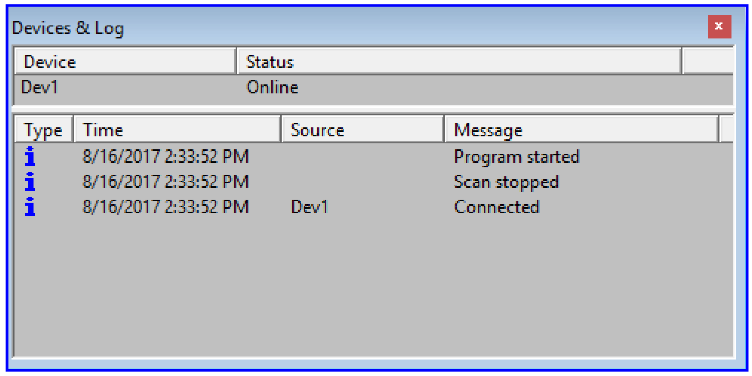
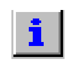


Figure 1-8. Devices & Log window.

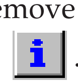
To display the **Devices & Log** window:

1. From the **View** menu, select **Devices & Log** or click . A log is displayed showing all active devices and their status.

NOTE

The system log is saved in a text file in the "Log" folder.

2. From here you can view a log of all related activity for active devices such as when scans were started or completed as well as any alarm conditions. It also provides information on the data source for the reading under the **Source** field (e.g., Dev1, or Device 1). The **Status** field indicates the current status of the analyzer (e.g., Online).

3. To remove the display, select **View** and then **Devices & Log** again or click .

Saving Analyzer Configuration Parameters

The software allows you to save current analyzer (device) setup configuration parameters to a file that can be used later as a reference or to restore the parameters to their original settings (if they are changed). This is useful to create a backup copy of the analyzer configuration parameters, or if you will be replacing the analyzer's EEPROM.

NOTE

If major changes are made to the analyzer configuration parameters, it is important to make a backup copy of these settings. This file can then be used to restore all parameters to their original (or latest) settings in the event of an EEPROM failure or it being damaged physically or electrically.

To save configuration parameters:

1. View and record the following information to use as a reference after the software upgrade is complete:

   a. Record the current version of the Host Controller and Microcontroller software:

      From the User Interface Panel:
      Press **F5 1** from RUN mode to view the Host Controller software version. Record the version number and ensure it is an older version than that being replaced.

      Press **F5 2** from RUN mode to view and record the Microcontroller software version. Record the version number and ensure it is an older version than that being replaced.

      From the Configurator Software:
      From the **General** tab, view and record the current version of the Host Controller (**HC ver**) and Microcontroller (**MC ver**) software, located to the right of **PC Communications** on this tab. Ensure it is an older version than that being replaced.

b. Record the current analyzer and Configurator Software Modbus address settings (if applicable). These settings must be restored later to allow communication between the analyzer and the Configurator Software or remote work station.

From the User Interface Panel:
Model 9xx-Series Analyzers that did not use the Configurator Software before the embedded software upgrade:

- **Model 909, 910, 919, 920 Analyzers:**
  From the User Interface Panel, press **F2** • from RUN mode to view the current *analyzer* Modbus setting.

- **Model 900, 930 Analyzers:**
  From the User Interface Panel, press **F4** • from RUN mode to view the current *analyzer* Modbus setting.

- *All Model 9xx-Series Analyzers that were using the Configurator Software before the embedded software upgrade:*
  Working from the Configurator Software, click **Modbus** from the **Setup** tab. Record the value of the Modbus **Address** field (this is the current *analyzer* Modbus setting).

From the Configurator Software:
From the Configurator Software, click **Modbus** from the **Setup** tab. Record the value of the Modbus **Address** field (this is the current *analyzer* Modbus setting).

From the **General** tab, click **Setup** to view the **Communication Settings** dialog box. Verify/record the communication option (**Modbus Serial** or **Modbus TCP**) and settings. These are the Configurator Software settings that must match those of the analyzer.

General (tab)→ <<Save Configuration>>

2. From the **General** tab, click **Save Configuration** to view the **Save As** dialog box. To store the file, navigate to **C:\Program Files (x86)\AMETEK\AMETEK** ***9XX*** **Configurator** on the computer's hard drive.

3. Name the file and click **Save**. The file will be saved with a ".dev" extension. This file can be used only by the Configurator Software.

The procedure is complete.

Restoring Analyzer Configuration Parameters

The Configurator Software allows you to retrieve previously saved analyzer configuration parameters to restore the parameters to their original settings. This function is useful if you wish to recover analyzer configuration parameters if changes have been made that you do not wish to keep, or to restore the settings after replacing the analyzer's EEPROM in the event of an EEPROM failure. The configuration parameters are stored in a ".dev" file on the computer.

To restore configuration parameters:

☞ *General (tab)→ <<Restore Configuration>>*

1. From the **General** tab click **Restore Configuration** to view the **Open** dialog box.

2. Navigate to the location of the file (e.g., **C:\Program Files (x86)\AMETEK\AMETEK *9XX* Configurator**), select it, and click **OK** to restore configuration parameters to the analyzer you are communicating with.

   During the parameters restoration, the analyzer will temporarily go "**OFFLINE**". After the restoration is complete, the **Name** and **Description** will change to reflect those of the saved parameters.

3. View the **Devices & Log** window. If the file restoration is successful, the message "**This new CFG has been restored successfully!**" will be displayed.

   If the file that is being restored contains identical information as that already saved to the analyzer's EEPROM, the message "**The restored CFG is not new!**" will be displayed in the **Devices & Log** window.

The procedure is complete.

CONFIGURING COMMUNICATION PARAMETERS

This section provides instructions on how to set up the System 200 Configurator Software to establish communication between your analyzer and your computer, via either Modbus Serial or Modbus TCP communication.

Modbus Serial / Modbus TCP Communication Setup

To set up the analyzer to allow Modbus Serial or Modbus TCP communication between it and the computer:

1. Start the Configurator Software. The ***M9XX* Properties** dialog box (**General** tab) will appear.

2. Click the **Setup** button (or click the **Live Data** check box) to view the **Communication Settings** dialog box (Figure 2-1, defaults to **Modbus Serial**). If you require **Modbus TCP**, select it. The screen will change to display TCP parameters (Figure 2-2).

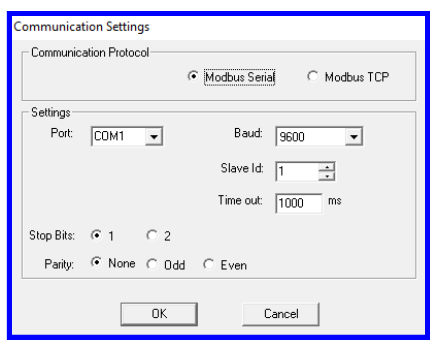


Figure 2-1. Communication Settings dialog box (Modbus Serial communication).

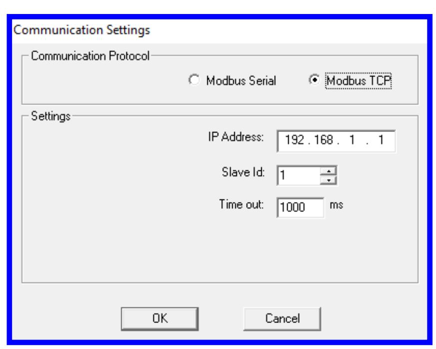


Figure 2-2. Communication Settings dialog box (Modbus TCP communication).

3. Enter or select the communications information for either selection:

   Settings

   Port (Modbus Serial only)
   Select the COM port on the computer used to communicate with the analyzer.

   Stop Bits (Modbus Serial only)
   Displays and allows you to select the number of stop bits of the Modbus network.

   Parity (Modbus Serial only)
   Displays and allows you to select the parity of the Modbus network.

   Baud (Modbus Serial only)
   Baud rate at which data will be transferred. The baud rate is fixed at 9600.

   IP Address (Modbus TCP only)
   Enter a unique address for each analyzer. This is determined based on network settings for the analyzer.

   Slave ID
   This is the Modicon Modbus® slave address of the analyzer. If the RS-232 port is selected, the address setting is not applicable (it is greyed out).

   If the RS-485 port is selected, be sure to enter a unique Modbus address (**Slave ID**) for the analyzer.

   For **Modbus Serial** communication interface:
   0 = Disabled
   1–255 = Enabled

   For **Modbus TCP** communication interface:
   0,1 = Disabled
   2–255 = Enabled

   Time out (ms)
   Enter a time out value (duration) that the software will use to attempt to establish communications with the analyzer. AMETEK recommends a value of 1000 ms.

NOTE

If you are unsure of the Modbus address assigned to the analyzer, you can use the "back door" access code (i.e., enter 255 in the ***Slave ID*** *field) to allow communication between the analyzer and the computer.*

4. Click **OK** to initialize communication with the analyzer. The software will revert back to the ***M9XX* Properties** dialog box and the analyzer will be **Online**, as indicated in the **Status** message box.

NOTE

If the computer cannot establish communication with the analyzer, refer to "Configurator Software Troubleshooting" in Chapter 1 for information about how to correct the problem.

5. View the **Status** tab. Live data should begin updating within 10 seconds.

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CONFIGURATION and CALIBRATION

To change ConFiGuration (CFG) and CALibration (CAL) parameters, you must first enter a password to enter CFG and/or CAL mode, similar to working from the analyzer User Interface Panel. Information about how to enter passwords from the Configurator Software is described under “Entering CFG and CAL Mode Passwords” in Chapter 1.

Working From the Setup Tab

The **Setup** tab contains all functional parameters that control the operation of the analyzer. These screens, which allow you to view all information about the analyzer, are accessed by clicking the appropriate **Modify** button.

CAUTION

The settings for your analyzer have been configured at the factory to meet specified customer requirements. Changing the factory-set configuration could cause the analyzer to operate incorrectly.

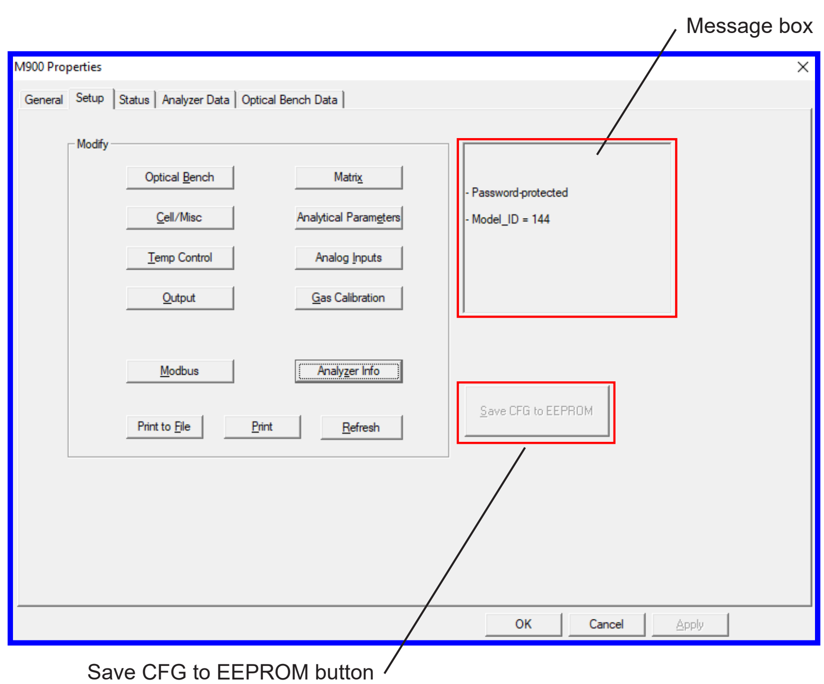


Figure 3-1.
Setup tab, example screen.

CAUTION

Access to the CFG mode should be restricted to trained technicians or electricians.

The settings for your analyzer have been configured at the factory to meet specified customer requirements. Changing the factory-set configuration could cause the analyzer to operate incorrectly.

NOTE

IMPORTANT
*The Setup screens on this tab cannot be accessed unless communication between the software and the analyzer has been established. If functions on this tab are greyed out, check the status of the system from the **General** tab. You will have to establish communications with the analyzer before you can view or configure its parameters.*

Depending on the analyzer, some functions may not be available (greyed out). To view the screens for your analyzer, view the software.

NOTE

Occasionally, the System 200 Configurator Software will truncate values or round values up or down. The rounding problems in turn can cause some data values to drop each time that data is written to the analyzer and then read back into the Configurator Software.

To ensure these problems do not occur, enter and save all values from the User Interface Panel. ***The rounding problem can also occur when entering information from the User Interface Panel.***

While changing parameters from any of the Setup Configuration/ Calibration dialog boxes, observe the following functions and rules:

- Information and/or functions that are greyed out are not applicable or currently unavailable for the analyzer you are currently working with.

- After changing any of the parameters or their values from any setup screen, you must click the **OK** or **Apply** button on that screen (or within the group) to activate the new settings. These new settings will be sent to the analyzer.

  If any configuration parameters have been changed, the **Save CFG to EEPROM** button (**Setup** tab) will become active (Figure 3-2) to allow you to save the change (permanently) to the analyzer's EEPROM. If you only want the changes to be in effect temporarily, do not click the **Save CFG to EEPROM** button.

NOTE

*Parameters in groups that have their own **Apply** button cannot be reverted to their original state by clicking the **Refresh** button if the changes have already been applied.*

- You can change numerous parameter values on a screen before clicking **OK** or **Apply**.

- The **Refresh** button on the **Setup** tab updates any changes made to the analyzer from its User Interface Panel to the Configurator Software. See "Refreshing Configuration Parameters" in this chapter for more information.

- On individual setup screens, click **Refresh** to change the values back to their original settings. When you click this button, any values that you have changed but do not wish to set permanently will revert to the settings that were last saved to the system's EEPROM. Changes can only be refreshed (reverted to their original setting) if they haven't already been applied (before you click the **OK** or **Apply** buttons) or saved (before you click the **Save CFG to EEPROM** button on the **Setup** tab).

- If you want the parameter changes to be valid only for the current session, do not click **Save CFG to EEPROM**. The changes will revert to the previously saved changes after the system is powered down and then powered up again, or if the analyzer is reset.

- You can make changes to all or some of the Modify Configuration dialog boxes before clicking **Save CFG to EEPROM**.

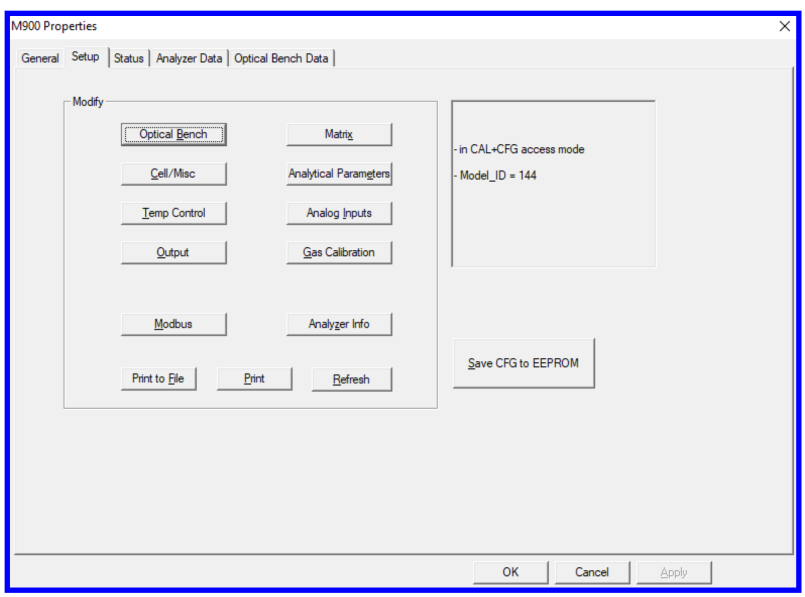


Figure 3-2. Setup tab, example screen with Save CFG to EEPROM button active.

Modify

Contains numerous buttons that allow you to view and set up different aspects of the analyzer. These buttons and their setup screens are discussed in detail in the following pages.

NOTE

Depending on the analyzer you are working with, some functions (dialog boxes) accessed from the ***Modify*** *buttons may not be available. Functions that are not available for a given analyzer are greyed out.*

Dialog boxes for each of the Setup Configuration/Calibration screens discussed in this chapter are sample screens only. Refer to the actual screens in the software for enabled/valid parameters for your analyzer. Also, refer only to the descriptions of the enabled functions on these screens, as listed throughout this chapter.

NOTE

IMPORTANT

The Setup screens on this tab cannot be accessed unless communication between the software and the analyzer has been established. If the functions on this tab are greyed out, check the status of the system from the ***General*** *tab. You will have to establish communications with the analyzer before you can view or configure its parameters.*

Depending on the analyzer, some functions may not be available (greyed out). To view the screens for your analyzer, view the software.

Message box

The message box (to the right of the Modify buttons) displays information about the software and analyzer it is currently communicating with.

For example, “in CFG + CAL access mode” indicates the passwords for both the Calibration and Configuration modes have been entered, allowing the user to make changes to the CFG and CAL parameters.

The Model ID (identification) number is also displayed to indicate the model of analyzer currently communicating with the analyzer. The ID number corresponds with a list that can be seen in the **Analyzer Information** dialog box.

Save CFG to EEPROM

Click this button to permanently save any changes you have made to operating parameters to the analyzer’s on-board EEPROM.

Saving Analyzer Configuration Parameters to an ASCII File

AMETEK recommends saving and storing these files in C:\Program Files (x86)\AMETEK\AMETEK 9XX Configurator.

When you select the **Print to File** button from the **Setup** tab, the **Save As** dialog box appears. Navigate to the path you wish to save the file to, name the file, and click **Save**. The software saves the current analyzer configuration parameters to an ASCII file (called "EEPROM Data"). Note that the file will be saved with a ".dmp" extension. This function can be used to back up analyzer Calibration and Configuration parameter settings.

NOTE

Include a date in the file name (e.g., M900_Cfg_08-15-2017). The file name is included in the header when you open the file.

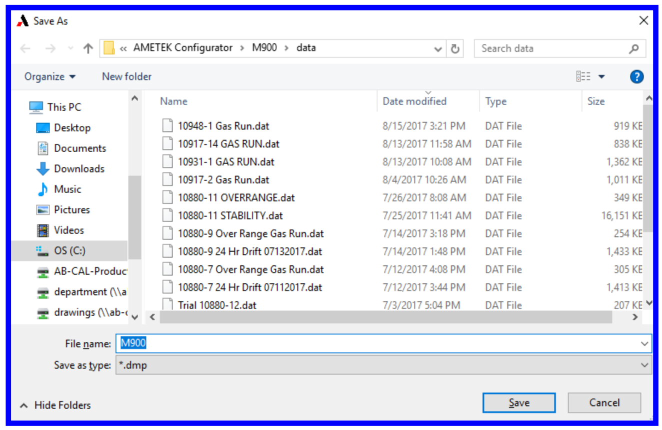


Figure 3-3.
Save As dialog box (Print to File button).

Printing Analyzer Configuration Parameters

A printer must be connected directly to the PC or via a network.

To print the current analyzer configuration parameters, select the **Print** (**Setup** tab). From the **Print** dialog box, click **OK**.

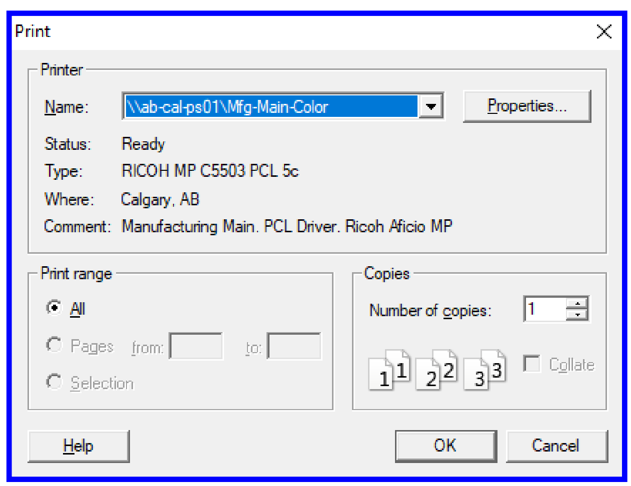


Figure 3-4.
Print dialog box (Print button).

Refreshing Configuration Parameters

When you make changes while working in CFG or CAL mode from the analyzer User Interface Panel, the **Refresh** button on the **Setup** tab (Figure 3-2) will flash to indicate that configuration or calibration changes have been made. When you click **Refresh**, the software polls the CFG and CAL parameters at the analyzer and updates the changes in the Configurator Software with the original analyzer settings.

When changes are made from the analyzer User Interface Panel, the message "**Button 'Refresh' is flashing. Possible panel operation**" is displayed in the message box next to the **Modify** buttons on the **Setup** tab.

Saving Configuration Parameters to EEPROM

After changing parameters or their values from any setup screen, click **OK** to return to the **Setup** tab (Figure 3-2). Parameter changes are evident when the **Save CFG to EEPROM** button is active. Click this button to activate the new settings and to permanently save the new value(s) to the analyzer's EEPROM.

Optical Bench

Setup (tab)→Optical Bench

The **Optical Bench** dialog box allows you to modify Optical Bench control and to view and modify data acquisition parameters. A password is required to change these parameters.

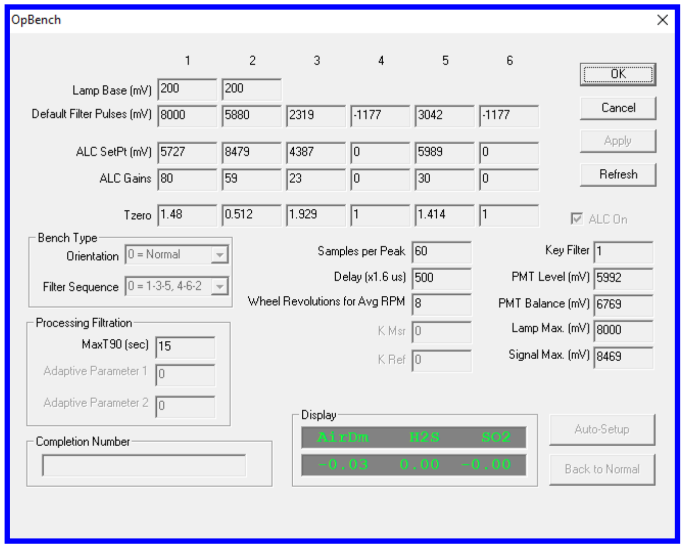


Figure 3-5. Optical Bench dialog box (multi-gas analyzers).

NOTE

*'**' following the parameter names below indicates the parameter should only be modified by a trained technician.*

Lamp Base (mV)**

This defines the base-current set point for each source lamp (1 and 2), which is the minimum operating current. **Do not change this.**

1 = Lamp 1 (closest to the Measuring Cell)
2 = Lamp 2 (farthest from the Measuring Cell)

Default Filter Pulses (mV)

Defines the source lamp pulse current-control signal for each filter. The normal operating range is between the **Lamp Base** and the **Lamp Max** settings (check **EEPROM Data Sheets** for actual value); the control signal for the key filter is **Lamp Max**. If a filter position is not used, the **Default Filter Pulses** value must be set to a negative number. The recommended value is negative base (-2000 mV) set point.

ALC SetPt (mV)**

The **Automatic Lamp Control Setpoint** signal is obtained from the *Reference* PMT for each filter (up to six) after the Auto-Setup is complete. These values are updated automatically by an Auto-Setup. The Automatic Lamp Control function adjusts the lamp pulses to maintain the *Reference* PMT signals to these values.

ALC Gains**

This is the automatic lamp-control gain setting for each filter.

Tzero**

This is the PMT signal transmittance value of each filter, with Zero gas in the sample system. It is adjusted automatically whenever the analyzer is Zeroed.

ALC On button

The Automatic Lamp Control automatically turns on at the completion of an Auto-Setup, and should be on during normal operation. However, this function should be turned off while performing a lamp alignment.

Checked (default)	Automatic Lamp Control function is enabled.
Not Checked	Automatic Lamp Control function is disabled.

Bench Type**

Defines the Optical Bench orientation and the filter sequence assigned to each source lamp. Do not change this.

Orientation	The physical orientation of the Optical Bench: **0 = Normal** (typical, factory default) The Measuring Cell is connected to the Optical Bench on the left side of the analyzer, when facing it. **1 = Reverse** The Measuring Cell is connected to the Optical Bench on the right side of the analyzer, when facing it.

Filter Sequence — This factory-set default specifies the order in which the filters pass in front of the light path of the source lamps. Options include:

0 = 1-3-5, 4-6-2 (typical, factory default)

8 = 3-5, 4-6-1-2 (custom applications)

16 = 1-3-4-5, 6-2 (custom applications)

24 = Invalid is used for analyzers without a Chopper Motor, which houses up to six filters. Typically reserved for Model 909, 919 Analyzers.

Processing Filtration

MaxT90 (sec) — This is the time (default is 60 seconds) required for the output signal to reach 90 percent of the final value after a step change in the concentration. Larger values reduce the noise level on the output signal but, at the same time, increase the sample response time. **Do not change this.**

Adaptive Parameter 1 — This is the adaptive filtering algorithm constant (default is 0.00025) for Filter 1 on single-species analyzers, such as Models 909, 919. **Do not change this.**

Adaptive Parameter 2 — This is the adaptive filtering algorithm constant (default is 0.00025) for Filter 2 on single-species analyzers, such as Models 909, 919. **Do not change this.**

Completion Number

Displays the completion number for the latest Auto-Setup (located below **Processing Filtration**). See the description of the **Auto-Setup** button for more information.

Samples per Peak**

Indicates the number of times the PMT signal is measured while a filter is completely within the light path.

Delay (x1.6 μs)**

This is the time interval between when the filter becomes completely within the light path and the first PMT signal measurement. The interval is shown as multiples of 1.6 microseconds (μs).

Wheel Revolutions for Avg RPM**

This is the number of filter wheel rotations per minute (RPM) used to calculate its RPM during one measuring cycle. **Model 900, 910, 920, 930 Analyzers only.**

K Msr**

This is the molar absorptivity of the gas species at the wavelengths used, for the Measure PMT signal. **Model 909, 919 Analyzers only.**

K Ref**

This is the molar absorptivity of the gas species at the wavelengths used, for the Reference PMT signal. **Model 909, 919 Analyzers only.**

Key Filter**

This displays the position of the key filter, which gives the weakest signal for a given source lamp current.

PMT Level (mV)**

This displays the Photomultiplier Tube gain control signal, which is based on the signal from the PMT when the key filter is in the light path. Normal values after a successful Auto-Setup are from 7.2–7.4 VDC. If the **PMT Level** is not in this range, adjust the **Lamp Max** and start another Auto-Setup.

PMT Balance (mV)**

This displays a secondary Photomultiplier Tube control signal, which adjusts the PMT gain to equalize the PMT signals when the filters with the lowest and highest transmittances are in the light path. Normal values after a successful Auto-Setup are from 4.0–7.0 VDC.

Lamp Max (mV)**

This displays the voltage to which the lamp pulse current-control signal for the key filter location is set during the Auto-Setup. To ensure a **PMT Level** of 7.2–7.4 VDC after an Auto-Setup, the Lamp Max typical range is 4.5–7.8 VDC. (Check **EEPROM Data Sheets** for actual value.)

Signal Max (mV)**

This displays a value that is used by the Auto-Setup to adjust the PMT signal (Reference or Measure PMT) with the highest gain. The PMT signal with the highest gain is set to **SigMax** when each filter is in the light path while the Auto-Setup is in progress. SigMax should be between 8.0 and 9.0 V. (Check **EEPROM Data Sheets** for actual value.)

Display

These message lines display the same information as that currently being displayed on the analyzer User Interface Panel.

During normal operation, these message lines display the real-time status of the species being measured (top line) and its concentration value (bottom line).

When an Auto-Setup is in progress, messages indicating the current stage of the Auto-Setup are displayed on the top line. Auto-Setup messages include:

- Adjusting PMT Level
- Adjusting Lamp Pulses
- Adjusting PMT Balance
- Adjusting PMT Level
- Adjusting Lamp Pulses
- Setting Up ALC
- Off/Completed

This information is also displayed on other screens.

Green text = normal conditions.
Red text = Warning or Fault alarm active.

If an alarm is active, refer to the analyzer manual ("Maintenance and Troubleshooting" chapter) for details about the alarm and corrective action to take to reset the alarm.

Auto-Setup button

Initiates the Automatic-Setup function, which optimizes the PMT gains and source lamp currents. This function combines automatic signal adjustment with manual jumper positioning (refer to the "Maintenance and Troubleshooting" chapter in the analyzer manual for more information). The Auto-Setup process takes approximately three minutes. Always perform an Auto-Setup after any lamps, optical filters, or PMTs have been installed or replaced.

The final **Completion Number** must be between 0.75 and 1.25. If it is, click **OK** and then click the **Save CFG to EEPROM** button to save the changes. If the completion number is not between 0.75 and 1.25, refer to the analyzer manual for more information.

After a successful Auto-Setup, return the analyzer to RUN mode by clicking the **Back to Run Mode** button on the **Info** dialog box.

Cancel Auto-Setup button

Stops the Automatic-Setup function.

Cell/Miscellaneous (Compensation) Parameters

Setup (tab)→Cell/Misc

The **Cell/Misc** dialog box contains compensation parameters used in calculating the concentration, plus other miscellaneous parameters. They account for temperature, pressure, compressibility and other variations that affect the concentration reading computed by the analyzer.

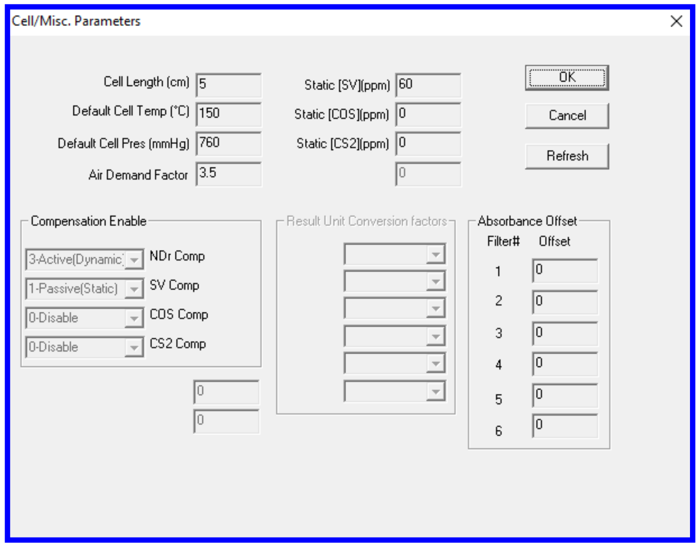


Figure 3-6. Cell/Miscellaneous (compensation parameters) dialog box.

NOTE

*'**' following the parameter names below indicates the parameter should only be modified by a trained technician.*

Cell Length**

Displays the axial length of the Measuring Cell gas space (centimetres or inches).

Default Cell Temp

Displays the default temperature for the Measuring Cell (°C or °F). This value is used in place of the Measuring Cell temperature when measured temperature compensation is disabled.

Default Cell Pres

Displays the default absolute pressure for the Measuring Cell (mmHg or "Hg). This value is used in place of the Measuring Cell pressure when active pressure compensation is disabled.

Moisture

Displays and allows you to change (from CFG mode) the ambient air moisture content or stack gas moisture content (%) compensation. **All analyzers except Model 900.**

Air Demand Factor

Displays the Air Demand (F) factor as shown in the Air Demand Analyzer calibration data sheet. Do not change this application-specific factor without first consulting with AMETEK personnel and receiving approval. **Model 900 Analyzers only.** Air Demand Factor components include:

SV – Sulfur vapor at analyzer conditions.
COS – COS in the tail gas stream (factory default = zero).
CS2 – CS_2 in the tail gas stream (factory default = zero).

Compensation Enable**

Displays the factory-set compensation functions that are used in the calculation of the concentration. Depending on your analyzer, some, all, or none of these will be enabled (checked). Compensation functions will vary for different analyzers or applications. **Model 900, 910, 920 Analyzers only.**

Each of these functions can be set to 0 – Disable, 1 – Passive (Static), 2 – Disable, 3 – Active (Dynamic), 4 – N/A (not applicable).

NDr Comp (Neutral Drift compensation)
SV Comp (Sulfur vapor compensation)
COS Comp (COS compensation)
CS2 Comp (CS_2 compensation)

Static

Displays the factory-set concentration value for the static component (**N2O** – absorbance offset vector) that is used for compensation purposes only. **Model 910, 920 Analyzers only.**

Result Unit Conversion factors**

Reserved for other analyzers.

Absorbance Offset**

Displays the Absorbance Offset vector for each filter location.

Temperature Control

☞ *Setup (tab)→Temp Control*

The **Temperature Control** dialog box contains temperature control parameters for all of the temperature zones measured by the analyzer.

Figure 3-7. Temperature Control dialog box.

NOTE

*'**' following the parameter names below indicates the parameter should only be modified by a trained technician.*

Temperature Control Zones**

Selection

This list box defines the factory-set number of temperature zones used by the analyzer. Options include:

0 = no temperature control:
No temperature zones are being used**.**

2 = 2 temp control zones (1 & 4):
Temperature zones 1 and 4 are being used.

4 = 3 temp control zones (1, 2 & 4):
Temperature zones 1, 2, and 4 are being used.

6 = 4 temp control zones (1, 2, 3 & 4):
Temperature zones 1, 2, 3, and 4 are being used.

Zone 3

This list box defines the factory-set cooling/heating logic for temperature zone3. Options include:

0 = cooling logic, SKO:
Used if Zone 3 is being used for the Sulfur Knock-Out.

32 = heating logic, heater:
Used if Zone 3 is reserved for an extra temperature zone.

Zones

Displays the factory-set temperature zones currently being used for the analyzer. Depending on which option is selected from the **Selection** list box, the **Zone** definitions will be enabled (a name for the zone is displayed), or disabled. If the analyzer does not use an ASR900 Sample Probe, Zone 5 will be greyed out (not used). The descriptions of each zone are:

- **Zone 1** – reserved for Sample Line.
- **Zone 2** – reserved for Vent Line.
- **Zone 3** – reserved for SKO (Sulfur Knock-Out) or optionally, SCU (Sample Conditioning Unit).
- **Zone 4** – reserved for Measuring Cell.
- **Zone 5** – reserved for ASR900 Sample Probe.
  This zone is an extra temperature zone and is typically reserved for analyzer Models 900, 930 using the ASR900 Sample Probe.
- **Zone 6** – reserved for Heater Plate.

Current

Displays the real time operating temperature for the corresponding temperature zone (°C or °F).

Setpoint

Displays the control operating set point for each temperature zone (°C or °F). This value is the temperature control set point at which an alarm Warning or Fault will be set and displayed in the software, and is used to alert the operator to analyzer operating conditions.

Kp (band)**

Displays the proportional term of the PID temperature control algorithm for each temperature zone.

Ti (sec)**

Displays the integral term of the PID temperature control algorithm for each temperature zone (seconds).

Sensor Type**

Displays the type of sensor used to measure the temperature for each temperature zone. 2 = RTD B is the typical default.

Duty Cycle (%)

Startup	This is the default duty cycle percentages used upon start-up for each temperature zone during steady-state operation at the set point.
Maximum	This is the maximum duty cycle percentage for each temperature zone.
Current	This is the real time duty cycle percentage for each temperature zone.

Too Cold

Displays the Measuring Cell temperature (°C or °F) at which the analyzer's Flow Control (*automatic* **Sample**) mode will switch between **Continuous Sample** mode and **Continuous Backpurge** mode, providing each of the other temperature zones is within 5 % of its set point value. Entering '**0**' results in the analyzer using 5 % of the Measuring Cell temperature set point as the switch temperature.

Probe Temp Input

Displays the temperature characteristics of the ASR900 Sample Probe. This parameter is used only for certain analyzers that use an ASR900 Sample Probe to extract the sample gas. These values can also be displayed in °F if the units are set to Imperial measurements.

at 0.0	Probe temperature signal low scale for 0 V (°C or °F).
at full scale	Probe temperature signal high scale for full-scale V (°C or °F).

Low Limit	Probe temperature low alarm set point (°C or °F).
High Limit	Probe temperature high alarm set point (°C or °F).

HC Scode

Displays the alarm status code triggered by the **Host Controller** board. This is the sum total of all alarms that have been set.

The message box below HC Scode displays the corresponding Scodes and their descriptions.

Output

☞ *Setup (tab)→Output*

The **Output Setup** dialog box contains Current and Voltage output assignments. Refer also to the **Customer I/O** board drawing in the analyzer manual.

NOTE

Analyzers with Dual Range functionality (e.g., so2 = Low Range; SO2 = High Range) must be configured from the User Interface Panel, as certain parameters are not available in the System 200 Configuration Software.

There are four independent isolated 4–20 mA DC outputs that can be either self-powered or loop-powered. The user must provide the loop supply for the loop-powered output.

In addition to the usual capability of Zeroing and Spanning the V/I and Voltage Outputs, you can also set them to a mid-scale level for diagnostic purposes. The low end of each analog output range can be a non-zero value.

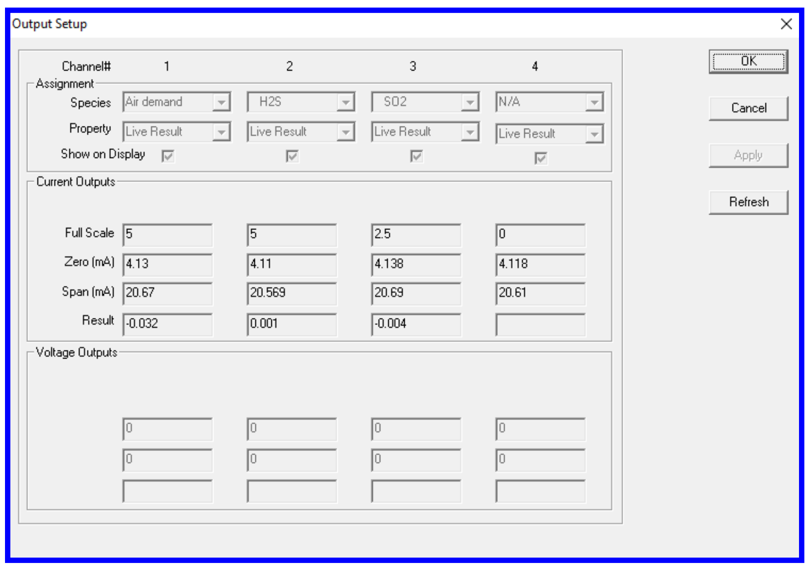


Figure 3-8. Analog Output Setup dialog box.

Channel# (1, 2, 3, 4) lists various parameters for each of the four analog output channels.

Assignment

Defines (Output Signal Assignment, or OSA) code for each of the four analog outputs. These are typically assigned at the factory, according to customer specifications.

Species is the gas type of interest.

You can assign a different species for each of the four channels. Depending on the analyzer, certain options may not be available. Options can include **SO2**, **H_2S**, **COS**, **CS_2**, **Sv**, **NDr**, **Air Demand**, **Trend**, **NOx**, **Stream flow rate**, and **O2**. **N/A** is selected if no output is assigned to the channel.

Property is the manner in which the output is provided.

You can assign a different property for each of the four channels. Depending on the analyzer, certain options may not be available. Options can include **Live Result**, **Mass emission**, **O2 Correction**, **T&H result**, **T&H mass emission**, and **T&H O2 Correction**. **N/A** is selected if no output is assigned to the channel.

Show on Display check box

Checked (default)	Displays the analog output information on the **Display** message lines that are available on the **Optical Bench**, **Gas Calibration**, and **Analyzer Information** dialog boxes, the **Status** and **Analyzer Data** tabs, and on the User Interface Panel.
Not Checked	Analog output information will not be displayed in the software or on the User Interface Panel.

Current Outputs

Low Scale

Enter the current low scale set point corresponding to 4 mA DC, for each of the analog outputs. If an output is not used, set this to zero ('**0**').

Full Scale (High Scale)

Enter the current full (high) scale set point corresponding to 20 mA DC, for each analog output. If an output is not used, set this to zero ('**0**'). For example, if Scale 1 = 1000 PPM, Output 1 would read 20 mA at 1000 PPM and 4 mA at 0 PPM. These outputs are application-specific.

Zero (mA)

Enter the measured current (mA) in the current output loop when the output is set to zero scale during the Zero calibration procedure, for each analog output. The actual mA value is displayed for each corresponding output channel when 4 mA (Zero function) is activated.

Span (mA)

Enter the measured full-scale current (mA) in the current output loop when the output is set to full-scale during the Span calibration procedure, for each analog output. The actual mA value is displayed next to the corresponding output channel when 20 mA (Span function) is activated.

Result

Displays the real time output value for each output.

Voltage Outputs

(Reserved for other analyzers.)

Modbus Settings

☞ *Setup (tab)→Modbus*

The **Modbus** dialog box displays current communication parameters for the analyzer you are communicating with. The parameters displayed here are the results of settings in the analyzer (made from the User Interface Panel).

See also Chapter 2.

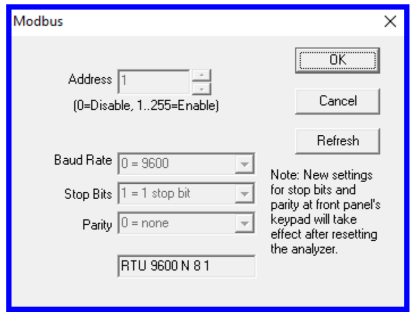


Figure 3-9.
Modbus dialog box.

Address
Displays the Modbus slave address assigned in the analyzer.

Baud Rate
Displays the baud rate.

Stop Bits
Displays the number of stop bits.

Parity
Displays the parity.

The field at the bottom of this dialog box (i.e., RTU 9600 N 8 1) represents the current settings.

Matrix

Setup (tab)→Matrix

The **Matrix** dialog box displays information that is responsible for partially calculating the concentration output and negating the effects of cross-talk by interfering gas species.

NOTE

*The **Matrix** dialog box is not used for analyzer Models 909, 919 (single-species analyzers). For these analyzers, the **Matrix** button is greyed out.*

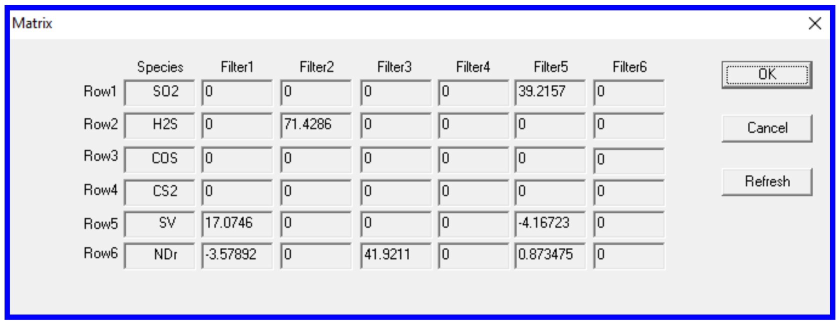


Figure 3-10.
Matrix dialog box.

NOTE

*'**' following the parameter names below indicates the parameter should only be modified by a trained technician.*

Species**
: This designates which gas species are currently configured for each row (up to six).

Row/Filter**
: This displays the value for each species of gas (Row 1–6) and each column (Filter 1–6) in the calculation matrix.

Analytical Parameters

☞ *Setup (tab)→Analytical Parameters*

NOTE

Analyzers with Dual Range functionality (e.g., so2 = Low Range; SO2 = High Range) must be configured from the User Interface Panel, as certain parameters are not available in the System 200 Configuration Software.

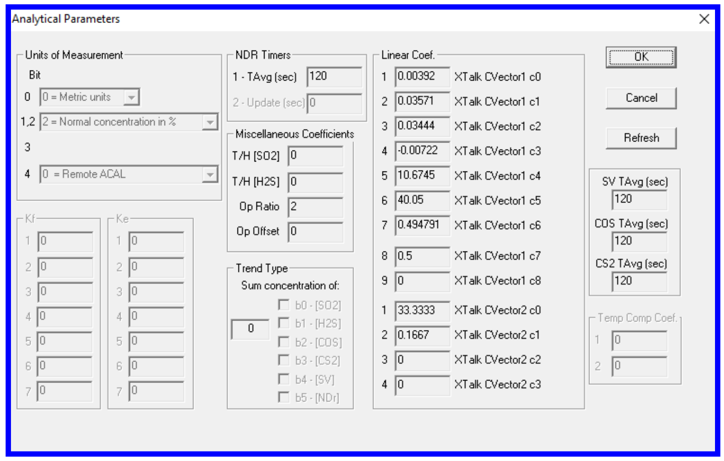


Figure 3-11. Analytical Parameters dialog box.

NOTE

*'**' following the parameter names below indicates the parameter should only be modified by a trained technician.*

Units of Measurement (factory-set)

Bit 0

Select the units of measurement used for displaying concentration, temperature, and pressure values. Options include:

0 = Metric units:
Displays the data in metric units.

1 = Imperial units:
Displays the data in imperial units.

Bit 1,2

Select the concentration values in which you system data will be displayed (either PPM or percent). Options include:

0 = Normal concentration (ppm):
Displays the data in parts per million.

2 = Normal concentration (%):
Displays the data in a percentage.

	4 = Finer (low) concentration result (ppm): This is used for low gas concentrations, providing a parts per million reading to one decimal place (one-tenths).
	6 = Coarse (high) concentration result (%): This is used for high gas concentrations, providing a percentage reading.
Bit 3	Select the number of outputs to display. Options include:
	0 = Display 4 items: Displays four outputs.
	8 = Display 3 items: Displays three outputs.
Bit 4	Select the type of remote function to enable. Options include:
	0 = Remote ACAL: Enables the Remote Auto-Calibration function via a remote contact (from a control station).
	16 = Remote backpurge/Zero flow (900/930 Analyzers) **16 = Remote backpurge** (909/910/919/920 Analyzers): Enables the Remote Backpurge function via a remote contact (from a control station).

Kf

Displays the factory-set units conversion constant for calculation of a component's mass flow (Mass/Energy).

Ke

Displays the factory-set units conversion constant for calculation of a component's mass flow (Mass/Amount). **Model 909, 910 Analyzers only.**

NDR Timers

1 - TAvg (sec)	Displays the factory-set amount of time (in seconds) for the averaging times of the Neutral Drift compensation functions.
2 - Update (sec)	Displays the factory-set amount of time (in seconds) for the update times of the Neutral Drift compensation functions.

Miscellaneous Coefficients

T/H	The Track-and-Hold functions display the factory-set value (%) of the specific gas species to which the Track-and-Hold function will hold. '**0**' = hold to the analyzer's calculated output value. The Track-and-Hold parameters will vary from analyzer to analyzer, but the specific functions can be set for the required species output.
Op Ratio	Displays a factory-set value for the tail gas H_2S-to-SO_2 ratio at which the plant is to be operated. For the conventional operation of the modified-Claus Sulfur Recovery process, this value is '**2**'. **Model 900 Analyzers only.** **Do not change this factory-set value without first consulting with AMETEK personnel and receiving approval**.
Op Offset	Displays the analog output mid-scale (12 mA DC) Air Demand Signal. For the conventional operation of the modified-Claus Sulfur Recovery process, this value is '**0**'. **Model 900 Analyzers only.** **Do not change this factory-set value without first consulting with AMETEK personnel and receiving approval.**

Trend Type

When these check boxes are checked, the software will display the sum concentration of the result for the corresponding gas species. **Model 900 Analyzers only.**

The results options, which are listed with the bit number (e.g., b0) that is used by the software, include **b0 (SO2)**, **b1 (H2S)**, **b2 (COS)**, **b3 (CS2)**, **b4 (SV)**, and **b5 (NDr)**. The checked species are factory-set, according to customer specifications.

Sum Results	This is a code generated by all of the enabled species.

Linear Coefficients

This is the calibration parameters used for factory calibration. The displayed results will vary, depending on which analyzer you are working with (i.e., SO2/NO, or Interferents Linear Coefficients). This function is not available for Model 909, 919 Analyzers.

For *Model 900 and 930 Analyzers*, the results include:

XTalk CVector1 c0–c8 or **c0–c9 (1..8/1..9)****
This displays the factory-set vectors for the *first* compensation calculations. **(XTalk CVector1 c9 (1..9) is for Model 900/930 Analyzers with COS/CS2 software version only.)**

XTalk CVector2 c0–c1 or **c0–c3 (1..2/1..4)****
This displays the factory-set vectors for the second compensation calculations. **(XTalk CVector2 c2, c3 (1..4) is for Model 900/930 Analyzers with COS/CS2 software version only.)**

For *Model 910, 920 Analyzers*, the results include:

Linearization c0–c6**
This displays the factory-set linearization coefficients that are used to provide polynomial correction in the data analysis.

SV TAvg (sec)**
This displays the factory-set compensation value (in seconds) for the Sv averaging time. **Model 900 Analyzers only.**

COS TAvg (sec)**
This displays the factory-set compensation value (in seconds) for the COS averaging time. **Model 900 Analyzers only.**

CS2 TAvg (sec)**
This displays the factory-set compensation value (in seconds) for the CS_2 averaging time. **Model 900 Analyzers only.**

Temp Comp Coef**
This displays the factory-set temperature compensation coefficient value for SO_2 cross-interference correction.

Analog Inputs

Setup (tab)→Analog Inputs

The **Analog Inputs** dialog box allows you to configure various parameters for the analog inputs associated with the analyzer.

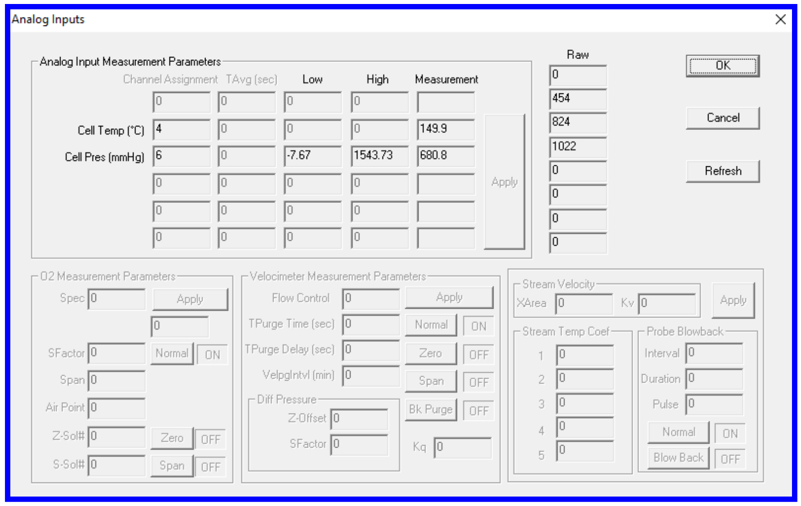


Figure 3-12. Analog Inputs dialog box.

NOTE

*'**' following the parameter names below indicates the parameter should only be modified by a trained technician.*

Analog Input Measurement Parameters** (factory-set)

Allows you to assign analog inputs for measurements and set calibration parameters.

Channel Assignment	Defines the signal assigned to each of the six analog channels.
TAvg (sec)	This factory-set time period (in seconds) displays the averaging times of the compensation functions.
Low	Displays the factory-set offset low range.
High	Displays the factory-set offset high range.
Measurement	Displays the signal levels.

The following signals are assigned to the Analog Input channels. Some signals are not applicable to (not used by) or optional for certain analyzers.

O2	Allows you to enter a range (%). Factory-set. (Optional)
Cell Temp**	Displays the real-time temperature for the Measuring Cell (°C or °F).
Cell Pres**	Displays the real-time absolute pressure for the Measuring Cell (mmHg or "Hg). Factory-set. Also used for factory calibration.
Stream Temp	Displays a value for stream temperature (°C or °F). (Optional)
Stream Pres	Displays a value for stream pressure (°C or °F). Factory-set.
Stream Velocity	Displays a value for the external stream velocity.
Diff Pres	Displays a value for the velocimeter (mmH2O or "H2O). Factory-set. Also used for factory calibration.
Probe Temp	Displays a value for the probe temperature (°C or °F). Factory-set. Also used for factory calibration.
Volu Flow Rate	Displays a value for the external volumetric flow rate. (Optional)
Apply button	Applies the changes you made to these values.

Raw

Displays a value that has been digitally converted from an analog input measurement.

O2 Measurement Parameters

Lists various O_2 configuration and calibration parameters used to calibrate the O_2 Sensor.

Spec	Factory-set value.
Zero CalOffset (%)	Zero offset is a factory-set calculated value that is adjusted based on the average reading during the last 25 percent of the **AZ-0** timer (**Timer0**) duration.
SFactor	Span factor is a factory-set calculated calibration value.
Span	Factory-set value to which the O_2 concentration analyzer will be spanned.
Air Point	Factory-set value to which the O_2 concentration analyzer is zeroed. (Air is used to obtain the air reference point which establishes the O_2 Sensor zero point.)
Z-Sol#	This is a factory-set value for the Zero Solenoid.
S-Sol#	This is a factory-set value for the Span Solenoid.
Apply button	Applies the changes you made to these values.
Normal button	Toggles the analyzer to normal operation when zero or span is active. The message box beside this button displays the operational status (On or Off) of the analyzer.
Zero button	This factory calibration function toggles the Zero solenoid on to zero the O_2 Sensor. The message box beside this button displays the status (On or Off) of the Zero solenoid.
Span button	This factory calibration function toggles the Span solenoid on to span the O_2 Sensor. The message box beside this button displays the status (On or Off) of the Span solenoid.

Velocimeter

Lists various configuration parameters used to measure the velocity of the measured gas species. **Model 909, 910 Analyzers only.**

Flow Control	Lists the analyzer's current flow control mode. 0 = analyzer control 1 = continuous backpurge
TPurge Time (sec)	Displays the duration (seconds) of the Pitot tube backpurge. The delay period can be set from 0–255 in one-second increments. Setting the duration to zero ('**0**') disables the function.
TPurge Delay (sec)	Displays the delay (seconds) following the backpurge in which the system will wait before resuming operation. The duration can be set from 0–120 in one-second increments, depending on sample line length. Setting the duration to zero ('**0**') disables the function.
VelpgIntvl (min)	Displays the time interval (minutes) between the Pitot tube backpurge sequences. The interval can be set from 0–255 in one-minute increments. Setting the interval to zero ('**0**') disables the function.
Diff Pressure (min)	Allows you to set up the differential pressure parameters. **Z-Offset** Displays the differential pressure transducer zero offset calibration value. **SFactor** Displays the differential pressure transducer span factor calculated calibration value.
Apply button	Applies the changes you made to these values.

Normal button	Toggles the analyzer to normal operation when the velocimeter function is active. The message box beside this button displays the operation status (On or Off) of the analyzer.
Zero button	This function toggles the Zero solenoid on during velocimeter functions. The message box beside this button displays the status (On or Off) of the Zero solenoid.
Span button	This function toggles the Span solenoid on during velocimeter functions. The message box beside this button displays the status (On or Off) of the Span solenoid.
Bk Purge button	This function toggles the Backpurge function Off-On. The message box beside this button displays the status (On or Off) of the Backpurge function.
Kq	Displays the constant for the volume-flow-rate calculation based on process stream data, process duct physical data, and units of measurement.

Stream Velocity

XArea	Cross area value.
Kv	The K(v) value is the molar absorptivity of the species of interest at the wavelengths used.

Stream Temp Coef**

Displays the factory-set coefficients calculated to linearize the reading from the process stream temperature transducer. Do not change these values.

Probe Blowback

Allows you to enter values that define the operational characteristics of the Probe Blowback device.

Interval	Allows you to enter the interval-time between blow-backs, in minutes. When an interval-time is entered, it is displayed along with a countdown timer (time remaining until the next blow-back).
Duration	Allows you to enter a value that defines the duration of each blow-back, in seconds.
Pulse	Is the Probe Blow-Back Pulse Width parameter. This parameter allows you to enter the length of time (in seconds) the analyzer will allow the blow-back system to build up pressure between pulses (air bursts, which blow debris back into the stack).
Normal button	Toggles the Probe Blowback device Off-On for normal conditions. The message box beside this button displays the operation status (On or Off) of the analyzer.
Blow Back button	Toggles the Probe Blowback function Off-On. The message box beside this button displays the operation status (On or Off) of the Probe Blowback function.
Apply button	Applies the changes you made to the Stream Velocity, Stream Temp Coef, and Probe Blowback values.

Refresh button

Reverts the changes you made on this screen back to their original settings, but only before you click **OK** to exit this screen.

Setting Gas Calibration Parameters

Setup (tab)→Gas Calibration

The **Gas Calibration** dialog box contains gas species information and sample system control parameters.

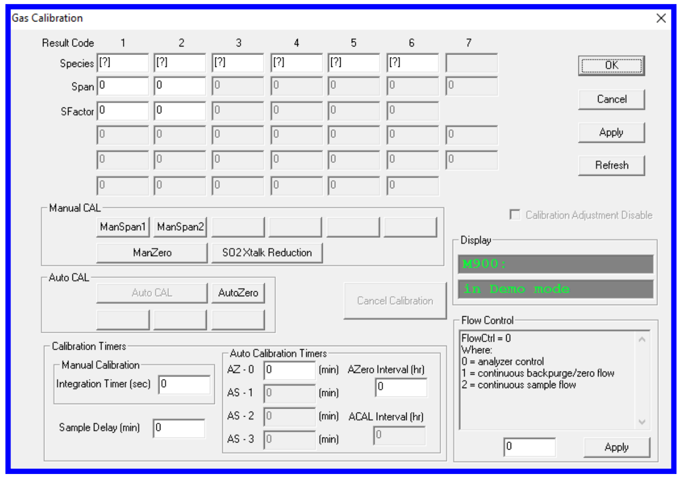


Figure 3-13. Gas Calibration dialog box.

NOTE

Analyzers with Dual Range functionality (e.g., so2 = Low Range; SO2 = High Range) must be configured from the User Interface Panel, as certain parameters are not available in the System 200 Configuration Software.

Result Code

Each of these factory-set Result Codes corresponds to a specific species. Result Codes are used to define outputs.

Species

Displays the names of available, factory-set gas species/output settings.

Span

This is the concentration of the component (ppm or %) in the calibration gas mixture. The concentration is entered in decimal notation. The maximum concentration which can be entered is 999 999. If a calibration gas is not used, this value must be set to zero ('**0**').

NOTE

*If the span gas concentration is changed to a value greater than 32700 ppm (or 32.7 %) using the Configurator Software, the analyzer memory (as viewed from the analyzer User Interface Panel, **CAL: F4 1**) will not be updated with the correct value.*

This problem can also occur if changing the concentration unit from ppm to %, or % to ppm, if the value is greater than 32700 ppm (or 32.7 %).

Therefore, if the span gas concentration must be changed to a value greater than these, or from ppm to % or % to ppm, make the change from the User Interface Panel.

SFactor

The Span (calibration) Factor for the calculated result (component concentration) for each configured gas species (and NO_x, if applicable). The analyzer's Span Factor is adjusted automatically whenever the analyzer is Spanned if the **Calibration Adjustment** check box is checked (enabled).

ZCalDrift

The Zero Calibration Drift specification is used only when the **Calibration Adjustment** check box is checked. At the end of every Auto-Zero or Manual Zero, the zero drift result is calculated and displayed (in PPM).

SCalDrift

The Span Calibration Drift specification is used only when the **Calibration Adjustment** check box is enabled. At the end of every span, the span drift result is calculated and displayed (in PPM).

Solenoid #

The Solenoid parameter assigns an SSR output controlling a calibration gas solenoid valve to a calculated result. The same SSR output can be assigned to more than one calculated result. This permits a multi-component calibration gas to be used. If a calibration gas is not used with one of the calculated results the value for the SSR output must be set to zero ('**0**').

Manual CAL

This group includes the control options that allow you to perform manual calibration functions on the analyzer.

Man Span buttons	Allow the user to manually span the analyzer for each component. The analyzer calibration is automatically adjusted based on the average reading during the **Integration Timer** period after clicking the corresponding **ManSpan** button, but only if the **Calibration Adjustment** check box is checked. The span gas must be introduced manually using the Flow Control function.
ManZero button	Allow the user to manually zero the analyzer. The analyzer zero is automatically adjusted based on the average reading during the **Integration Timer** period after clicking the **ManZero** button, but only if the **Calibration Adjustment** check box is checked. The zero gas must be introduced manually using the Flow Control function.
SO2 Xtalk Reduction button	Recalculates the matrix elements for Sv and NDR at specific wavelengths to reduce SO_2 cross-talk. **Model 900 Analyzers only.**

Auto CAL

AutoCAL button

Initializes the analyzer to automatically cycle sequentially through the Auto-Zero and Auto-Span functions. Only the functions with timers set to non-zero durations are included.

The zero offset and calibration will be automatically adjusted only if the **Calibration Adjustment** check box is checked.

AutoZero button

Initializes the analyzer to automatically introduce Zero gas into the sample system. The Zero gas solenoid is turned on and off automatically during the sequence.

The zero offset is a factory-set calculated value that is adjusted based on the average reading during the last 25 percent of the **AZ-0** timer (**Timer0**) duration.

NOTE

An Auto-Zero sequence initiated on a timed basis or by a remote contact will not be executed if there is a fault alarm present.

AutoSpan buttons

Automatically introduce calibration gas into the sample system. The calibration gas solenoid valve connected to the SSR output (1, 2, or 3) is turned on and off automatically during the sequence.

The analyzer calibration is automatically adjusted based on the average reading during the last 25 percent of the countdown after clicking the appropriate **AutoSpan** button, but only if the **Calibration Adjustment** check box is checked.

For multi-component calibration gas mixtures, the same solenoid can be assigned to different species, but must be spanned individually.

Cancel Calibration button

Aborts the calibration sequence (Manual Zero, Auto-Zero, Span).

Calibration Timers

Allows you to set up the timers used during calibration.

Manual Calibration	Allows you to enter a time value (Default = 60 seconds) for the **Integration Timer(sec)**, during which the concentration reading for each of the species is averaged. The **Integration Timer** may be set to a duration from 0–65535 seconds in one-second increments.
Sample Delay (min)	Allows you to enter a time value (in minutes) that sets the time delay for the AUTO/ MANUAL relay to continue indicating that a calibration (Zero) is in progress after completion of the Zero function. This function also sets the time delay that the Normal/ Fault relay will wait before indicating the fault alarm has been cleared. This allows for a smooth transition from the Zero/Span Gas back to the sample gas. The delay can be set from 0–255 minutes in one-minute increments. Setting the delay to zero ('**0**') turns the function off.

Auto Calibration Timers

Allow you to enter a time value (in minutes) for the **Auto-Zero Timer** and three **Auto-Span Timers**.

AZ-0	Allows you to enter a value (duration) that defines the amount of time that the zero solenoid is active during an Auto-Zero function. The time may be set from 0–255 minutes in one-minute increments. Setting the time to zero ('**0**') turns the timer off.
AS-1, AS-2, AS-3	Allows you to enter a value (duration) that defines the amount of time that each of the three span solenoids is active during an Auto-Span function. The time may be set from 0–255 minutes (default = 4 minutes) in one-minute increments. Setting these timers to zero ('**0**') to turn them off.

AZero Interval	The **Auto-Zero Interval Timer** field allows you to enter a time value (in hours) that controls the interval between Auto-Zero sequences. The interval can be set from 0–999 hours in one-hour increments. Setting the interval to zero ('**0**') turns the timer off, disabling a timed start of the Auto-Zero sequence. The Auto-Zero function will be included in the Auto-Calibration sequence if Auto-Zero is enabled and **Timer0** duration is not zero.
ACAL Interval	The **Auto-Calibration Timer** allows you to enter a time value (in hours) that controls the interval between Auto-Calibration sequences. The interval can be set from 0–999 hours in one-hour increments (default = 0 hours). Setting the interval to zero ('**0**') turns the timer off, disabling a timed start of the Auto-Calibration Zero sequence.

Calibration Adjustment Enable

Enables or disables the automatic adjustment of the analyzer zero offset and calibration for all Zero and Span operating modes. When the automatic adjustment is disabled, all auto-calibration functions (Auto-Zero, Auto-Span, or Auto-Calibration) – except automatic calibration adjustments – will be performed. (i.e., Zero gas or Calibration Gas will be introduced into the sample system but no automatic adjustment will be done).

Checked	Automatic calibration adjustment will be performed after an Auto-Calibration sequence.
Not Checked	Automatic calibration adjustment will not be performed after an Auto-Calibration sequence.

Display

These message lines display the same information as that currently being displayed on the analyzer User Interface Panel.

During normal operation, these message lines display the real-time status of the species being measured (top line) and its concentration value (bottom line).

When an Auto-Setup is in progress, messages indicating the current stage of the Auto-Setup are displayed on the top line. Auto-Setup messages include:

- Adjusting PMT Level
- Adjusting Lamp Pulses
- Adjusting PMT Balance
- Adjusting PMT Level
- Adjusting Lamp Pulses
- Setting Up ALC
- Off/Completed

This information is also displayed on other screens.

Green text = normal conditions.
Red text = Warning or Fault alarm active.

If an alarm is active, refer to the analyzer manual ("Maintenance and Troubleshooting" chapter) for details about the alarm and corrective action to take to reset the alarm.

Flow Control

This is the analyzer sample gas flow control mode. For normal operations, the analyzer operates in the **Analyzer Control** (automatic) mode. Other Flow Control modes are set manually by the user.

The Flow Control modes, listed in the Flow Control Legend, vary for different analyzers. The analyzer will operate in the corresponding Flow Control mode code that is entered in the **Flow Control Mode box** below the Flow Control Legend. After entering a Flow Control mode code, click the **Apply** button to save the change and set the analyzer into the new Flow Control mode.

NOTE

Depending on the analyzer you are working with, certain Flow Control modes listed below may not be available. Only the Flow Control modes available for the analyzer you are working with are displayed in the software. Some Flow Control mode descriptions are slightly different from analyzer to analyzer.

0 = analyzer control
Enter this code to enable the analyzer to automatically determine and set the mode of operation (sample or backpurge) by monitoring the state of the Fault alarm relay contacts.

1 = continuous backpurge/zero flow
or
1 = continuous backpurge
Enter this code to manually force the analyzer to continuously back-purge its sample system with Zero (or Instrument Air) gas.

2 = continuous sample flow
or
2 = continuous sampling
Enter this code to manually force the analyzer to continuously extract sample gas from the process duct and force it throughout its sample system.

10 = continuous zero (probe-tip)
or
10 = zero gas flow
Enter this code to manually force the analyzer to continuously back-purge its sample system with Zero gas.

11 = continuous cal gas1 (probe-tip)
or
11 = cal gas1 flow
Enter this code to manually force the flow of Calibration Gas 1 through the analyzer's sample system.

12 = continuous cal gas2 (probe-tip)
or
12 = cal gas2 flow
Enter this code to manually force the flow of Calibration Gas 2 through the analyzer's sample system.

13 = cal gas3 flow
Enter this code to manually force the flow of Calibration Gas 3 through the analyzer's sample system.

Analyzer Information

☞ *Setup (tab)→Analyzer Info*

The **Info** dialog box displays information about the analyzer and allows you to reset the analyzer's **Host Controller** board and enter or change passwords that are used to access the CALibration (CAL) and ConFiGuration (CFG) mode passwords.

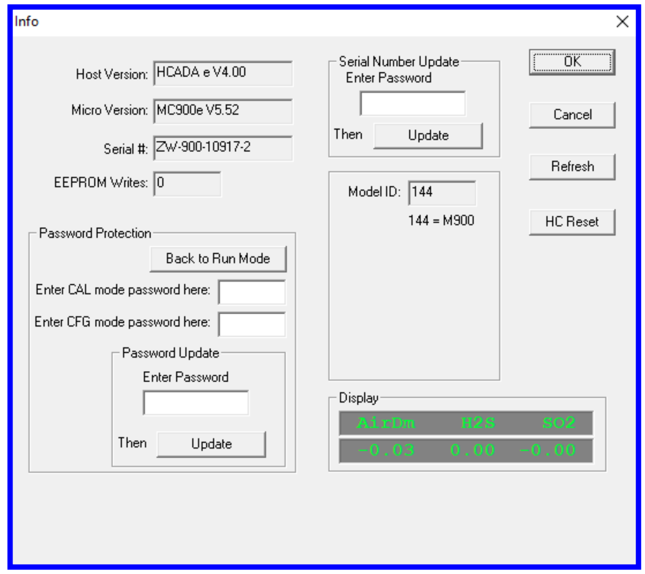


Figure 3-14. Analyzer Information dialog box.

Host Version

Displays **Host Controller** board software version.

Micro Version

Displays **Microcontroller** board software version.

Serial #

Displays analyzer serial number.

EEPROM Writes

Displays number of times that new configuration data has been saved to the analyzer's EEPROM. The maximum allowable number of saves is 20,000.

Password Protection

Back to Run Mode button

Allows you to revert the software back to RUN mode if passwords have been entered to access CAL and/or CFG Modes. This will ensure no further changes can made to parameter settings.

Click this button after a successful Auto-Setup to return the analyzer to RUN mode.

The factory-default password is '• •' for both CAL and CFG modes.

To change the factory-default CAL / CFG mode passwords, contact AMETEK or your IT Administrator.

Enter CAL mode password here:

Used to enter the Calibration mode password, which is required to change Calibration parameters.

Enter CFG mode password here:

Used to enter the Configuration mode password, which is required to change Configuration parameters.

Password Update

A password is required to change the Calibration and Configuration mode passwords.

Enter Password	Enter the password that allows you to change the CAL and CFG mode passwords.
Update button	Saves the new password that allows you to change the CAL and CFG mode passwords.

Serial Number Update

Used by factory personnel to enter a serial number for the analyzer. **Do not change this.**

Model ID

Displays a code (see Analyzer Code Legend, below) that the software uses to define the AMETEK analyzer model the software is currently communicating with (**do not change this**). Analyzer models include:

144 = M900 (Model 900 Analyzer)
145 = M910 (Model 910 Analyzer)
146 = M920 (Model 920 Analyzer)
147 = (Reserved)
148 = (Reserved)
149 = M909 (Model 909 Analyzer)
150 = M919 (Model 919 Analyzer)

Refresh button

Reverts any values that you have modified back to their original settings, but only before you select an **Update** button or **OK**. When you click this button, any values that you have changed but do not wish to set permanently will revert to the settings that were last saved to the system's EEPROM.

HC Reset button

Resets the analyzer's **Host Controller** board.

CAUTION

*Do not randomly reset the analyzer during normal operation. Typically, the only resets required are in cases where the **Host Controller** or **Microcontroller** boards have been replaced. In this case, it is necessary to shut down the analyzer. The analyzer will reset upon normal power-up.*

Display

These message lines display the same information as that currently being displayed on the analyzer User Interface Panel.

During normal operation, these message lines display the real-time status of the species being measured (top line) and its concentration value (bottom line).

When an Auto-Setup is in progress, messages indicating the current stage of the Auto-Setup are displayed on the top line. Auto-Setup messages include:

- Adjusting PMT Level
- Adjusting Lamp Pulses
- Adjusting PMT Balance
- Adjusting PMT Level
- Adjusting Lamp Pulses
- Setting Up ALC
- Off/Completed

This information is also displayed on other screens.

Green text = normal conditions.
Red text = Warning or Fault alarm active.

If an alarm is active, refer to the analyzer manual ("Maintenance and Troubleshooting" chapter) for details about the alarm and corrective action to take to reset the alarm.

VIEWING LIVE DATA

Similar to RUN mode while working from the analyzer User Interface Panel, you can view live analyzer results and operational status without having to enter a password.

Status Tab

The **Status** tab displays live data results of the selected outputs, plus the Fault and Warning conditions (current and historical) associated with the **HC Scode** (Host Controller Status Code) and **MC Scode** (Microcontroller Status Code). You can also view the current status of various analyzer control functions from this tab. This screen is particularly useful when performing analyzer diagnostics. Information on this tab is not user-adjustable.

Analyzer Status

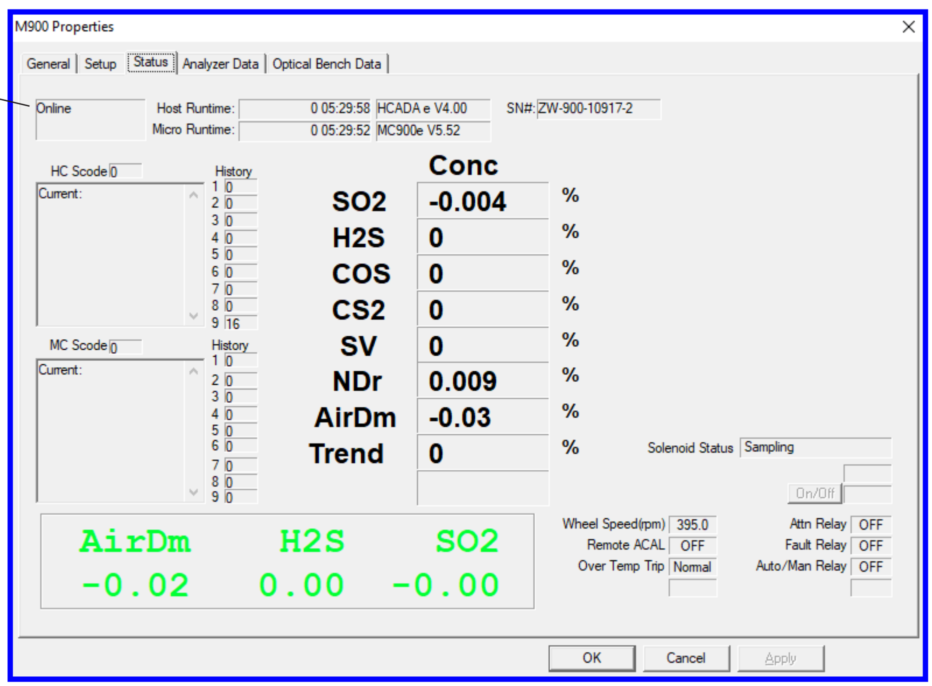


Figure 4-1. Status tab.

System Status Messages along the top portion of this screen display information about the System 200 Configurator Software and the analyzer. These include:

Analyzer Status
Displays the communication status between the System 200 Configurator Software and the analyzer. Messages that can appear here include: **OFFLINE**, **Online**, **DISABLED**, **Device Not Found**, or **DEMO Online**. Their descriptions are listed in Chapter 1.

Host Runtime
This is the amount of time the **Host Controller** board has been performing controls since the analyzer was last powered up or reset.

Micro Runtime
Amount of time the **Microcontroller** board has been performing controls since the analyzer was last powered up or reset.

Host Controller Board software version
Displayed next to **Host Runtime** (e.g., HCADA e V4.00). This information will be displayed only if the System 200 Configurator Software is communicating with the analyzer.

Microcontroller Board software version
Displayed next to **Micro Runtime** (i.e., MC900e V5.52). This information will be displayed only if the System 200 Configurator Software is communicating with the analyzer.

SN#
Analyzer's serial number. This information will be displayed only if the System 200 Configurator Software is communicating with the analyzer.

HC Scode
Displays active alarm conditions that originate from the **Host Controller** board. Each alarm condition is preceded by its status number, followed by the type of alarm (Fault or Warning), and the alarm description. The sum of their respective primary codes is listed in the field next to **HC Scode**.

NOTE

*For a complete list of alarms generated by the **Host Controller** board, refer to the analyzer manual for the analyzer you are working with.*

MC Scode

Displays active alarm conditions that originate from the **Microcontroller** board. Each alarm condition is preceded by its status number, followed by the type of alarm (Fault or Warning), and the alarm description. The sum of their respective primary codes is listed in the field next to **MC Scode**.

NOTE: *For a complete list of alarms generated by the **Microcontroller** board, refer to the analyzer manual for the analyzer you are working with.*

History

These readings are history buffers for the **Host Controller** (**HC Scode**) and **Microcontroller** (**MC Scode**) boards, for the last eight measuring cycles. Each history buffer displays a status code (if any alarms have been set), which is a sum of the primary error codes, where '**1**' is the oldest status code and '**9**' is the most recent. To resolve a non-primary status code into its primary error codes, subtract the largest primary error code from the displayed number. Continue to subtract the largest primary code from the remainder until a primary error code remains.

Calculated Results

Located to the right of the HC Scode and MC Scode **History** buffers, the existing results and values are displayed. The value for each result will be displayed and updated at one-second intervals.

The calculated results displayed include:

Conc	Displays the current concentration for each component displayed to the left of this column.
O2 Corr	Displays the current O2 Corrected concentration for each component displayed to the left of the **Conc** column.
Emission	Displays the current Emission levels for each component displayed to the left of the **Conc** column.

Solenoid Status

Displays the current status of the purge solenoid, either *Purging* (**Model 900 Analyzers only**), *Zeroing, Sampling*, or *OFF*.

Wheel Speed (rpm)

The current optical bench filter wheel speed in revolutions per minute (RPM).

Remote ACal

The current status of the remote, dry (potential free) contact, either *start* (closed) or *OFF* (open). When *start* is displayed, the remote auto-calibration function has been initiated from a remote control room, such as a Data Acquisition System (DAS).

Over Temp Trip

The current status of the Over Temperature circuit, either *Tripped* or *Normal*. The *Tripped* status indicates that one of the Over-Temp RTDs has exceeded its trip-point value. This action will trip the Over Temperature circuit and will set a High Temperature alarm. The Over Temperature circuit can only be reset by manually resetting the **SW300** switch on the **Termination** board. The Over Temperature trip-point value is not user-adjustable.

Auto/Man Relay

Model 900, 930 Analyzers:

When the analyzer is operating in its normal Automatic state, the **Auto/Manual relay** is energized. If this relay is in the Manual (de-energized) state, either a *fault* alarm condition exists within the analyzer's built-in diagnostics (analyzer service is required), the analyzer is operating in CALibration (CAL) or ConFiGuration (CFG) mode, an Auto-Zero has been initialized, or the analyzer's Flow Control mode has been manually forced to **Continuous Backpurge/Zero Flow** mode or **Continuous Sample** mode. While in the Automatic state (by the analyzer), a lower case "**m**" is displayed in the top-left corner of the **Display** message lines on the **Optical Bench, Gas Calibration**, and **Info** dialog boxes and **Status** tab. It will also be displayed in the same location in Run mode on the User Interface Panel.

Resetting of the contacts is delayed by the Sample Delay Timer (**SDelay**) duration; otherwise, this relay's contacts reset automatically upon correction of the *fault* alarm, upon switching back to **Analyzer Control** (automatic) mode, upon completion of the Auto-Zero function, or upon exiting CAL or CFG mode.

If no *fault* alarm conditions exist, you can manually change the state of this relay using the keypad command **F2 •** while working from RUN mode (this can only be done from the User Interface Panel). When this command is entered, an upper case "**M**" will be displayed in the top-left corner of the RUN mode screen to indicate that the state of this relay has been changed manually by the user. This command will also cause the Run/Attention relay contacts to de-energize.

Cal Relay

Model 909, 910, 919, 920 Analyzers:

The current status of the **Run/Calibration relay**. When the analyzer is operating in its normal Run state, this relay is energized. When any of the gas calibration functions are in progress, this relay is de-energized.

Resetting of the contacts is delayed by the Sample Delay Timer (**SDelay**) duration.

Attn Relay

When the analyzer is operating in its normal Run state, the **Run/ Attention relay** is energized. This relay is de-energized if a *warning* alarm condition exists within the analyzer's built-in diagnostic system (the analyzer requires attention), or when the analyzer is operating in CFG or CAL mode. This indicates to the control room that the analyzer is not operating in its normal Run state. The Run/Attention contacts will also become de-energized if you manually force the analyzer's Flow Control mode to any mode other than **Analyzer Control (automatic) mode.**

When this relay changes state to de-energized, a lower case "**m**" will be displayed in the top-left corner of the **Display** message lines on the **Optical Bench**, **Gas Calibration**, and **Info** dialog boxes and **Status** tab. It will also be displayed in the same location in Run mode on the User Interface Panel.

Resetting of the contacts is delayed by the Sample Delay Timer (**SDelay**) duration; otherwise, this relay's contacts reset automatically upon correction of the *warning* alarm, upon switching back to **Analyzer Control** (automatic) mode, and/or upon exiting CFG or CAL mode.

Fault Relay (*Model 900, 930 Analyzers*) or
Normal/Fault Relay (*Model 909, 910, 919, 920 Analyzers*):

When the analyzer is operating in its normal Run state, the **Normal/ Fault relay** is energized. This relay is de-energized if a *fault* alarm condition exists within the analyzer's built-in diagnostic system (the analyzer requires service). In RUN mode, **S** is displayed on the upper-right line of the User Interface Panel to indicate this relay has become de-energized.

With the exception of an Over-Temperature fault (**f Temp High**) – detected by the **Temperature RTD Daughter** boards – on the Sample Line, Vent Line (if used; or SCU), or Analyzer Oven, this relay's contacts reset automatically upon correction of the *fault* alarm. The Over-Temperature fault, however, must be reset manually. To reset this relay, you must press **SW300** on the **Termination** board, located in the Electronics Enclosure.

When a *fault* alarm condition exists (relay is de-energized), the sample system will automatically switch to Backpurge mode if the analyzer's Flow Control mode is set to **Analyzer Control** (automatic) mode. ***For Model 900, 930 Analyzers only***, a lower case "**b**" will be displayed in the top-left corner of the **Display** message lines (on the **Optical Bench**, **Gas Calibration**, and **Info** dialog boxes and **Status** tab) to indicate the analyzer has automatically forced its Flow Control mode to Backpurge. It will also be displayed in the same location in RUN mode on the User Interface Panel.

NOTE

*To back out of this screen or to view or set up other system information, choose another tab. Clicking **OK** or **Cancel** will take you back to the Configurator Software main window. You will have to re-establish computer-analyzer communications (select **Device Properties** from the **Edit** menu).*

Display

These message lines display the same information as that currently being displayed on the analyzer User Interface Panel.

During normal operation, these message lines display the real-time status of the species being measured (top line) and its concentration value (bottom line).

When an Auto-Setup is in progress, messages indicating the current stage of the Auto-Setup are displayed on the top line. Auto-Setup messages include:

- Adjusting PMT Level
- Adjusting Lamp Pulses
- Adjusting PMT Balance
- Adjusting PMT Level
- Adjusting Lamp Pulses
- Setting Up ALC
- Off/Completed

This information is also displayed on other screens.

Green text = normal conditions.
Red text = Warning or Fault alarm active.

If an alarm is active, refer to the analyzer manual ("Maintenance and Troubleshooting" chapter) for details about the alarm and corrective action to take to reset the alarm.

Analyzer Data Tab

The Analyzer Data tab displays live data results of up to six species of gases plus other components, depending on which model of analyzer you are working with. You can also view live data results of each temperature zone, analog inputs/outputs, and digital inputs/outputs. This screen is particularly useful when performing diagnostics on the analyzer. Information on this tab is not user-adjustable.

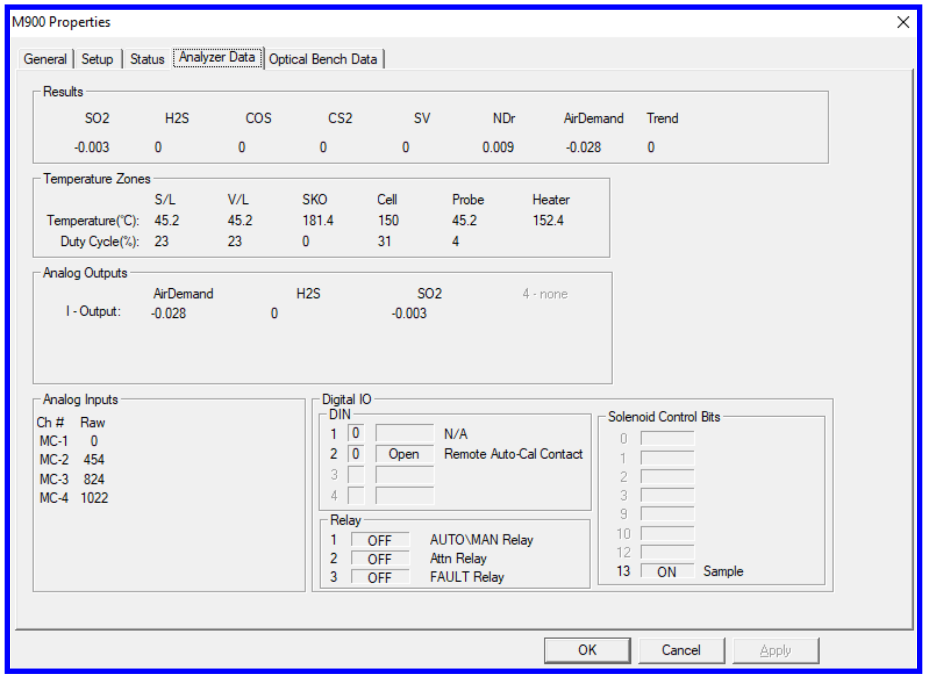


Figure 4-2. Analyzer Data tab (multi-species analyzers).

Results

Displays the real-time calculated result of each species of gas being measured (up to six), plus live results of other components, such as *Air Demand* and *Trend* (Model 900/930 Analyzers), *Flow Rate* (Model 909/910/919/920 Analyzers), O_2 (Model 909/910/919/920 Analyzers), and NOx (Model 910/920 Analyzers). The results, which will vary from analyzer to analyzer, are updated at one second intervals. The appropriate results for the analyzer you are communicating with will be displayed on this screen. Review this screen to determine which results are displayed here.

Temperature Zones

Some zones are not applicable to (or are not used by) certain analyzers.

Displays the real time **Temperature** (°C or °F) and **Duty Cycle** (%) of each temperature zone:

- **S/L** (Sample Line)
- **V/L** (Vent Line) or **SCU** (Sample Conditioning Unit)
- **SKO** (Sulfur Knock-Out) or optionally, **SCU** (Sample Conditioning Unit)
- **Cell** (Measuring Cell)
- **Probe** (AMETEK ASR900 Probe or Heated Acid Gas Probe)
- **Heater** (Oven Heater)
- **Bench** (Optical Bench)

Analog Outputs

Displays the assigned analog output name (up to four) and its real time status. If no output is assigned to a channel, "none" will be displayed next to the channel number (for example, "4 – none"). The outputs will be different for each analyzer/application.

I - Output Displays the analog output (current).

Analog Inputs

Displays the assigned analog input name (up to eight) and its real time status. If no input is assigned to a channel, no information is displayed. The inputs will be different for each analyzer/application.

Ch # Defines the input code assigned to each analog input channel.

Raw Displays the real-time digitally converted analog input values.

Digital IO

Displays the real time status of the digital inputs/outputs.

DIN Displays the real time status (*start* or *normal*) of the digital input 2 (Remote Auto-Cal Contact). Note that digital input 1 is Not Available (N/A). The current status of the digital input is also displayed (1 = On; 0 = Off).

Relay Displays the real time status of the analyzer's **Auto-Man Relay** (Auto/Manual), **Attn Relay** (Run/Attention Status relay), and **Fault Relay** (Normal/Fault Status relay). The status is either Off (normal) or On (tripped).

Solenoid Control Bits

Displays the real time status of the solenoids. Solenoids 9, 10, 12, 13 are pseudo solenoids. Refer to the analyzer manual for details.

NOTE

*To back out of this screen or to view or set up other system information, choose another tab. Clicking **OK** or **Cancel** will take you back to the Configurator Software main window. You will have to re-establish computer-analyzer communications (select **Device Properties** from the **Edit** menu).*

Optical Bench Data Tab

The Optical Bench Data tab (Figure 4-3, multi-species analyzers; Figure 4-4, single-species analyzers) allows you to view live data results from various signals that originate from each of the filters in the Optical Bench. This dialog box is particularly useful when performing diagnostics on the analyzer. Information on this tab is not user-adjustable.

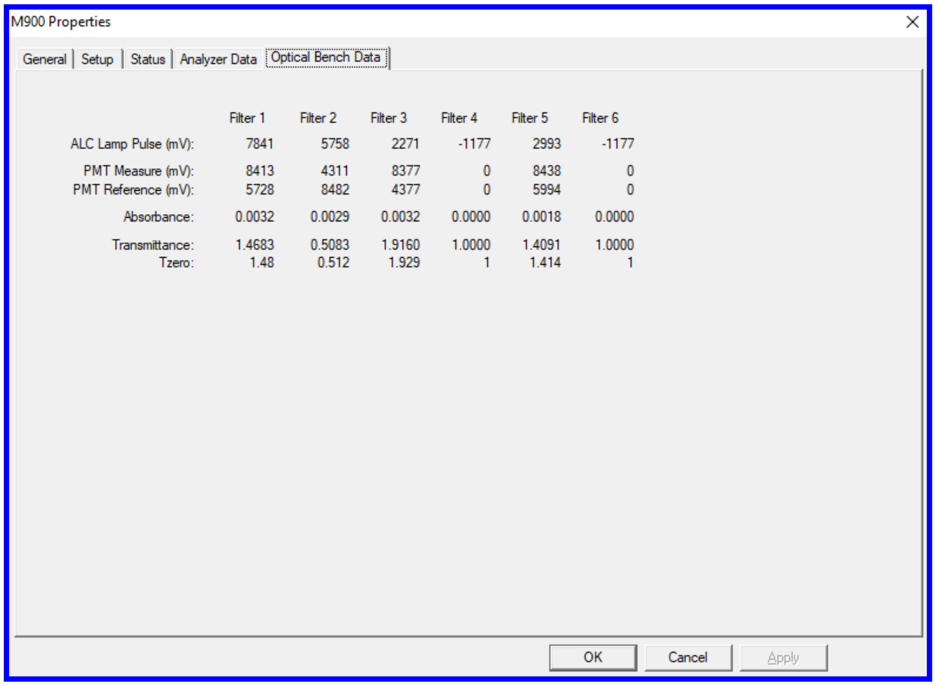


Figure 4-3. Optical Bench Data tab (multi-species analyzers).

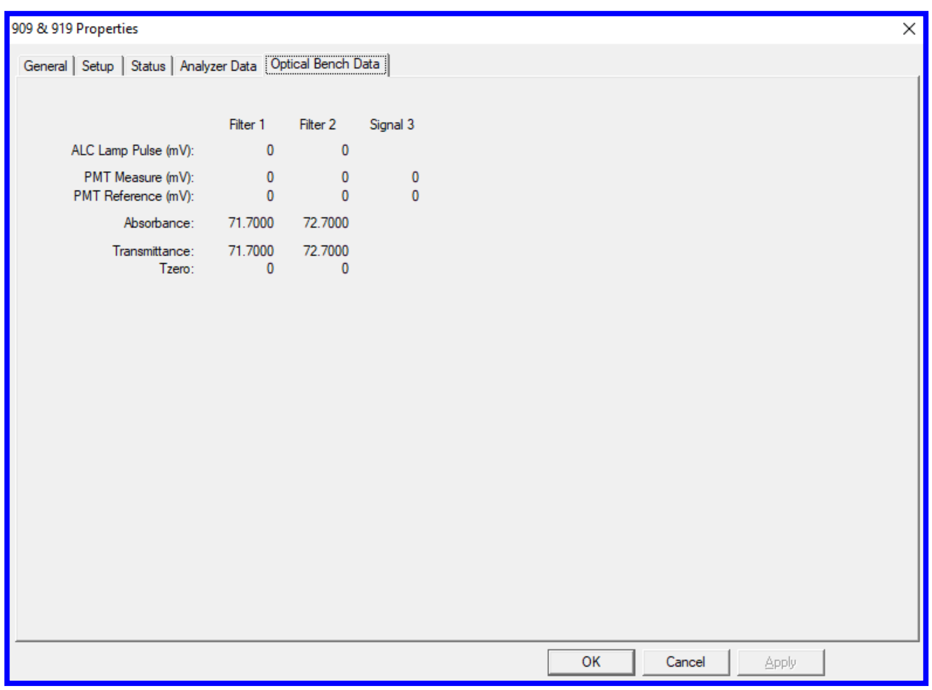


Figure 4-4. Optical Bench Data tab (single-species analyzers).

ALC Lamp Pulse (mV)

Displays the real time lamp pulse measurement of the Automatic Lamp Control function, for each **Filter** location.

PMT Measure (mV)

Displays the real time value of the Photomultiplier Tube *Measure* voltage, for each **Filter** location.

PMT Reference (mV)

Displays the real time value of the Photomultiplier Tube *Reference* voltage, for each **Filter** location.

Absorbance

Displays the real time absorbance values for each **Filter** location.

Transmittance

Displays the real time transmittance values for each **Filter** location.

Tzero

Displays the real time PMT signal transmittance, for each **Filter** location, with Zero gas in the sample system. It is adjusted automatically whenever the analyzer is Zeroed.

NOTE

*To back out of this screen or to view or set up other system information, choose another tab. Clicking **OK** or **Cancel** will take you back to the Configurator Software main window. You will have to re-establish computer-analyzer communications (select **Device Properties** from the **Edit** menu).*

Signal 3

Analyzer Models 909, 919 only (single-species).

Displays the real time baseline measurement of the *Measure* and *Reference* PMT signals in an off-state.

MODES OF OPERATION

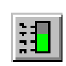
Any settings you define for a mode will be retained by the system when you change the mode or exit the program.

Any display or scan parameters that you define for a mode will not be transferred to a new mode when you switch modes. However, the system will continue to scan when you change modes.

Meter Mode

Meter mode allows you to view information in a meter-type format (Figure 5-1). Alarms can be set up and displayed on the meter to view the current reading in relation to the High and Low alarm limits defined. You can also define unique scan, display, and alarm output settings.

To set up a Meter mode display:

1. Select **Meter** from the **Mode** menu or click  from the **Standard Toolbar.**

2. Select a meter by clicking on one. A yellow border around the meter indicates it is active.

3. Right-click the active meter and define the **Scan**, **Display**, and/or **Alarm** settings for the meter.

4. Repeat Steps 2 and 3 to add more meters.

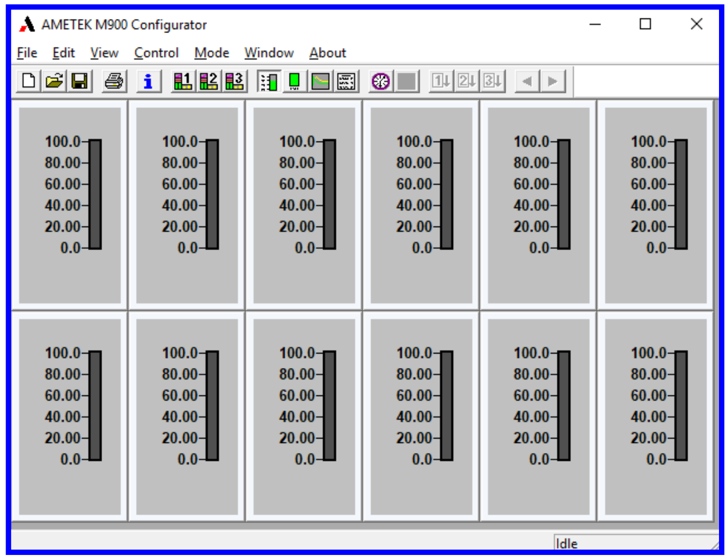


Figure 5-1.
Meter mode display.

While working in Meter mode:

- Each meter has a bar representing a measured value. Text under the meter displays the numeric value of the measured parameter.
- Each meter can be set to display alarm limits. As long as the measured value is within the high and low alarm limits, the meter bar appears in *green*.

  A *yellow* meter bar indicates an alarm Warning condition.

  A *red* meter bar indicates an alarm Fault condition.
- Any other actions associated with alarms are activated if the limit is exceeded (e.g., running an information file, or setting off a digital or analog output).
- Before changing meter properties, you must select the meter by clicking on it. The meter will be highlighted with a *yellow* border when selected.

Annunciator Mode

Annunciator mode (Figure 5-2) allows you to track whether a measured parameter is within acceptable user-defined limits using a simple color/ text indication.

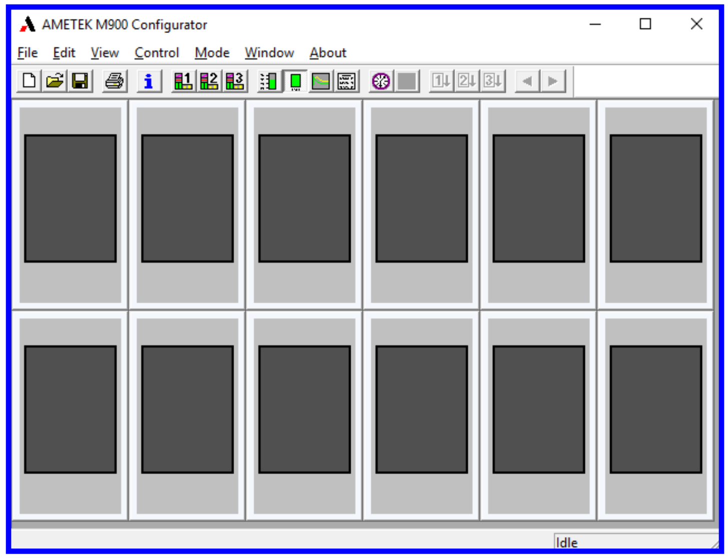


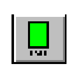
Figure 5-2. Annunciator mode display.

If the level is:

WITHIN the alarm limits defined	=	GREEN	=	OK
ABOVE the High alarm warning level	=	YELLOW	=	HIGH
ABOVE the High alarm limit	=	RED	=	HIGH
BELOW the Low alarm warning level	=	YELLOW	=	LOW
BELOW the Low alarm limit	=	RED	=	LOW

You can set up multiple indicators, each corresponding to a different gas species. You can also define unique scan, display, and alarm output settings.

To set up an Annunciator mode display:

1. Select **Annunciator** from the **Mode** menu or click  from the **Standard Toolbar.**
2. Select a display by clicking on one. A yellow border around the display indicates it is active.
3. Right-click the active display and define the **Scan**, **Display**, and/or **Alarm** settings for the display.
4. Repeat Steps 2 and 3 to add more displays.

While working Annunciator mode:

- Annunciator mode is normally used to define alarm limits so that you can view – using visual indicators – whether the selected value is within the alarm limits.

- For each channel, a *green* display indicates the value is within acceptable limits.

  A *yellow* display indicates an alarm warning.

  A *red* display indicates an alarm condition.

- Before changing the display properties, you must select the display by clicking on it. The display will be highlighted with a *yellow* border when selected.

Trend Mode

Trend mode allows you to view trends of measured parameters in a graphical format (Figure 5-3). You can also define unique scan, display, and alarm output settings.

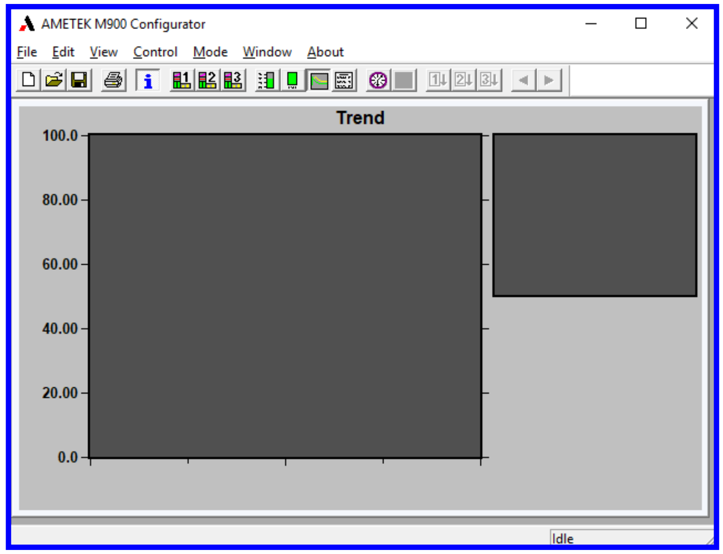
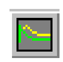


Figure 5-3. Trend mode (graph) display.

To set up a Trend mode graph:

1. Select **Trend** from the **Mode** menu or click  from the **Standard Toolbar.**

2. Select a display by clicking on one. A yellow border around the display indicates it is active.

3. Right-click the graph and define the **Scan**, **Display**, and/or **Alarm** settings for the graph.

While working in Trend mode:

- The main Trend mode window displays each channel as a colored line. The Y-axis displays partial pressure or measured value; the X-axis displays time.

- You can view the exact value of a trend line by holding down the left mouse button in the trend graphical display area. Display the **Data File Toolbar** to view the time of each data point.

Tabular Mode

Tabular mode allows you to view information in a textual, table-type format (Figure 5-4). You can also define unique scan, display, and alarm output settings.

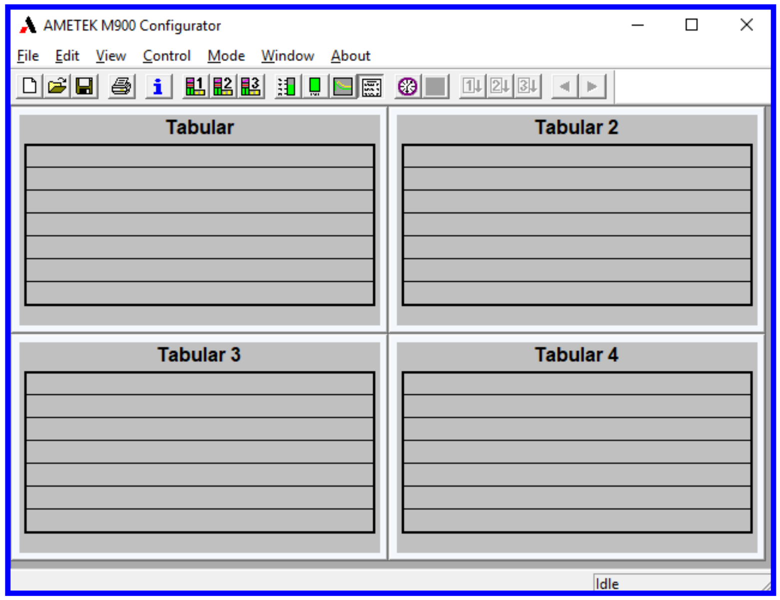
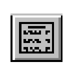


Figure 5-4.
Tabular mode display.

While working in Tabular mode:

- If an alarm was defined and the alarm has been exceeded, an alarm indicator will appear to the right of the main table.
- You can copy any of the columns from a **Tabular** display window to the clipboard. See also “Copying Magnitudes” and “Copying Channels” in Chapter 11 for more information.
- Before changing the display properties, you must select the display by clicking on it. The display will be highlighted with a *yellow* border when selected.

To set up the software for Tabular mode:

1. Select **Tabular** from the **Mode** menu or click  from the **Standard Toolbar.**
2. Select a display by clicking on one. A yellow border around the display indicates it is active.
3. Right-click the active display and define the **Scan**, **Display**, and/or **Alarm** settings for the display.
4. Repeat Steps 2 and 3 to add more displays.

Custom Modes

Custom mode allows you to create custom setups that can include all scanning, display, and alarm output options. This is done from the **Set Custom Mode Menu** dialog box (Figure 5-5). Custom mode setups can include either a single mode display window or multiple mode display windows. Using Custom mode, you can create a unique mode display by mixing and matching the best features of various modes.

For example, you can customize the window to show one Meter mode display window, one Trend mode window, and two Annunciator windows. Or, you could set up two Trend mode display windows, or two Tabular mode windows.

Three default custom mode setups are included with the Configurator Software and more can be added as needed. For each display window added in Custom mode, the scanning, displays, and alarm output options are set as if in that mode.

For example, if adding a Meter mode window within the Custom mode, all settings for that window are defined as if in Meter mode.

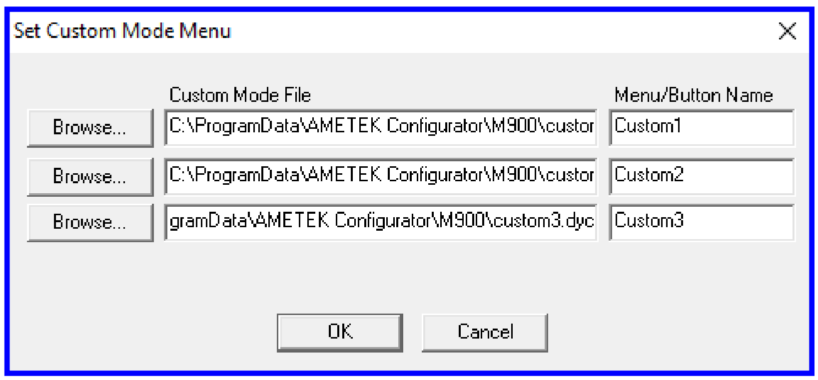
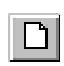


Figure 5-5.
Set Custom Mode Menu dialog box.

To create a Custom Mode:

1. Select **New** from the **File** menu or click  on the **Standard Toolbar.**

2. Select **Add Display** from the **Edit** menu and select the type of display you want to add from the list of standard mode types. Or, use the Custom mode icons on the **Custom Mode Toolbar** to add different displays.

3. Specify the data source. Select the applicable source of data from the **Data Source** group by clicking **Device** and then selecting the device you want to enable.

4. Repeat Steps 2 and 3 to add others displays, if desired.

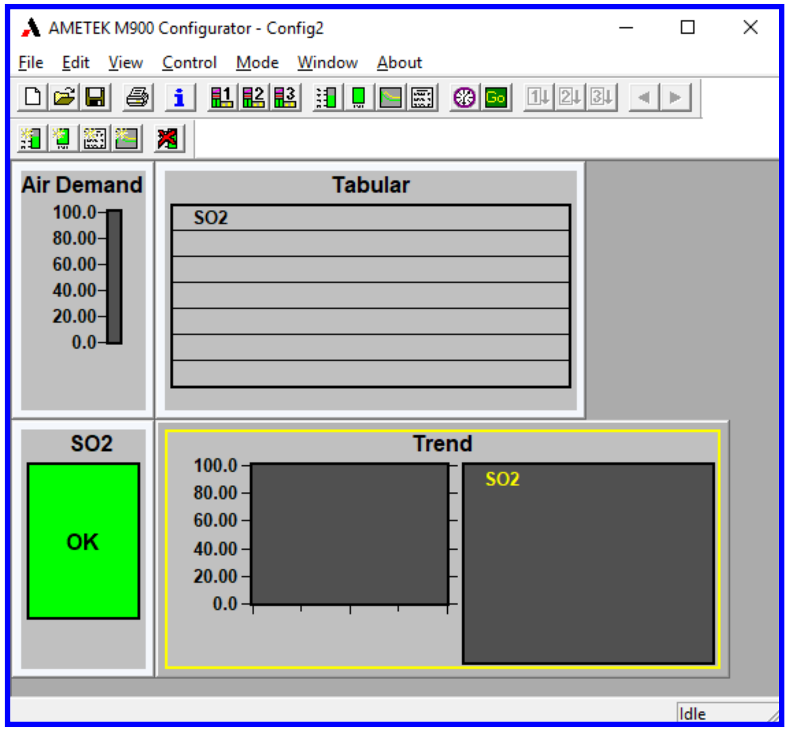


Figure 5-6. Custom Mode display, with Meter, Tabular, Annunciator ("Trend"), and Trend modes all in one.

5. Select **Save As** from the **File** menu to save the Custom mode. Or click one of the icons on the **Standard Toolbar** to save the Custom mode to one of the predefined Custom mode file names (custom1.dyc, custom2.dyc, or custom3.dyc). Custom mode files are given a **.dyc** file extension.

6. To retrieve the Custom mode file at a later time, select **Open Configuration** from the **File** menu. If you used one of the predefined icons, double-click one of the files to retrieve it.

Moving or Resizing a Window in Custom Mode

Select the display window to move or resize. The window is highlighted with a *yellow* border.

- To move the window, press and hold down the mouse button (just an outline of the window is visible) while moving the display window, then release the mouse button.
- To resize the window, use standard Windows methods.

Adding a Display Window in Custom Mode

1. From the **Edit** menu, select **Add Display**. Choose the type of display window to add.

2. Select the data source for the display window.

3. The system adds a display window to the **Custom** mode window.

Deleting a Window in Custom Mode

1. Click on the window to be deleted. The window is highlighted with a *yellow* border.

2. Select **Delete Display** from the **Edit** menu, press the **Del** key on the keyboard, or click  from the **Custom Mode Toolbar** to delete the display window.

Saving Custom Mode Files

1. Select **Save As** from the **File** menu . You can save the Custom mode setup under a new name or use one of the predefined icons.

2. Select the **Save** button to save the file.

3. By default, the system places these files in the folder where the Configurator Software is installed and gives the file a **.dyc** extension.

If you save a **Custom** mode file in the install folder with the name "start-up.dyc" it will automatically be opened when the program starts.

Opening Custom Mode Files

1. Select **Open Configuration** from the **File** menu or click  from the **Standard Toolbar.**

2. Navigate to the location of the **Custom** mode file to open.

3. Select the Custom mode file and click **Open**.

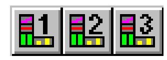
Adding Custom Mode Files to the Mode Menu

1. Select **Set Menu** from the **Mode** menu to view the **Set Custom Mode Menu** dialog box (Figure 5-5). You can associate a Custom mode file to appear at the bottom of the **Mode** menu.

   You can also provide a menu/button name to appear instead of the file name at the bottom of the menu.

2. Navigate to the location of the Custom mode file using the **Browse** button.

3. To enter a name that will appear at the bottom of the **Mode** menu, enter a name in the **Menu/Button Name** text field.

4. To recall any of these files, click one of the  icons.

SETTING PREFERENCES

The **Preferences** dialog box allows you to set up parameters that define how Tabular mode the files will be saved.

To set preferences, select **Preferences** from the **Edit** menu.

- **DDE Item Separator**
  Select the character that will separate multiple data items in a Dynamic Data Exchange (DDE) message.

- **Trend Colors**
  Set the default trend channel colors.

- **Data file size**
  Set the maximum size for a data file. This can be an integer between 1 and 16. The normal value is 1 megabyte. Setting the data file size to a higher value will increase the size of your data files as well as the size of the trend graph buffer. As a result of this increase, it will require more disk space and memory.

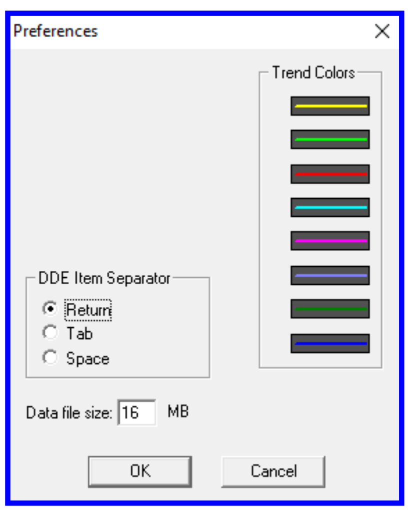


Figure 6-1. Preferences dialog box.

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SCANNING DATA

This chapter contains information on how to scan data and how to link data from a different display. Analyzer data that is scanned can be displayed on the screen in any of five formats (or modes) based on your application. See Chapter 5 – Modes of Operation and Chapter 8 – Setting Up the Display for detailed information about setting up modes and defining their parameters.

Getting Started

NOTE

A configuration file has been included with the Configuration Software.

From the **File** menu, select **Open Configuration** to open the DataLogSetup.dyc file. This should be in the same directory in which the Configurator Software has been installed. This configuration file sets up the software to display the:

- Trend graph of real-time concentration,
- Track and hold concentration (if used),
- Measure and reference PMT signals, and
- Analog inputs.

Once the file is open, click 

on the **Standard Toolbar** to start scanning data.

Defining Scan Settings

Define the type of information you want to gather from the selected device. To do this, right-click on the display window for the device you have selected and then click **Scan** from the context menu. The **Properties** dialog box appears with the **Scan** tab active.

NOTE

*For **Trend** and **Tabular** modes you must first select a channel before you can define scan settings. To do this, select a **Channels** button.*

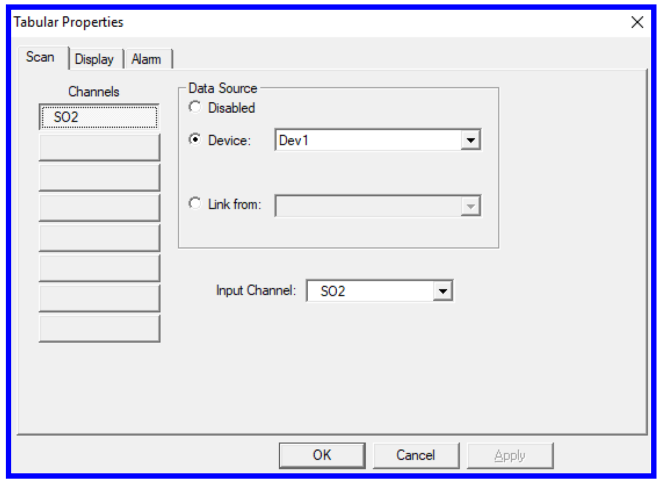

Figure 7-1.
Scan properties setup screen.

Data Source

Select the device from which to scan or temporarily disable the scanning device.

- **Disabled**
  Select this option to disable the display of the selected channel.

- **Device**
  Select this option and use its list box to select the device from which to scan.

- **Link from**
  Data can be linked from one window into another. This can save scanning time since the system only needs to scan the data one time. To do this:

  1. Select the display window that will receive the linked data from another data source.

  2. Right-click over the display window and then click **Scan** from the context menu that appears.

  3. From the **Data Source** group, select the **Link from** button.

  4. Select the data source to link from using the **Link from** list box.

Starting a Scan

To start a scan, click 

or select **Scan** from the **Control** menu. The message "**Scanning**" and the scanning progress will appear in the **Status Bar** at the bottom of the window (if it has been enabled).

If you have scheduled scans at timed intervals and the system has finished a scan and is waiting to start the next scan, the time remaining before the start of the next scan is displayed.

"Idle" is displayed in the **Status Bar** when the system is not scanning.

Stopping a Scan

Click 

or select **Scan** from the **Control** menu to toggle off the scan.

Scheduling Scans

Select **Schedule** from the **Control** menu or click  on the **Standard Toolbar** to view the **Schedule** dialog box.

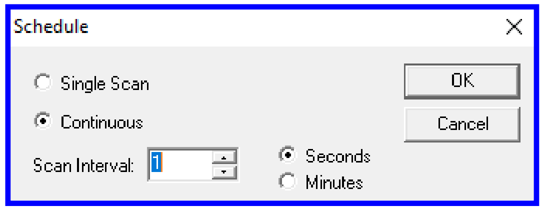

Figure 7-2. Schedule Scan dialog box.

Single Scan radio button

Select this to command the software to run a single scan when you click . The system will stop scanning after one scan.

Continuous radio button

Select this to command the software to run scans at timed intervals when you click .

Scan Interval text field

Type a number to specify the time delay between scans. The unit this number represents depends on whether the scans were scheduled using seconds or minutes as the time interval.

Seconds

Select this option to use seconds as the interval between successive scans, as defined by the number specified in the **Scan Interval** text field.

Minutes

Select this option to use minutes as the interval between successive scans, as defined by the number specified in the **Scan Interval** text field.

SETTING UP THE DISPLAY

To set up the display for a mode, right-click on a display window and then click **Display** from the context menu that appears. The **Properties** dialog box is displayed, with the **Display** tab active. For modes using channels – Trend and Tabular modes – you must first select a channel before you can define the scan settings.

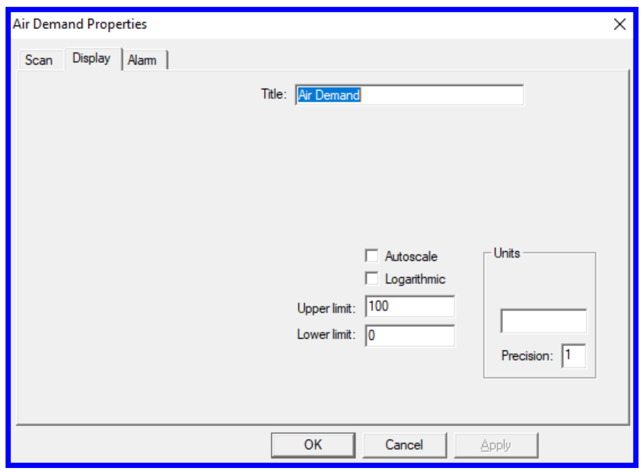

Figure 8-1.
Display Properties dialog box.

Title

Type the title for the display window. It will then appear in the title bar for that window and in other areas of the software to identify the display window.

Autoscale check box

Applies to **Meter** mode only. When selected, the system automatically sets the Y-axis based on the highest value from the previous scan. This will also override the Y-axis. As the highest peak increases or decreases, the display scale is changed to accommodate the changing highest peak.

Logarithmic check box

Applies to **Trend** and **Meter** modes only.

Checked	The software uses a logarithmic scale to display readings.
Not Checked	The software uses a linear scale to display readings.

Upper limit

Applies to **Trend** and **Meter** modes only. This value is used only when the **Autoscale** check box is not checked. Enter the upper limit to display on the Y-axis.

Lower limit

Applies to **Trend** and **Meter** modes only. This value is used only when the **Autoscale** check box on the **Display** tab is not checked. If the **Logarithmic** check box is selected, use this text field to enter the number of logarithmic decades to display on the Y-axis using the upper limit as the top of the display range. If the Logarithmic is not checked, enter a value into this text box for the lower limit.

Units

This is the value in which your results will be displayed.

- In the **Units** text field, type in the units on which you want the scanned information displayed.
- **Precision**
  Defines the number of digits after the decimal point to be shown. For example, if the precision is set to 2, a reading might be 5.22.

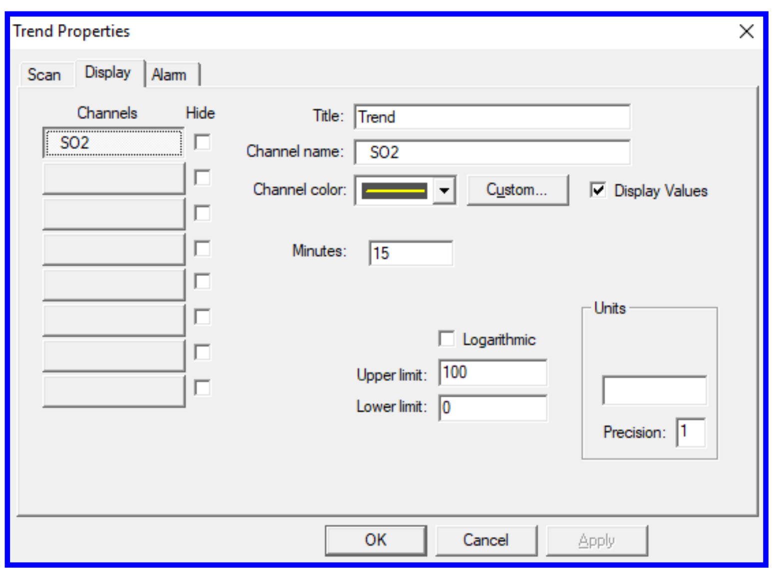

Figure 8-2. Display Properties setup screen.

Channel name

Applies to **Trend** and **Meter** modes only. Names the displayed channel. Select one of the **Channels** buttons and enter a name for it in the **Channel name** text field.

Channel color

Applies to **Trend** mode only. Defines a different color for the displayed channel. A custom color can also be chosen by clicking on the **Custom** button and selecting a color.

Minutes

Applies to **Trend** mode only. Defines the time interval to include on the display.

Display Values

If checked, displays channel values in **Trend** mode.

Hide check boxes

Applies to **Trend** mode only. If checked, the data channel will not be displayed but will continue to track the data. This is useful when viewing a scan that overlaps another scan.

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SETTING ALARMS

To set alarms, right-click on a display window and then click **Alarms** from the context menu. The **Properties** dialog box is displayed, with the **Alarm** tab active.

NOTE

The alarms discussed in this chapter are used by the Configurator Software only. They are not the same as the concentration alarms on the analyzer. The analyzer concentration alarms operate independently of the Configurator Software.

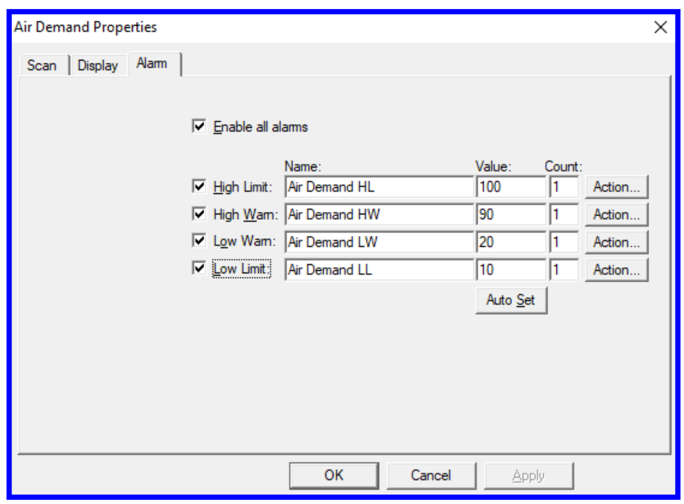

Figure 9-1. Alarm properties setup screen.

For Trend and Tabular modes, first select the channel as the source of the alarms before you define the alarm values. Setting alarms includes defining alarm limits and defining the actions that should be taken when an alarm limit is reached. Alarm limits also appear on the main display for the current mode. High and low limit alarms appear in *red*; high and low warning alarms appear in *yellow*.

Enable all alarms

Checked	Enables all high and low alarms.
Not Checked	Deactivated – alarms can be deactivated when, for example, your system is not operating.

High Limit

When checked, enables the High Limit alarm.

Name	Enter a name for the alarm that will be used to identify the alarm to the system.
Value	Enter the high (upper) limit value for the alarm.
Count	Defines the number of consecutive readings that must be above the high alarm limit before the alarm is triggered. Higher count values decrease the possibility that a transient or noise signal will set off a false alarm.

High Warning

When checked, enables the High Warning alarm.

Name	Enter a name for the alarm that will be used to identify the alarm to the system.
Value	Enter the high (upper) limit value for the alarm. Must be lower than the high alarm value.
Count	Defines the number of consecutive readings that must be above the high alarm warning limit before the alarm is triggered. Higher count values decrease the possibility that a transient or noise signal will set off a false alarm.

Low Limit

When checked, enables the Low Limit alarm.

Name	Enter a name for the alarm that will be used to identify the alarm to the system.
Value	Enter the low limit value for the alarm.
Count	Defines the number of consecutive readings that must be below this limit before the alarm is triggered. Higher count values decrease the possibility that a transient or noise signal will set off a false alarm.

Low Warning
When checked, enables the Low Warning alarm.

Name Enter a name for the alarm that will be used to identify the alarm to the system.

Value Enter the low limit value for the alarm. Must be higher than the low alarm value. For analog mode, any mass values that fall below this limit are counted even if they are from the same scan.

Count Defines the number of consecutive readings that must be below this limit before the alarm is triggered. Higher count values decrease the possibility that a transient or noise signal will set off a false alarm.

Auto Set button
When selected, this button automatically sets the alarm levels as follows:

High Limit 10 times the current scan value.

High Warning 5 times the current scan value.

Low Warning 5 times less than the current scan value.

Low Limit 10 times less than the current scan value.

Action button
Choose the **Action** button to view the **Alarm Action** dialog box, where you can specify what action the system should take when the specified alarm is set.

Figure 9-2. Alarm Action dialog box.

Dialog Box

Specify a message to display when the alarm is set.

Message — Enter a message that will be displayed in the **Alarm** dialog box when the alarm is set.

Info File — Enter the name and path of a help file or use the **Browse** button to navigate to the location of a help file and select the file.

This file will be launched when the user clicks the **Information** button in the **Alarm** message box that appears when an alarm is set. For example, the file could suggest what action to take when the alarm is triggered.

Sound

Enter the name and path of a sound file or use the **Browse** button to navigate to the location of the sound files and select a file. This allows you to include warning sound (in addition to text instructions) to alert the operator when the alarm is set.

Test Dialog button

Click this button to test the alarm. The **Alarm** message box will appear. Click **Acknowledge** or **Disable** to close this dialog box. The **Information** button is not currently available.

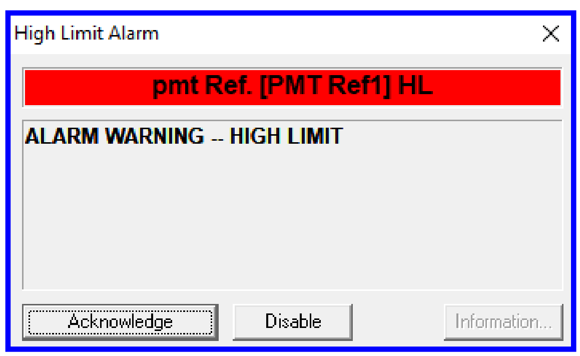

Figure 9-3. Alarm message dialog box.

WORKING WITH DATA FILES

Saving Data Files

Displayed information can be saved for later viewing or printing. Each data record within a data file contains scan data from the display window(s). Data records are created in serial format, as the data becomes available from the system. A Custom mode, for example, will save each display as a data record.

1. Select the display window or windows for which data will be saved.
   - Hold down the **Shift** key and click on each window to be included when selecting multiple display windows.
   - Selecting a highlighted display window deselects the display window.
   - If no display window is selected, the software saves data for all display windows in the mode.
2. Select **Save Data** from the **File** menu or click on the **Data File Toolbar** to view the **Save As** dialog box. From here, you can specify data file attributes.

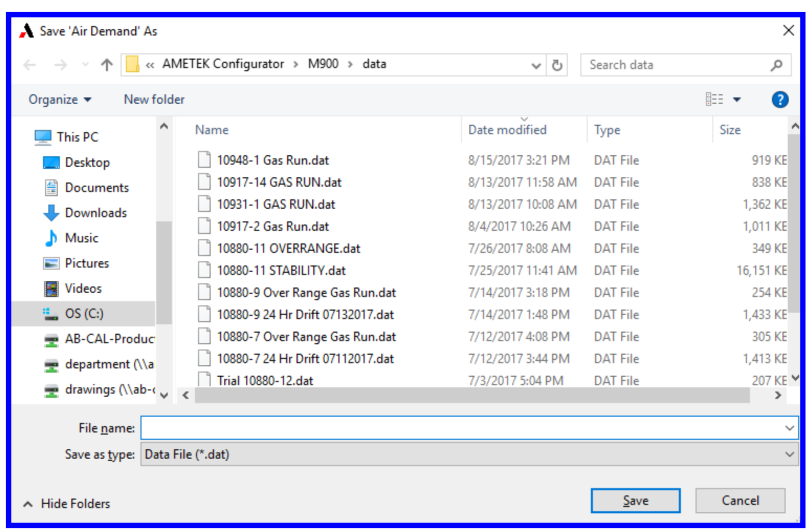

Figure 10-1.
Save As dialog box.

3. Once the attributes are set, enter a name for the data file in the **File name** text field and save it in a folder using standard Windows techniques. Select the following:

   - **Save Now** radio button
     Prompts the system to save the most recent scanned data and then stop scanning. If there are multiple Trend modes within a Custom mode setup, only one can be selected for which to save data.

   - **Start Saving** radio button
     Prompts the system to start saving data with the next scan and to continue saving data files. Activates **When File Full** command.

   - **When File Full**
     Chooses how to handle cases in which the data file becomes greater than 1 megabyte. A disk icon appears in the windows that are selected to have data saved. Active only when **Start Saving** is active.

     Stop radio button
     Stops scanning when the file is full.

     Start new file radio button
     Save the data to a new file. The system automatically appends consecutively numbered digits at the end of each new file it creates so it is easier to follow the order in which the files were created. Each file will be one megabyte in size so the data can be copied to a disk.

4. To stop saving data, select **Stop Saving** from the **File** menu or click  on the Data File Toolbar.

Opening Data Files

1. Select **Open Data** from the **File** menu or click  on the **Data File Toolbar.**

2. Navigate to the location of the data file and select it.

3. Select **Open**. The data file appears on the screen. From here it can either be viewed or printed.

Scrolling Through Data Records

Select either **Data File Position** from the **File** menu or use the **Data File Toolbar** to scroll forward and backward through the data file using the standard recording symbols such as rewind or fast forward.

Converting Data Files

Use this utility to convert the analyzer Configurator Software data files into ASCII text.

1. Select **Convert Data File** from the **File** menu and select one or more data files.

2. Click **Convert** to convert and save the file with a CSV extension.

Printing Data

The Configurator Software will print scanning information in a format similar to how it is displayed on the screen using the display parameters created for that mode. You can view a preview of what will be printed by selecting **Print Preview** from the **File** menu.

In Custom mode, the system prints the currently selected display window. If you do not select a display window, the system prints information for each display window using the required number of pages.

To print data:

1. Select the display window(s) to be printed. If a window is not selected, the entire screen will be printed. To select multiple windows, hold down the **Shift** key while selecting each window.

2. Select **Print** from the **File** menu or click  .

3. Type a print-header comment in the **Display Print** dialog box. This information appears in the title of the printed pages. Click **OK**.

4. If you select **Print** from the **File** menu, a standard Windows **Print** dialog box appears. Set the additional print information.

5. Click **OK** to print the scanning information.

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DYNAMIC DATA EXCHANGE (DDE)

Copying Magnitudes

You can copy any of the columns from a **Tabular** display window to the clipboard.

1. Select **Tabular** mode.
2. Right-click on the mouse and select **Copy Magnitudes** from the context menu. This places the DDE data onto the clipboard.
3. Select **Paste Special** (or **Paste Link**, depending on the version of Windows running) from the **Edit** menu to create the DDE link and continuously update the data in real time.

Copying Channels

1. Select **Tabular** mode.
2. Right-click and select **Copy Channels**. This places the name of the channel onto the clipboard.
3. Use **Paste Special** (or **Paste Link**, depending on the version of Windows running) from the **Edit** menu to create the DDE link and continuously update the channel names in real time.

NOTE

*If you are importing data into Microsoft Excel, select **Preference** from the **Edit** menu. To place the numbers into separate columns, select **Return** from the **DDE Item Separator** group. To place the numbers in rows, select **Tab**.*

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