

PN 074-508-P1F



Trademarks

The trademarks of the products mentioned in this manual are held by the companies that produce them.

Teflon[®] and Tedlar[®] are registered trademarks of Dupont.

Swagelok[®] is a registered trademark of Swagelok Co.

PEEK[™] is a trademark of Victrex plc.

Fischer[®] Connectors is a registered trademark of Fischer Connectors SA.

Intel[®] and Pentium[®] are registered trademarks of Intel.

All other brand and product names are trademarks or registered trademarks of their respective companies.

Disclaimer

The information contained in this manual is believed to be accurate and reliable. However, INFICON assumes no responsibility for its use and shall not be liable for any special, incidental, or consequential damages related to the use of this product.

Due to our continuing program of product improvements, specifications are subject to change without notice.

Copyright

©2022 All rights reserved. Reproduction or adaptation of any part of this document without permission is unlawful.



This declaration is issued under the sole responsibility of the manufacturer INFICON. The object of the declaration is to certify that this equipment, designed and manufactured by:

INFICON Inc. Two Technology Place East Syracuse, NY 13057 USA

is in conformity with the relevant Community harmonization legislation. It has been constructed in accordance with good engineering practice in safety matters in force in the Community and does not endanger the safety of persons, domestic animals or property when properly installed and maintained and used in applications for which it was made.

Equipment Description: CMS5000 Air and Water Monitoring Equipment.

| Applicable Directives: | 2014/35/EU (LVD) |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| | 1999/5/EC (R&TTE / EMC) (The required compliance statement concerning this directive can be found in Chapter 4 of this manual.) |
| | 2014/30/EU (General EMC) |
| | 2011/65/EU (RoHS2) |
| Applicable Standards: | |
| Safety: | EN 61010-1:2010 3 rd Edition |
| Emissions: | ETSI EN 300 328 v1.8.1 (2.4 Ghz) (ERM for equipment operating in the 2.4 GHz ISM band) ETSI EN 301 893 v1.7.1 (5 Ghz) |
| | EN 61326-1: 2013 (Radiated & Conducted Emissions) (EMC – Measurement, Control & Laboratory Equipment) |

CISPR 11/EN 55011 Edition 2009-12 Emission standard for industrial, Scientific and medical (ISM) radio RF equipment

FCC Title 47 Part 15 Class A emission requirements (USA)

Immunity: EN 61326:2013 (Industrial EMC Environments) (EMC – Measurement, Control & Laboratory Equipment) Immunity per Table 2

> ETSI EN 301 489-17 V2.2.1: 2012 (General EMI) (ERM - EMC - Specific conditions for 2.4 GHz)

RoHS: Fully compliant with Exemptions

Wireless Restrictions:

| Countries | Restrictions |
|--------------------------------------------------------|--------------------------------------------------------------------------|
| France | Outdoor use limited to 10mW e.i.r.p. within the band 2454 to 2483.5 MHz. |
| Italy | If used outside of own premises, general authorization is required. |
| Luxembourg | General authorization is required for public service. |
| Romania | On a secondary basis. Individual license required. |
| Austria, Denmark, Finland, Germany, Greece, Iceland | None |
| Ireland, Liechtenstein, | |
| Luxembourg, The Netherlands, | |
| Norway, Portugal, Spain, | |
| Sweden, Switzerland, The United | |
| Kingdom | |

CE Implementation Date: March 10, 2022 UKCA Implementation Date: March 10, 2022

Authorized Representative:

Andrew Digitally signed by Andrew Klamm Date: 2022.04.12 16:13:48 -04'00'

Andrew Klamm Quality Manager INFICON Inc. Samuel Digitally signed by Samuel Carroll Date: 2022.04.12 16:28:58 -04'00'

Sam Carroll Vice President of Engineering, ISS INFICON Inc.

ANY QUESTIONS RELATIVE TO THIS DECLARATION OR TO THE SAFETY OF INFICON'S PRODUCTS SHOULD BE DIRECTED, IN WRITING, TO THE AUTHORIZED REPRESENTATIVE AT THE ABOVE ADDRESS.

Warranty

INFICON warrants that the products sold by it are delivered free from any defect in materials, workmanship and construction, and meet the products' specifications set forth by INFICON.

INFICON warrants the products for two (2) years from the date of shipping invoice of the products to the customer. The warranty excludes carrier gas, GC columns, concentrator tubes, and all other items deemed by INFICON as consumables. In the event the customer finds any defective products which do not meet the aforesaid warranty, it shall give notice to that effect to INFICON. The customer will return defective systems, accessories and parts to be repaired to INFICON or INFICON contracted suppliers after obtaining a Return Material Authorization (RMA) from INFICON Service Department.

INFICON liability under this warranty is limited to such products as are returned, transportation prepaid, to INFICON plant no later than thirty (30) days after the expiration of the warranty coverage and are found by INFICON examination to have failed because of defective workmanship. At INFICON election, it may either repair and return the product, or furnish a replacement product, with transportation paid by INFICON in either case.

This warranty is made and accepted in lieu of all other warranties, express or implied, whether of merchantability or of fitness for a particular purpose or otherwise, as buyer's exclusive remedy for any defects in the product sold hereunder. All other obligations and liabilities of INFICON, whether in contract or tort (including negligence) or otherwise, are expressly excluded. In no event shall INFICON be liable for any costs, expenses or damages, whether direct or indirect, on any claim of defective product, in excess of the price paid by the buyer for the products plus return transportation charges prepaid.

No warranty is made by INFICON for any INFICON product which has been installed, used or operated contrary to INFICON written instruction manual or which has been subject to misuse, negligence or accident, or has been repaired or altered by anyone other than INFICON or which has been used in a manner or for a purpose for which the product was not designed.



| Cover | Page |
|-------|------|
|-------|------|

Trademarks

Disclaimer

Copyright

Warranty

Chapter 1

Introduction

| 1.1 | Introduction |
|-------|-----------------------------------------------------------------------|
| 1.2 | Theory of Operation |
| 1.2.1 | Purge and Trap Sampling System1-2 |
| 1.2.2 | Gas Chromatograph1-3 |
| 1.2.3 | Micro Argon Ionization Detector (MAID) |
| 1.3 | Radioactive Source |
| 1.4 | Definition of Note, Hint, Danger, Warning, and Caution Paragraphs 1-6 |
| 1.5 | How To Contact Customer Support |
| 1.5.1 | Returning CMS5000 |

Chapter 2

Specifications

| 2.1 | Gas Chromatograph Specifications | 2-1 |
|-------|-------------------------------------------------------|-----|
| 2.2 | Micro Argon Ionization Detector (MAID) Specifications | 2-1 |
| 2.3 | Communication | 2-2 |
| 2.4 | Physical Operating Requirements | 2-2 |
| 2.4.1 | Operating Environment | 2-2 |
| 2.5 | Analysis and Protocols | 2-3 |

Chapter 3

| | System Setup |
|-------|---------------------------------------|
| 3.1 | CMS5000 Feature Options |
| 3.1.1 | Analytical Unit |
| 3.1.2 | Sampling Source |
| 3.1.3 | Integration |
| 3.1.4 | Ship Kits |
| 3.1.5 | Laptop Installed with CMS IQ Software |
| 3.2 | CMS5000 Ship Kit Contents |

| 3.3 | CMS5000 Diagram |
|---------|----------------------------------------|
| 3.4 | Mounting Instructions |
| 3.5 | Water Monitoring Assembly Instructions |
| 3.6 | Attaching the Water Sampling Vessel |
| 3.7 | Connecting the Water Supply |
| 3.8 | Air Monitoring Assembly Instructions |
| 3.8.1 | Ambient Air Sampling |
| 3.8.2 | In-line Air Sampling |
| 3.8.2.1 | In-Line Sampling |
| 3.9 | Connecting the Argon Supply |
| 3.10 | Connecting the Power Supply |
| 3.11 | Instrument Equilibration |
| 3.11.1 | Calibration |
| 3.12 | Communication Options |
| 3.12.1 | Connecting the Ethernet Cable |
| 3.12.2 | Attaching the Wireless Antenna |
| 3.12.3 | Connecting the I/O Cable |
| | |

Setting Up Computer Communication

| 4.1 | Introduction | ŀ-1 |
|---------|-------------------------------------------------------------|-----|
| 4.2 | Configuring the Computer for CMS5000 Communication4 | -1 |
| 4.3 | Setting Up Computer Communications4 | -8 |
| 4.4 | Wireless Regulatory Compliance Information4- | 12 |
| 4.4.1 | Regulatory Compliance Information for UNITED STATES Users4- | 12 |
| 4.4.1.1 | FCC Statement | 12 |
| 4.4.1.2 | FCC RF Exposure Statement4- | 13 |
| 4.4.2 | Regulatory Compliance Information for CANADIAN Users4- | 13 |
| 4.4.2.1 | Industry Canada (IC) Notices4- | 14 |
| | | |

Chapter 5

Input/Output Configuration

| 5.1 | Introduction | j -1 |
|-----|------------------------------|-------------|
| 5.2 | Input Method Triggering | -2 |
| 5.3 | Replace Argon Cylinder Alarm | -2 |
| 5.4 | Out of Specification Alarm | -3 |

Software Setup

| 6.1 | Introduction | i-1 |
|-----|----------------------------|-----|
| 6.2 | FTP Connection |)-1 |
| 6.3 | System Integration | 12 |
| 6.4 | Defining Startup Methods6- | 12 |
| 6.5 | Input Methods | 15 |
| 6.6 | Method Sequence | 17 |

Chapter 7

System Status

| 7.1 | Introduction |
|-----|---------------|
| 7.2 | SYS Function |
| 7.3 | TIME Function |
| 7.4 | NET Function |
| 7.5 | STAT Function |
| 7.6 | FIRM Function |

Chapter 8

Basic Operation

| 8.1 | Introduction | . 8-1 |
|-----|-----------------------------------------|-------|
| 8.2 | Default Methods | . 8-1 |
| 8.3 | System Check Standard | . 8-1 |
| 8.4 | Operating CMS5000 using the Front Panel | . 8-2 |

Chapter 9

Review Data Function

| 9.1 | Review Data Function | 9-1 |
|-----|----------------------|-----|
|-----|----------------------|-----|

Chapter 10

System Function

| 10.1 | Introduction |)-1 |
|--------|--------------------------------|-----|
| 10.2 | System Function |)-1 |
| 10.3 | Set Date, Time and Time Zone10 |)-3 |
| 10.3.1 | Set Network Info |)-5 |
| 10.3.2 | Set Language |)-9 |

Chapter 11

Exit Function

| 11.1 | Exit Function. | 11-1 |
|------|------------------------|------|
| 11.2 | Accessing Exit Options | 11-1 |
| 11.3 | Restart System | 11-3 |

| 11.4 | Reboot System |
|------------|-----------------------------------------------|
| 11.5 | Return to CMS5000 Main Menu |
| Chapter 12 | |
| | CMS IQ System Setup |
| 12.1 | Introduction |
| 12.2 | System Setup |
| 12.2.1 | Connecting to CMS5000 |
| 12.2.2 | System Setup Menu |
| 12.2.3 | File Menu |
| 12.2.3.1 | Generate Trend Report12-5 |
| 12.2.4 | Functions Menu |
| 12.2.5 | System |
| 12.2.5.1 | Port Settings |
| 12.2.5.2 | Display |
| 12.2.5.2.1 | Screen Layout |
| 12.2.5.2.2 | Colors |
| 12.2.5.2.3 | Selecting Colors |
| 12.2.5.2.4 | Fonts |
| 12.2.5.2.5 | Restore Colors and Fonts Defaults12-19 |
| 12.2.5.2.6 | Plot |
| 12.2.5.3 | Miscellaneous12-20 |
| 12.2.5.3.1 | Data File Increment Digits12-21 |
| 12.2.5.3.2 | Default Pathways |
| 12.2.5.3.3 | Changing Default CMS Folder12-23 |
| 12.2.5.3.4 | Changing Default NIOSH Database Folder |
| 12.2.5.3.5 | Method Editor in Wizard Mode12-27 |
| 12.2.5.3.6 | Allow Multiple Connections |
| 12.2.6 | Tools Menu |
| 12.2.6.1 | System Setup |
| 12.2.6.2 | System Properties |
| 12.2.6.3 | Sensor Properties12-29 |
| 12.2.6.4 | Set Access Level |
| 12.2.6.4.1 | Changing Access Levels |
| 12.2.6.4.2 | Setting or Changing the Access Level Password |
| 12.2.7 | View Menu |
| 12.2.7.1 | Main Toolbar |
| 12.2.7.2 | Sensor Toolbar |
| 12.2.7.3 | Function Toolbar |

| 12.2.7.4 | Toolbars Use Large Icons | |
|------------|-------------------------------------|-------|
| 12.2.7.5 | Sensor Status Grid | |
| 12.2.8 | Window Menu | |
| 12.2.9 | Help Menu | |
| 12.3 | System Setup Icons | |
| 12.4 | Safety DB | |
| 12.5 | Manage Files | |
| 12.5.1 | Copy Function | |
| 12.5.2 | Backup Function | |
| 12.5.3 | Rename Function | |
| 12.5.4 | Delete Function | |
| 12.6 | Status Icon | |
| 12.6.1 | Status | |
| 12.6.2 | CMS5000 Time Zone | |
| 12.6.2.1 | Setting the Time Zone | |
| 12.6.2.2 | Setting Date and Time | |
| 12.6.2.2.1 | Sync Date and Time to Computer | |
| 12.6.2.2.2 | Enter Date and Time Manually | |
| 12.6.3 | CMS5000 Information | |
| 12.6.4 | Pressure Flows and Temperatures | |
| 12.6.4.1 | Pressures | 12-55 |
| 12.6.4.2 | Method Start Temperature Tolerances | |
| 12.6.4.3 | Carrier Gas Alarm | |
| 12.6.5 | Input/Output | |
| 12.6.6 | Data Settings | |
| 12.6.6.1 | Notification | |
| 12.6.6.2 | Logged Items | |
| 12.6.6.3 | Log Path and Maintain Logs. | |
| 12.6.6.4 | Directories | |
| 12.6.6.5 | Configure FTP Settings | |
| 12.6.7 | Functions | |
| 12.6.8 | Parameters | |
| 12.6.8.1 | Startup Method | |
| 12.6.8.2 | Enable Water Adjustment. | |
| 12.6.8.3 | Enable CkStd Autocal | |
| 12.6.8.4 | Auto Baseline Function | |
| 12.6.8.5 | Run Time Prompt Enable | |
| 12.6.8.6 | Summary Report Options | |
| 12.7 | Front Panel Display Icon | |
| | | |

| 12.8 | CMS5000 Sensor Status Icon | .12-71 |
|----------|----------------------------|---------|
| 12.8.1 | Update CMS5000 Software | .12-72 |
| 12.8.2 | Bring Online | .12-72 |
| 12.8.2.1 | Communication Messages | .12-72 |
| 12.8.3 | Disconnect | . 12-72 |

Data Review

| 13.1 | Introduction to Data Review |
|------------|-----------------------------------|
| 13.2 | Accessing the Data Review Feature |
| 13.3 | Menu Bar |
| 13.3.1 | Data Review Menu |
| 13.4 | Data Review Toolbar |
| 13.5 | Data File Information Window13-0 |
| 13.6 | Reports |
| 13.6.1 | Access Reports |
| 13.6.2 | Summary Reports |
| 13.6.3 | Quantitative Reports |
| 13.7 | Chromatogram Window Options13-10 |
| 13.7.1 | Manual Scale |
| 13.7.2 | View All Data |
| 13.7.3 | View Temperature Profile |
| 13.7.4 | Change Plot Color |
| 13.7.5 | Peaks |
| 13.7.5.1 | Search for Peaks |
| 13.7.5.1.1 | Add Peaks |
| 13.7.5.1.2 | Redo Peak Search |
| 13.7.5.1.3 | Peak Search Parameters |
| 13.7.5.1.4 | Report Preview |
| 13.7.5.2 | Show/Update Current Peaks13-20 |
| 13.7.5.3 | Edit Base Points |
| 13.7.5.4 | Clear the Peaks |
| 13.7.5.5 | Label the Peaks |
| 13.7.5.6 | Change Search Parameters |
| 13.7.5.7 | Previous Search Results |
| 13.7.6 | Control Panel |
| 13.7.7 | Properties |
| 13.8 | How to Access the Scan Cursor |
| 13.9 | Using the Zoom Function |

| 13.10 | Range Tool | 13-34 |
|---------|------------------|-------|
| 13.10.1 | Background Tools | 13-37 |

Run Method

| 14.1 | Run Method Procedure | -1 |
|------|----------------------|--------|
| | | |

Chapter 15

Chromatogram Overlay

| 15.1 | Introduction | <u>;</u> -1 |
|------|------------------------|-------------|
| 15.2 | Chromatogram Overlay15 | j-1 |
| 15.3 | Retention Time Shift | <u>;</u> -4 |
| 15.4 | Chromatogram Subtract | <u>;</u> -5 |

Chapter 16

Method Editor

| 16.1 | The Method Editor | |
|----------|-------------------------------------|--|
| 16.2 | Wizard Mode | |
| 16.3 | Accessing Method Editor | |
| 16.4 | Description Screen | |
| 16.5 | Startup | |
| 16.5.1 | CMS5000 Temperatures (°C) | |
| 16.5.2 | Method Type Selection | |
| 16.6 | Inlet | |
| 16.6.1 | Inlet States | |
| 16.6.2 | GC Temperature Profiles | |
| 16.6.3 | Scan Events | |
| 16.7 | Search | |
| 16.7.1 | Setting Up a Quantitative Search | |
| 16.7.2 | Compound Specific Search Parameters | |
| 16.8 | Data | |
| 16.8.1 | Data File Information | |
| 16.8.2 | Date and Time Appendix | |
| 16.8.2.1 | Date and Time Format | |
| 16.8.3 | Use Default Directory | |
| 16.8.4 | Data Display | |
| 16.9 | Summary Screen | |
| 16.10 | Saving a Method | |

| | Calibration | |
|----------|----------------------------------------------------|---|
| 17.1 | Introduction To Calibration | 1 |
| 17.2 | Method Development | 1 |
| 17.3 | Check Standard | 2 |
| 17.4 | Calibrating the Check Standard | 2 |
| 17.5 | Calibrating the Analytical Method | 0 |
| 17.5.1 | Multiple Standards vs Multiple Calibration Methods | 0 |
| 17.5.2 | Water Standards | 1 |
| 17.5.3 | Air Standards | 4 |
| 17.5.3.1 | Directly Filling Tedlar Bag | 5 |
| 17.5.3.2 | Diluting Gas Samples | 6 |
| 17.5.4 | Running Standards | 9 |
| 17.6 | Using the Calibrate Function17-2 | 0 |
| 17.7 | Water Beta | 6 |
| 17.8 | Glossary of Terms in the Calibrate Window | 7 |
| 17.8.1 | Method | 7 |
| 17.8.2 | Data Files | 8 |
| 17.8.3 | Peak Search Section | 9 |
| 17.8.4 | Calibrate Options | 9 |
| 17.8.5 | Analytes | 9 |
| 17.8.6 | View Reports | 0 |
| 17.8.7 | Calibrate Display | 1 |

Chapter A

Appendix

| A.1 | Modbus Protocol | A-1 |
|-------|----------------------|-----|
| A.2 | Ethernet Integration | A-4 |
| A.2.1 | CMS5000API.H | A-5 |

Chapter 1 Introduction

1.1 Introduction

CMS5000 Monitoring System is used to monitor volatile organic compounds (VOCs) in either water or air without requiring sample pre-treatment. Designed as a stationary instrument, CMS5000 is ideal for long-term VOC monitoring with minimal operator intervention required. (See Figure 1-1 and Figure 1-2.)

Air samples are collected directly into the instrument using an internal sample pump. Water samples are collected using a Purge and Trap sampling system. Samples are trapped on a Tri-Bed concentrator and thermally desorbed onto a low thermal mass gas chromatograph (GC) column. VOCs are separated while traveling through the column and are analyzed using a Micro Argon Ionization Detector (MAID).







1.2 Theory of Operation 1.2.1 Purge and Trap Sampling System

VOCs collected from air or water samples are drawn into CMS5000 by an internal pump and adsorbed onto the Tri-Bed concentrator. For air analysis, air is drawn directly into the instrument.

For water analysis, argon is bubbled into the sample. The bubbles rise and collect at the top, or headspace, of the sample collection tube. As the bubbles rise, a portion of the VOCs pass from the water phase to the gas phase, also known as "partitioning." The ratio of the VOC concentration in the water phase, VOC_{water} , to the concentration in the gas phase, VOC_{gas} , is the partition coefficient. (See equation [1].)

Partition Coefficient =
$$\frac{\text{VOC}_{\text{water}}}{\text{VOC}_{\text{gas}}}$$
 [1]

Each compound will partition according to its solubility in water, its vapor pressure, the specific water sampling matrix, and water temperature. The quantity of VOCs detected is dependent on the partition coefficient. In general, less polar compounds are more readily detected than more polar compounds.

The VOCs are then desorbed into the GC column by heating the concentrator and reversing the carrier gas flow.



CMS5000 contains an onboard permeation tube containing toluene, which is used as a check standard for internal calibration. The lifetime of the permeation tube is approximately 6 to 8 years.

1.2.2 Gas Chromatograph

The gas chromatograph performs a time separation of the sample compounds.

Argon is used as the carrier gas to transport analytes through a capillary column module. The inside of the column is coated with a thin layer of material known as the stationary phase. The stationary phase selectively attracts components in a sample mixture. The mixture of sample compounds in argon gas, also known as the mobile phase, interact with chemicals of the stationary phase. The chemicals which spend the least time interacting with the stationary phase will elute (exit) from the column first.

The time taken for an individual compound to elute from the column is referred to as the *retention time* (RT). If the GC conditions remain constant, a given compound should elute from the column at the same time for each analysis. Retention time is primarily based on polarity, boiling point, and vapor pressure of a compound.

The retention time of a compound is affected by the column temperature. The column is housed in a temperature controlled oven that can be programmed to increase the temperature over time (ramping). As the temperature increases, compounds move through the column faster.

The signal of a gas chromatograph charted over time is called a chromatogram. The chromatogram depicts the separation of various compounds from one another by the action of the gas chromatograph.

1.2.3 Micro Argon Ionization Detector (MAID)

WARNING - Radioactive

Due to U.S. Nuclear Regulatory Commission regulations, the CMS5000 detector oven, which contains a sealed radioactive source, may not be repaired by unauthorized personnel. INFICON will provide the maintenance, repair, replacement, and disposal of the radioactive source, as well as any part of the detector.

The Micro Argon Ionization Detector (MAID) is sensitive to organic compounds having an ionization potential of 11.7 eV or lower, which includes halomethanes, haloethanes, BTEX, and carbon tetrachloride. CMS5000 can detect these compounds, as well as other hydrocarbons, to parts-per-trillion (ppt) levels.

The MAID contains a nickel-63 (Ni-63) radioactive foil and uses argon as a carrier gas. Ni-63 naturally decays into copper-63, a stable isotope, and releases an energetic electron known as a beta particle (β particle). As argon flows over the Ni-63 foil, β particles collide and excite the argon atoms into a metastable state where an electron moves to a higher energy orbit. The excitation energy of argon is approximately 11.7 eV.

Ar \rightarrow Ar^{*} (Energized to excited state)

When an organic molecule (R) enters the detector, it collides with the metastable argon (Ar*). During this collision, energy is transferred to the organic molecule. The organic molecule will ionize if its ionization energy is 11.7 eV or less. The reaction is illustrated as follows:

 $Ar^* + R \rightarrow Ar + R + e^-$

High voltage applied across the detector draws electrons to the anode. As organic molecules are ionized, the ejected electrons produce a change in current, which is measured to produce a chromatogram.

1.3 Radioactive Source

CMS5000 MAID contains a metal foil plated with the radioactive isotope Ni-63, with an activity level of up to 2.4 millicuries. The half-life of Ni-63 is approximately 96 years. The source of the radioactivity is sealed within a stainless steel cylinder, located within the detector cavity. Because the instrument is manufactured at the INFICON facility in East Syracuse, NY, USA, New York State regulations are followed. Per New York State radioactive materials license regulations, a wipe test is required for the Ni-63 source every 36 months. The first test is completed at the factory prior to shipment.



WARNING - Radioactive

Do not attempt to repair the detector cell. If the detector cell does not exhibit an electronic signal, the foil may require replacement. Contact INFICON for repair or replacement of the detector cell.

The State of New York Department of Health, Bureau of Environmental Radiation Protection, and the United States Nuclear Regulatory Commission require either a Specific License or a General License to authorize possession and use of the radioactive source in the instrument. INFICON provides a General License to authorize operation of CMS5000 for all end users. A copy of the terms and requirements of a General Licensee (section 12 NYCRR, part 38:41, table 3, item b) accompany INFICON's transfer of each instrument. The safety requirements of the Specific License or General License are designed to protect the user and the public from unnecessary prolonged exposure to radiation. Following these requirements is imperative.



CMS5000 has no user serviceable parts. Only factory trained personnel should perform service or maintenance on CMS5000.

1.4 Definition of Note, Hint, Danger, Warning, and Caution Paragraphs

- **NOTE:** This Note paragraph provides additional information about the current topic.
- HINT: This Hint paragraph provides insight into product usage.



Failure to heed these messages could result in personal injury.



WARNING - Radioactive

This Warning paragraph warns against the presence of radioactive emissions which may cause physical injury.



CAUTION

Failure to heed these messages could result in damage to the instrument or lead to the loss of data.





1.5 How To Contact Customer Support

Worldwide customer support information is available under **Support > Support Worldwide** at www.inficon.com:

- Sales and Customer Service
- Technical Support
- Repair Service

If experiencing a problem with CMS5000, please have the following information readily available:

- The Sales Order or Purchase Order number of the instrument purchase.
- The version of Windows operating system.
- A description of the problem.
- An explanation of any corrective action that may have already been attempted.
- The exact wording of any error messages that may have been received.

1.5.1 Returning CMS5000

Do not return any component of CMS5000 to INFICON before speaking with a Customer Support Representative and obtaining a Return Material Authorization (RMA) number. CMS5000 will not be serviced without an RMA number.

Packages delivered to INFICON without an RMA number will be held until the customer is contacted. This will result in delays in servicing CMS5000.

Chapter 2 Specifications

2.1 Gas Chromatograph Specifications

| GC Column | . Standard: DB-1, 0.32 mm ID, 30 m, 4.0 μm df or equivalent (Alternately, a custom, application specific module may be installed.) |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Valves | . Stainless Steel body / Teflon $^{	extsf{B}}$ diaphragm |
| Temperature Programmable Column Module Range | . 50-200°C |
| Carrier Gas | . Argon (99.999%) @ 414-689 kPa (60-100 psi) |
| Variable Column | |
| Pressure Control | . Regulator pre-set to 620.5 kPa (90 psi) |
| Sample Inlet | . Air sampling tube or water vessel with purge-and-trap |
| Concentrator | . Tri-Bed |

2.2 Micro Argon Ionization Detector (MAID) Specifications

| Ionization Source | Ni-63 2.4 mCi |
|-------------------|---------------------------------------------------|
| Repeatability | 5 replicates of 1 ppb benzene: RSD calculated <5% |
| Temperature | 110°C (Maximum) |
| Dynamic Range | 3 decades |
| Detection Limit | ppb to ppt for most analytes |

2.3 Communication

| Computer / Data | Internal Intel [®] Pentium [®] processor |
|-----------------------|---------------------------------------------------------------------|
| Integration | TCP/IP USB for local diagnostics I/O Relay Contacts Modbus |
| FTP | Configurable for automated data upload |
| Storage | 160 GB (minimum) hard drive |
| System Status | Status table for system operating changes |
| Wireless Connectivity | 802.11 B/G |
| Display | 6.5 in. VGA color display with touch screen |

2.4 Physical Operating Requirements

| Size | 43 x 83 x 26 cm (16.9 x 32.7 x 10.2 in.) |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Weight | 25 kg (55.1 lb.) |
| Power Requirement | 100/120 V(ac) ± 10% nominal, 50/60 Hz, 3.6 A, or 230 V(ac) ± 10% nominal, 50/60 Hz, 2.2A A/C Max Draw 3.6 A at 120 V |

2.4.1 Operating Environment

| Temperature | 5–45°C (Water and Air) (41–113°F) |
|----------------------------|-----------------------------------------------------|
| Relative Humidity | 5 - 95% relative humidity @ 31°C, non-condensing |
| Altitude | Up to 2000 m (6562 ft.) |
| Installation (Overvoltage) | Category II |
| Pollution Degree | Category II |

2.5 Analysis and Protocols

| Integrated Performance Standard | Toluene permeation tube for check standard calibration |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Detectable Compounds | Volatile organic compounds with an ionization energy under 11.7 eV (e.g., halomethanes, haloethanes, BTEX, and carbon tetrachloride) |
| Acceptance Protocol | Initial setup with 19 compound standard, BTEX standard, or custom standard |
| Data Analysis | Automatic peak detection and area integration for known compounds |

Chapter 3 System Setup

3.1 CMS5000 Feature Options

3.1.1 Analytical Unit

| CMS5000 w/ standard column | 935-600-G1 |
|----------------------------|------------|
| CMS5000 w/ custom column | 935-600-G2 |

3.1.2 Sampling Source

| Water, No Vessel | .935-700-G1 |
|------------------------|-------------|
| Water, Standard Vessel | .935-700-G3 |
| Air, Sampling System | .935-701-G1 |

3.1.3 Integration

| Ethernet, 802.11g, Wireless | . 935-710-G1 |
|-----------------------------------------------------------------------------|--------------|
| I/O Relays and 1 m (3 ft.) cable, Ethernet, and 802.11g Wireless | . 935-711-G1 |
| Modbus, I/O Relays and 1 m (3 ft.) cable, Ethernet, and 802.11g Wireless | . 935-711-G2 |
| Modbus, Ethernet, 802.11g Wireless | . 935-711-G4 |

3.1.4 Ship Kits

| CMS5000 | 120 V (USA) | . 935-721-G1 |
|---------|----------------|--------------|
| CMS5000 | 230 V (Europe) | . 935-721-G2 |
| CMS5000 | 230 V (UK) | . 935-721-G3 |
| CMS5000 | 230 V (China) | . 935-721-G4 |

3.1.5 Laptop Installed with CMS IQ Software

| CMS IQ Software, No Laptop. | . 935-030-G1 |
|-----------------------------------|--------------|
| Laptop w/CMS IQ Software (USA) | .935-731-G1 |
| Laptop w/CMS IQ Software (Europe) | .935-731-G2 |
| Laptop w/CMS IQ Software (UK) | .935-731-G3 |
| Laptop w/CMS IQ Software (China) | . 935-731-G4 |

3.2 CMS5000 Ship Kit Contents

The ship kit contains the following items:

| Power Supply | .930-469-P1 (110 V USA) 930-469-P2 (230 V Europe) 930-469-G3 (230 V UK) 930-469-G4 (230 V China) |
|-------------------------|-----------------------------------------------------------------------------------------------------------|
| Ethernet Cable | . 600-1319-P2 |
| CMS5000 Operator Manual | .074-508-P1 |
| Argon Tank Regulator | .935-412-P1 |
| Argon Fill Line | .935-212-G1 |
| Quick Disconnect Stem | . 059-0329 |
| CMS5000 Training CD | . 074-5020-G1 |

3.3 CMS5000 Diagram

Figure 3-1 CMS5000 dimensional diagram



3.4 Mounting Instructions

WARNING

CMS5000 Monitoring System weighs over 25 kg (55 lb.). Use proper safety procedures and PPE when mounting CMS5000.

CMS5000 Monitoring System requires mounting as well as some minor assembly. The four mounting brackets included in the ship kit need to be attached to the four corners on the back of the CMS5000. Position the bracket on the analytical module by lining up the openings in the bracket to the holes on the CMS5000. Place the washer over the hex bolt, and using a socket wrench, screw in the hex bolt until tight. (See Figure 3-2.) Refer to the instructions included with the bracket hardware.

NOTE: The nuts included with the hex bolts are not needed to mount the brackets to the CMS5000.

Figure 3-2 Attaching the mounting brackets



Structural mounting hardware is not included. Select the proper mounting hardware. CMS5000 is shipped with four (4) mounting brackets to support the instrument. The mounting surface must be able to support 25 kg (55.1 lbs), plus the weight of the water vessel or air sampling vessel.

CMS5000 weighs 25 kg (55.1 lbs). All plumbing to and from the sampling vessel must be supported independent of the analytical module, as the system design will not support any additional weight.

For air monitoring, CMS5000 should be mounted in an optimal location for collecting air samples of interest. Avoid locations affected by air currents from heating or cooling systems, doors, windows, or structural openings.



To ensure proper operation when utilizing CMS5000 for continuous water monitoring, it is necessary to determine optimal mounting height and CMS5000 placement. This is to accommodate both the water intake, as well as allow for clearance of the sample collection tube when attaching and removing the sampling vessel. Allow a minimum of a 38.1 cm (15 in.) clearance below the mounted sampling vessel for vessel removal. Verify that CMS5000 is level when mounted or that any slope is less than 5%. (Refer to Figure 3-1 for unit dimensions.)



If CMS5000 is used in a manner not specified by INFICON, the protection of interior components provided by the casing may be impaired.

3.5 Water Monitoring Assembly Instructions

- **NOTE:** If using CMS5000 for air monitoring, skip to section 3.8, Air Monitoring Assembly Instructions, on page 3-10.
- **1** The temperature sensor, or RTD, is unattached and taped to the bottom of CMS5000 for shipment. Remove the tape, guide the excess wire back into the port nearest to the beige sample collection tube mounting bracket located on the bottom of CMS5000.
- **2** Tighten the stainless steel Swagelok[®] fitting 1/4 turn past finger-tight, using a 7/16 in. open-ended wrench. (See Figure 3-3.)



Figure 3-3 Attaching the temperature sensor

3 Install the PEEK[™] purge tube (found in the ship kit) to the left port, inside the beige sample collection tube mounting bracket. (See Figure 3-4.)

CAUTION

Ensure the sample inlet and purge tube are installed in the proper port.

Placing the sample inlet line in the center port during water sampling will allow water to be drawn into CMS5000 causing severe damage.

Figure 3-4 Attaching the PEEK purge tube for water monitoring



- **4** Install the collection tube o-ring into the beige sample collection tube mounting bracket. (Refer to Figure 3-4.)
- **5** Screw the clear acrylic sample collection tube from the ship kit into the beige sample collection tube mounting bracket located on the bottom of CMS5000 until finger-tight. Do not overtighten. (See Figure 3-5.)





Figure 3-5 Attaching the sample collection tube

3.6 Attaching the Water Sampling Vessel

NOTE: If using CMS5000 for air monitoring, skip to section 3.8, Air Monitoring Assembly Instructions, on page 3-10.

The optional calibration and sampling vessels mount to the bottom of CMS5000 using the wing nuts supplied with the vessel. (See Figure 3-6.)



Figure 3-6 Optional calibration and sampling vessels (shown left to right)

NOTE: Calibration and sampling vessel designs may vary.

To attach the sampling vessel to CMS5000:

- **1** Align the four openings on the flange of the sampling vessel with the mounting screw standoffs attached to CMS5000.
- **2** Hold the vessel against the mounting screw standoffs.



3 Secure the sampling vessel in place by threading on the wing nuts until finger-tight. (See Figure 3-7.)

Figure 3-7 Attaching the sampling vessel



The standoffs provide space between CMS5000 and the vessel to prevent water from entering CMS5000 in the event of water overflow. (See Figure 3-8.)



Do not allow water to enter the sampling inlet. Severe damage to CMS5000 will occur.

Figure 3-8 Standoffs to prevent overflow



3.7 Connecting the Water Supply

NOTE: If using CMS5000 for air monitoring, skip to section 3.8, Air Monitoring Assembly Instructions, on page 3-10.

It is the responsibility of the integrator to configure all plumbing. Support the weight of all plumbing lines and associated hardware independently of CMS5000.

INFICON is not responsible for personal injury or damage to CMS5000 that is a result of improper plumbing connections.

Attach the water inlet line to the 1/4 in. threaded side port, at the bottom of the sampling vessel. Attach the outlet line to the 1-1/4 in. threaded side port, at the top of the sampling vessel. The outlet line must be larger than the water inlet line. Flow rate should not exceed 1 L/min. (See Figure 3-9.)

NOTE: The 1-1/4 in. connection at the bottom of the sampling vessel is an optional connection for fast sample turnover or particulate removal.



Figure 3-9 Water flow

3.8 Air Monitoring Assembly Instructions

CMS5000 monitors air via two possible configurations:

- Ambient air sampling, uses an air collection tube with integrated filter to prevent large particulates from entering CMS5000
- In-line air sampling

3.8.1 Ambient Air Sampling

Ambient air sampling requires the air sampling tube. (See Figure 3-10.)

Figure 3-10 CMS5000 air sampling tube



NOTE: The temperature sensor, or RTD, is unattached and taped to the bottom of CMS5000 for shipment. The RTD is designed for water monitoring only. Attaching the RTD is optional for air monitoring and will not affect analysis. Refer to section 3.5, Water Monitoring Assembly Instructions, on page 3-4 for instructions on attaching the RTD.



1 Install the collection tube o-ring into the beige sample collection tube mounting bracket. (Refer to Figure 3-11.)





2 Attach the air sampling tube by threading it into the beige sample collection tube mounting bracket, located on the bottom of CMS5000, until finger-tight. Do not overtighten. (See Figure 3-12.)



Figure 3-12 CMS5000 with air sampling tube attached

3.8.2 In-line Air Sampling

In-line air sampling can be used when calibrating air standards, or when sampling directly from a closed system.

To prepare CMS5000 for in-line air sampling, attach the sample inlet line to the center port. (See Figure 3-13.)







Do not allow water to enter the sampling inlet. Severe damage to CMS5000 will occur if water enters the sampling inlet.

3.8.2.1 In-Line Sampling

The pressure of the sample in the air line must be greater than the pressure of the CMS5000 exhaust, and should not exceed 1 atmosphere (atm). Maintaining the pressure differential will prevent any sample from re-entering the sample path and collecting on the concentrator. The exhaust line is attached to the sample exhaust port via a compression fitting. (See Figure 3-14.) The exhaust line diameter must be greater than or equal to the diameter of the sample inlet line.





An example of in-line sampling setup is shown in Figure 3-15.



Figure 3-15 Example in-line air sampling setup
3.9 Connecting the Argon Supply

User supplied ultra-high purity grade argon (99.999%) is required for optimal operation of the MAID. The included regulator is preset at the factory to 6.2 kPa (90 psi). Connect the argon supply to CMS5000 using the included copper argon supply line and quick connect valve. The fitting for the quick connect valve is located on the left side of the analytical module. (See Figure 3-16.)



Failure to use the recommended argon purity, substituting the copper argon supply line with a permeable material (e.g. Teflon) or adding a join in the line will result in poor instrument performance and possible instrument damage.

Figure 3-16 Connecting the argon supply to CMS5000





3.10 Connecting the Power Supply

- **1** Connect the 4-pin Fischer[®] connector from the power supply to the 4 pin receptacle near the rear of the upper right side of CMS5000.
- 2 Connect the plug end of the power supply to a reliable earthed socket outlet. CMS5000 will power on automatically. CMS5000 does not have an "on/off" switch. (See Figure 3-17.)
- **HINT:** Position the power cord for easy access, since it is used for shutting off and restarting the instrument.
- **NOTE:** CMS5000 should be operated with the front panel door closed and fastened in order to ensure the stability of the heated internal components.





3.11 Instrument Equilibration

When CMS5000 is initially set up, or after prolonged periods of time when CMS5000 is powered off or is not being purged with argon, the MAID detector will require equilibration. Power on the unit and purge with argon for 24 - 28 hours.

CMS5000 contains an onboard permeation tube containing toluene, which is used for internal calibration. The permeation tube is designed to continually emit toluene at a consistent rate when heated to 55° C.

The detector is considered to be equilibrated when a stable response for toluene is observed from consecutive runs of the check standard method. When the instrument is initially set up, or after prolonged periods of time when CMS5000 is powered off, small amounts of toluene may build up and need to be purged before stable operation can be attained. (See section 17.4, Calibration.)

3.11.1 Calibration

Once CMS5000 is equilibrated, the check standard method and analytical method must be calibrated. (See Chapter 17, Calibration.)

3.12 Communication Options

3.12.1 Connecting the Ethernet Cable

The Ethernet port, used to connect CMS5000 to a computer or network, is located on the upper right side of CMS5000 next to the wireless antenna.

- **1** Unscrew and remove the water tight shipping cap.
- **2** Plug the end of the Ethernet cable with the water tight cap into CMS5000. Screw on the water tight cap until finger-tight. (See Figure 3-18.)
- **3** Plug the other end of the Ethernet cable into a computer or network.
- **NOTE:** See Chapter 4, Setting Up Computer Communication for additional information.

3.12.2 Attaching the Wireless Antenna

For wireless communication with CMS5000, the antenna must be attached to the port in front of the Ethernet port. Screw the antenna into the port until finger-tight. (See Figure 3-18.)

3.12.3 Connecting the I/O Cable

The multi-pin I/O receptacle is located on the right side of CMS5000, next to the power supply receptacle. (See Figure 3-18.) Plug the 19-pin Fischer Connector from the I/O cable into CMS5000 and configure the other end of the cable as desired. (See Chapter 5, Input/Output Configuration for more information.)



Figure 3-18 Connecting the Ethernet and I/O

Chapter 4 Setting Up Computer Communication

4.1 Introduction

Communication can be established between CMS5000 and the computer to run analyses and review data from the computer. It is necessary to establish this communication to calibrate CMS5000 methods and setup software parameters. Communication can be established using an Ethernet cable or the CMS5000 wireless connection.

4.2 Configuring the Computer for CMS5000 Communication

In order to communicate with CMS5000, the computer must be assigned a manual IP Address, based on the IP Address of CMS5000.

1 Tap **STAT** on the front panel of CMS5000 to display the **STATUS** screen. (See Figure 4-1.)

Figure 4-1 STAT button



2 The C# (format Cxxxx) of CMS5000 is listed under **Hostname** in the **SYS** tab. Tap **DOWN** to highlight **NET.** (See Figure 4-2.)

Figure 4-2 Accessing NET screen



Beach CMS5000 will have a unique IP address, for example: 10.210.50.107.
 The subnet mask is also displayed on the NET screen, for example: 255.252.0.0. (See Figure 4-3.)

Figure 4-3 NET screen



4 On the computer, click **Start**. (See Figure 4-4.)

Figure 4-4 Start button





4a Hover over Settings and click Network Connections. (See Figure 4-5.)

Figure 4-5 Network Connections



- **NOTE:** Appearance of windows may vary depending on the operating system in use.
- **5** Double-click the desired connection type. (See Figure 4-6.)
 - Local Area Connection to connect with an Ethernet cable
 - Wireless Connection to connect wirelessly

Figure 4-6 Select connection

| le Edit View Favorites Tools | Advanced Help | |
|--------------------------------------|-----------------------------------------------------------------------------------|-------|
| 🌀 Back 🔹 🕥 👻 🥬 🔎 S | earch խ Folders 🔢 - | |
| ddress 🔌 Network Connections | | 💌 🄁 G |
| Network Tasks | LAN or High-Speed Internet | |
| Create a new connection | 1394 Connection Connected 1394 Net Adapter Rep Intel(R) PRO/Wireless 3945A8 | |
| See Also | Local Area Connection Connected Broadcom NetXtreme 57xx Gig | - |
| Network Troubleshooter | | |
| Other Places 🙁 | | |
| Control Panel | | |
| My Network Places | | |
| Wy Computer | | |
| Details (8) | | |
| Network Connections System Folder | | |
| | | |
| | | |



6 The **Connection Status** window will display. Click **Properties**. (See Figure 4-7.)

| Local Area Conr General Support | ection Status | | | | ? × |
|----------------------------------------------|---------------|----------|----------|--------------------------------------|-----|
| Connection Status: Duration: Speed: | | Acquir | ing netw | ork address 01:27:41 10.0 Mbps | |
| Activity Packets: | Sent — 20,035 | <u>е</u> | | Received 23,719 | |
| Properties | Disable | | | Close | |

Figure 4-7 Local Area Connection Status window

NOTE: The same process is followed when entering an IP address for a wired or wireless connection; however, the IP addresses entered for each differ as described in the following sections.



7 On the General tab, scroll down and highlight Internet Protocol (TCP/IP), click Properties. (See Figure 4-8.)

🕹 Local Area Connection Properties ? × General Authentication Advanced Connect using: Broadcom 570x Gigabit Integrated Contr Configure. This connection uses the following items: ☑ T NWLink IPX/SPX/NetBIOS Compatible Transport Protocol AFGIS Protocol (IEEE 802 1x) v2.3.1.7 🗹 🔭 Internet Protocol (TCP/IP) Install. Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks. Show icon in notification area when connected Notify me when this connection has limited or no connectivity OK Cancel

Figure 4-8 Selecting Internet Protocol (TCP/IP) and Properties button

NOTE: If there is more than one Internet Protocol to choose from, select **Internet Protocol Version 4 TCP/IPv4**.

- 8 Select Use the following IP address. (See Figure 4-9.)
- **9** For the first segment, enter the first number of the IP address, displayed on CMS5000. For example, if the IP address is **10.210.50.107**, enter **10** into the first slot. Refer to Step 1, Step 2 and Step 4 of this section to find the IP address for CMS5000.

| nternet Protocol (TCP/IP) P General | roperties | ? |
|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------|
| You can get IP settings assigned this capability. Otherwise, you ne the appropriate IP settings. | d automatically if your networ ed to ask your network adm | k supports inistrator for |
| 🔘 Obtain an IP address auton | natically | |
| ✓ ● Use the following IP addres | s: | |
| IP address: | 10 | |
| Subnet mask: | | |
| Default gateway: | | |
| Obtain DNS server address | automatically | |
| ─⊙ Use the following DNS serv | ver addresses: | |
| Preferred DNS server: | | |
| Alternate DNS server: | | |
| | | Advanced |
| | ОК | Cancel |

Figure 4-9 Entering first segment of IP address

10 For the second segment of the IP address, enter **210** if connecting with an Ethernet cable or **209** if connecting via wireless. (See Figure 4-10.)

Figure 4-10 Entering second segment of IP address

| eneral | |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| You can get IP settings assigr this capability. Otherwise, you the appropriate IP settings. | ned automatically if your network supports need to ask your network administrator for |
| 🔘 Obtain an IP address au | tomatically |
| O Use the following IP add | ress: |
| IP address: | 10 . 210 |
| Subnet mask: | |
| Default gateway: | |
| Obtain DNS server addre | ess automatically |
| Ouse the following DNS s | erver addresses: |
| Preferred DNS server: | |
| Alternate DNS server: | · · · |
| | Advanced |
| | OK Cancel |



- **11** For the third segment of the IP address, add 128 to the number displayed on CMS5000. In this example, adding 128 to 50 equals 178, so **178** would be entered into the third slot. (See Figure 4-11.)
 - **NOTE:** The maximum total number cannot exceed 255. If the total of the third number is greater than 255, add 5 to the original third number.

Figure 4-11 Entering third segment of IP address

| ternet Protocol (TCP/IP) Proj | perties ? |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| General | |
| You can get IP settings assigned au this capability. Otherwise, you need t the appropriate IP settings. | tomatically if your network supports to ask your network administrator for |
| 🔘 Obtain an IP address automatic | ally |
| ─⊙ Use the following IP address: - | |
| IP address: | 10 . 210 . 178 . |
| Subnet mask: | |
| Default gateway: | |
| Obtain DNS server address au | tomatically |
| ─⊙ Use the following DNS server a | addresses: |
| Preferred DNS server: | |
| Alternate DNS server: | · · · |
| | Advanced |
| | OK Cancel |

12 For the fourth segment, enter the last number of the IP address displayed on CMS5000. In this example, 107 would be entered into the fourth slot. (See Figure 4-12.)

| aeneral | |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| You can get IP settings assigned a this capability. Otherwise, you nee the appropriate IP settings. | automatically if your network supports d to ask your network administrator for |
| 🔘 Obtain an IP address automa | atically |
| Use the following IP address: | |
| IP address: | 10 . 210 . 178 . 107 |
| Subnet mask: | |
| Default gateway: | |
| Obtain DNS server address a | automatically |
| Output the following DNS serve | r addresses: |
| Preferred DNS server: | |
| Alternate DNS server: | |
| | Advanced |
| | OK Cancel |

Figure 4-12 Entering fourth segment of IP address

- 13 Repeat steps Step 9 through Step 12 to enter the Subnet mask: 255.252.0.0
- **14** Click **OK** to close the **Internet Protocol (TCP/IP) Properties** window. (See Figure 4-13.)

Figure 4-13 Closing the Internet Protocol Properties window

| eneral | |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| You can get IP settings assigned a his capability. Otherwise, you nee the appropriate IP settings. | automatically if your network supports d to ask your network administrator for |
| Obtain an IP address automa | tically |
| Use the following IP address: | |
| IP address: | 10 . 210 . 178 . 50 |
| Subnet mask: | |
| Default gateway: | |
| Obtain DNS server address a | utomatically |
| O Use the following DNS server | r addresses: |
| Preferred DNS server: | |
| Alternate DNS server: | |
| | |
| | Advanced |
| | |

4.3 Setting Up Computer Communications

- **NOTE:** Setting up communication is an Advanced User function. To change the access level, see section 12.2.6.4, Set Access Level, on page 12-29.
- **NOTE:** CMS IQ must be installed on the computer. Instructions for installation are included with the installation CD.
- **1** Open CMS IQ Software.
- 2 From the **System** menu, select **Properties**. The system properties window will open. (See Figure 4-14.)

Figure 4-14 Selecting Properties from the System menu





3 Click CMS5000 List. (See Figure 4-15.)

Figure 4-15 CMS5000 List button

| UTCD | | ype |
|--------------------------|----------------|----------------------------------------------------------------|
| COM1 | F | 1475 15-232 |
| | | |
| | | |
| lapsTCP is H | apsTCP | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Add P | ort | (to add a Communications Port) |
| Add P CMS500 | 'ort O List | (to add a Communications Port) (to add or remove a CMS5000) |
| Add P CMS500 Berro | 'ort O List | (to add a Communications Port) (to add or remove a CMS5000) |

- 4 Enter the CMS5000 C# or IP address into the Enter New CMS5000 Name or IP Address box. (See Figure 4-16.)
- **NOTE:** The C# (format: Cxxxx) and IP address can be found on the front panel of CMS5000 by tapping **STAT** from the Main Menu. Refer to section 4.2, Configuring the Computer for CMS5000 Communication, on page 4-1.
- 5 Click Add. (See Figure 4-16.)

Figure 4-16 Add CMS5000

| CMS5000/TCP Settings for HapsTCP | X |
|----------------------------------------------------------------------------------------------|-------------|
| CMS5000 List CMS5000/TCP Settings CMS5000 Name or IP Address System Name C0101 C100 | Remove |
| Enter New CMS5000 Name or IP Address: 10.210.50.108 OK Cancel | Add Help |

- **6** The newly added CMS5000 will be displayed in the **CMS5000 List**. (See Figure 4-17.)
- **NOTE:** To make a custom name for the instrument, highlight the System Name box and type in the desired name.



7 Click OK.

Figure 4-17 Closing the CMS5000/TCP window

| CMS5000/TCP Settings for HapsTCP | X |
|----------------------------------------------|--------|
| CMS5000 Name or IP Address System Name C0101 | Remove |
| I Enter New CMS5000 Name or IP Address: | Add |
| OK Cancel | Help |

8 Click OK to close the System Properties window. (See Figure 4-18.)

Figure 4-18 Closing the System Properties window

| System Proper | rties 🛛 🕹 |
|-----------------|---------------------------------------|
| Port Settings | Display Miscellaneous |
| Port HapsTCP | Type HAPS |
| COMI | H5-232 |
| Use TCD is U | L |
| Hapsilerish | 14p\$1CP |
| | |
| , | |
| Add P | Port (to add a Communications Port) |
| CMS500 | 00 List (to add or remove a CMS5000) |
| Remo | ove (to remove a Communications Port) |
| | |
| | OK Cancel Help |



9 The newly added **CMS5000** icon will now be displayed at the bottom of the System Setup window. (See Figure 4-19.) When the CMS5000 icon is overlaid with a gray "X," the CMS5000 is not trying to communicate with the computer.

Figure 4-19 Newly added CMS5000



10 Clicking the CMS5000 icon will begin communication between CMS5000 and the computer, indicated by the absence of the "X" over the CMS5000 Sensor in the System Setup window. (See Figure 4-20.)

Figure 4-20 Active CMS5000 sensor icon



NOTE: If CMS IQ is configured for multiple connections, right click on the desired CMS icon and select **Bring Online.** (See section 12.2.5.3, Miscellaneous, on page 12-20.)

If the CMS5000 icon is overlaid with a blue "X," communication was established and then lost. (See Figure 4-21.) If the CMS5000 icon is overlaid with a red "X," communication cannot be established. (See Figure 4-21.) If either "X" is overlaid on the CMS5000 icon, confirm the computer is connected through either an Ethernet or wireless connection, and the IP address is properly configured. (Refer to section 4.2, Configuring the Computer for CMS5000 Communication, on page 4-1.) If CMS5000 still does not connect to the computer, restart CMS5000. (See Chapter 11, Exit Function.)



Figure 4-21 Communication between CMS5000 and computer has been lost

Figure 4-22 Communication cannot be established between CMS5000 and computer



4.4 Wireless Regulatory Compliance Information 4.4.1 Regulatory Compliance Information for UNITED STATES Users

This section of the Operating Manual lists FCC compliance information for CMS5000 wireless communication.

NOTE: This equipment contains an OEM Embedded Wireless Bridge (Ethernet to Wireless LAN) Module from Quatech Inc.

FCC ID: F4AWLNN551

This device complies with Part 15 of the FCC rules and is subject to the following two conditions:

- **1** This device may not cause harmful interference.
- **2** This device must accept any interference received, including interference that may cause undesired operation.



CAUTION

To maintain compliance with FCC standards and regulations and to ensure the proper operation of the wireless communication system used within CMS5000, ONLY use the antenna that was originally supplied with the instrument. If original antenna is lost or damaged, please contact the INFICON service department for a replacement antenna (IPN 035-0050).

4.4.1.1 FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver



- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for assistance

4.4.1.2 FCC RF Exposure Statement



To satisfy RF exposure requirements, this device and its antenna must operate with a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

4.4.2 Regulatory Compliance Information for CANADIAN Users

This section of the Operating Manual lists Industry Canada (IC) compliance information for CMS5000.

NOTE: This equipment contains an OEM Embedded Wireless Bridge (Ethernet to Wireless LAN) Module from Quatech Inc.

IC: 3913A-WLNN551

This device compiles with RSS-210 of Industry Canada (IC) and is subject to the following two conditions:

- **1** This device may not cause harmful interference.
- **2** This device must accept any interference received, including interference that may cause undesired operation.

4.4.2.1 Industry Canada (IC) Notices

This equipment complies with Canadian RSS-210.



This device has been designed to operate with an antenna having a maximum gain of 5.0 dB. An antenna having a higher gain is strictly prohibited per regulations of Industry Canada (IC). The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and gain should be so chosen that the equivalent isotropically radiated power (IEIRP) is not more than required for successful communications.

Chapter 5 Input/Output Configuration

5.1 Introduction

CMS5000 is equipped with a 19-pin input/output (I/O) port. The optional I/O cable (PN 600-1388-P1) can be configured to allow remote triggering of methods. The I/O cable also allows for the external transmission of alarms indicating that argon cylinder replacement is required, and a component being measured has exceeded a set level. (See Figure 5-1.) The leads of the I/O cable are individually tagged. (See Figure 5-2.)

Figure 5-1 19-Pin I/O port and associated cable



Figure 5-2 Labeling of 19-pin I/O cable leads





5.2 Input Method Triggering

CMS IQ software allows the assignment of up to four input methods. The associated leads on the I/O cable can be configured to trigger the start of the defined methods.

- **1** Define the desired input methods in CMS IQ software. See section 6.5, Input Methods, on page 6-15 for information on defining input methods.
- **2** To trigger the start of a method remotely, the appropriate lead of the I/O cable needs to contact either of the ground leads as follows:

5.3 Replace Argon Cylinder Alarm

When the supply of argon has decreased to a point where CMS5000 can no longer operate, CMS5000 will actuate an internal relay establishing continuity between the **RELAY NO 3** and **RELAY COM3** leads of the I/O cable. The user is responsible for determining how the output signal is integrated into their system. A **REPLACE ARGON CYLINDER!** message will also appear on the CMS5000 front panel, as shown in Figure 5-3.



Figure 5-3 REPLACE ARGON CYLINDER! warning message

5.4 Out of Specification Alarm

Actionable alarms can be defined in a method, for individual analytes, that will trigger an output through the I/O cable when an out of specification result is obtained.

- **1** Open the desired method file in **Method Editor**. (See Chapter 16, Method Editor for more information.)
- 2 Click **Next** in **Method Editor** until the **Search** screen is displayed. (See Figure 5-4.)

| Metho | od File Name | _{s:} Water Purge | 919 Cmpd.mth | | Display Erro | or Information |
|-------|--------------|---------------------------|----------------------------------------------|------------------------|----------------------|-------------------|
| Sear | ch Mode 🛛 | Juantitative | • | | Library Se | arch Parameters |
| | Name | Cal Std | Cal Curve | Create Time | Modified Time | Creator |
| | XQ-4406 | Internal | Quadratic (3 or more points) | ▼ 6/12/2009 8:40:43 AM | 9/12/2011 1:55:31 PM | Edit |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| 1 | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | 20 | 0.0 C.m.h 200.0 G |
| | | | | | _ | |
| | | | | 6.0Ca | | |
| | | entre . | 4.0 Citrila | | | |
| | | | 9 | g | g | ν g |
| | | | 02:3 | 80 | 16:0 | 19:1 |
| ₩ | ande | | 이 년 · · · · · · · · · · · · · · · · · · · | | | Ends |
| 5 6 | | ക്ഷം | 2 | | | |

Figure 5-4 Method Editor - Search window



3 Click **Edit** for the library containing the analyte(s) for which an alarm point is being set. (See Figure 5-5.)

Figure 5-5 Edit library button

| - | od File Name | e: Water Purge | e 19 Cmpd.mth | | Display Error | Information |
|------|--------------|--------------------------------------------------------------------|-------------------------------------------|-------------|---------------------------------------|----------------|
| Sear | rch Mode Q | uantitative | • | | Library Sea | rch Parameters |
| 5 | Name | Cal Std | Cal Curve Quadratic (3 or more points) | Create Time | Modified Time 9/12/2011 1:55:31 PM | Creator |
| | | | | | | |
| | | | | | 20/ | oc.mh 30000 |
| | | ebác | 4.D.C.mh | 600 | inh | |
| | | 860 860 860 800 800 800 800 800 800 800 | 02:30 | 08:30 | 16:00 | 19:15 20:00 |
| | | | | | · · · · | |



4 The **Library Analyte List** window will be displayed. Select the **Actions** tab. (See Figure 5-6.)

| Fiaure | 5-6 | Librar | v Anal | vte L | .ist - | Actions | tab |
|--------|-----|--------|--------|-------|--------|---------|-----|
| | | | , | , | | | |

| Name | | CAS# | BT | Time | Stan | dard | | Conc. | | | 1 |
|-------------------|-------------------|----------|------|---------------------|-------|---------|------------|----------|-------|---------|----------|
| Methylene Chlor | ide | | 03:0 | 33 000 | Analy | /te | | - | | | |
| trans-1,2-dichlor | oethene | | 04:1 | 14 199 | Analy | /te | | - | | | |
| cis-1,2-dichloroe | thene | | 05:0 | 05 700 | Analy | /te | | • | | | |
| Chloroform | | | 05:2 | 20 600 | Analy | /te | | <u> </u> | | | |
| 1,2-dichloroetha | ne | | 06:0 | 05 600 | Analy | /te | • | · _ | | | |
| | earch Parameter / | | | – Template/Calibr | ation | Files — | | | | | |
| Action | Critical Level | C - Min | _ | | | | | | | | |
| Display | | Settings | - | File Name | | Temp | File Saved | Time | Conc. | Unit | _ |
| Benort | | Settings | - | /Water Purge | 6 se | | 9/12/2011 | 10:46: | 0.5 | ppb | 4 |
| riopon | , | oosango | _ | /Water Purge | 36 s | | 9/12/2011 | 11:15: | 3 | ppb | |
| | | | | /Water Purge | 72 s | | 9/12/2011 | 11:44: | 6 | ppb | <u> </u> |
| | | | | | | | | | | | |
| | | | | Calibration Origina | al | | | | | View Re | port |

- **5** Click the analyte name for which an alarm is being set. In this example, **Chloroform** is selected. (See Figure 5-7.)
- 6 Select the checkbox next to **Alarm** and enter the desired alarm set point in the box that is enabled.

| Name | | CAS# | RT | Time | Stan | dard | | | Conc. | | ^ |
|---------------------------|----------------------|----------|------|--------------------|--------|----------|-----------|----------------|----------|---------|------|
| dethylene Chlo | ride | | 03: | 33 000 | Anal | yte | | • | | | |
| rans-1,2-dichlor | roethene | | 04:1 | 14 199 | Anal | yte | | • | | | |
| sis-1.2-dichloroe | athene | | 05: | 05 700 | Anal | yte | | • | | | |
| Chloroform | | | 05:3 | 20 600 | Anal | yte | | • | | | |
| ,z-alchioroetha | ine | | 06: | 05 600 | Anal | yte | | • | | | |
| Chloroform Calibration | Search Parameters Ac | tions | | | | | | | | Shift R | Ts |
| Action | Critical Level | | | - Template/Calib | ration | Files | | | | | |
| Dieplau | | Settings | | [7] N | | T | 51.0 | 1.7. | - | 11.5 | |
| Alarm | ₽ 5 | Settings | | File Name | 6.00 | Temp | File Save | 1 1 (1 1 (| me Lonc. | Unit | |
| Report | 1 | Settings | | Av/ater Purge | 36 s | | 9/12/201 | 1 11 | 1.40 0.5 | ppb _ | ┦╏ |
| | | | | /Water Purge | 72 s | , Г | 9/12/201 | 11 | 1:44: 6 | ppb | |
| | | | | Calibration Origin | al | | | | | View Re | port |
| | | | | | | | | Г | ОК | Canc | el |

Figure 5-7 Setting Alarm set point

NOTE: Alarm set points will correspond to the concentration unit (eg. ppb, ppm) used when calibrating the method. (See section 17.6, Using the Calibrate Function, on page 17-20.)

- 7 Click OK to close the Library Analyte List window.
- **8** Click **Save** to save the method with the desired name. (See Figure 5-8.) *Figure 5-8 Saving the method*

| Meth | iod File Name | e: Water Purge | 19 Cmpd.mth | | | Display Error I | nformation |
|------|---------------|-----------------|------------------------------|----------------------------------------------------------------------------------------|--------------|-----------------|----------------|
| Sea | rch Mode |)uantitative | T | | | Library Searc | h Parameters |
| | Name | Cal Std | Cal Curve | Create Time | Modified Tir | me | Creator |
| 1 | XQ-4406 | 🔲 Internal | Quadratic (3 or more points) | 6/12/2009 8:40:43 AM | 9/12/2011 | 1:55:31 PM | Ed |
| | | | | | | | |
| | | | | | | | |
| | | | | | | 20.0 | .mh 200.0 g |
| | | | 4.0 C min | 60 C mi | h | 2000 | anh 200.03 |
| | | 844c 000,100 | 4.0 C dm la 00 100 | 60 C Int 00 00 00 00 00 00 00 00 00 00 00 00 00 | 1 | 1000 2000 | 51.55 51.55 |

- 9 Once the alarm set point has been defined, when an out of specification result is obtained, an alarm output signal will be sent through the I/O cable. CMS5000 will actuate an internal relay establishing continuity between the RELAY NO 1 and RELAY COM1 leads of the I/O cable. The user is responsible for determining how the output signal is integrated into their system.
- **NOTE:** When running a method sequence and an out of specification alarm is triggered, the alarm will be cleared as soon as the next method in the sequence starts. No user intervention is required to acknowledge or clear an alarm in the software.

Chapter 6 Software Setup

6.1 Introduction

Various software parameters in CMS IQ need to be established for optional CMS5000 operation and communication methods. This includes defining startup methods, method sequences, I/O input methods, and FTP server(s) information.

6.2 FTP Connection

Up to three FTP servers, each with its own unique IP address, user name, and password, can be configured to upload data files and can be enabled or disabled independently.

If an FTP server is enabled, CMS5000 will maintain a queue for uploading data files. After each run, CMS5000 will upload the files onto the queues. If CMS5000 cannot connect or login to an FTP server, the data file will be stored in the queue until another data file is ready to be uploaded. CMS5000 will attempt to upload both the new and the previous data file.

If there is a loss of power to the server, the data files will continue to be stored in the queues. CMS5000 also provides an option to clear the files in the queue if the data is no longer desired.

- **1** Verify that the computer will connect to the FTP server. If the computer can connect to both the FTP server and CMS5000, it can be configured to upload data files.
- 2 To verify the connection, first open Internet Explorer. (See Figure 6-1.)

🖉 Address not valid - Windows Inter - 0 × 💌 🍫 🗶 Google Eile Edit View Favorites Tools Help 🔄 • 🔂 - 🚔 • 🔂 Bage • 🥥 Tools 😂 🕸 🏾 🏉 Address not valid Internet Explorer The address is not valid Most likely causes: There might be a typing error in the address
If you clicked on a link, it may be out of date. What you can try: Retype the address. Go back to the previous page Interne 100%

Figure 6-1 FTP server

3 Enter the FTP address of the server into the address bar using the following format: **FTP:**//<**IP address**>. (See Figure 6-2.)

Figure 6-2 FTP server



4 Press **Enter** on the keyboard. The login window is displayed. (See Figure 6-3.)

Figure 6-3 Pop-Up window

| 3 0- | e ftp://10.21 | 1.1.24/ | | • *, | Google | 2 |
|------------------|------------------|----------------------------|--------------------------------|------------------------|------------------|--------------------------|
| jie <u>E</u> dit | View Favorites | <u>T</u> ools <u>H</u> elp | | | | |
| \$ 48 8 | 🏉 Internet Explo | er cannot display | the webpage | | 🔂 • 🗟 - 🖶 • 🔂 | age 🔹 🎯 T <u>o</u> ols 🔹 |
| - | | | | | | |
| | Internet | Explorer | cannot dicalay t | the webpage | ×I | |
| | miterite | e explorer | | | | |
| | Mos 🕐 | • To log on to thi | is FTP server, type a user nan | ne and password. | | |
| | • 🔍 | ET0 | 10.011.1.04 | | | |
| | 1 | FIP server: | 10.211.1.29 | | | |
| | | User name: | [http://user | | | |
| | Wha | Password: | | | | |
| | | After you log o | in, you can add this server to | your Favorites and ret | um to it easily. | |
| | ~ | | nymously | | | |
| | ۲ | | .,, | Log On | Cancel | |
| | | | | 203 0 | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | • |



- 5 Type the User name and Password of the FTP server.
- 6 Click Log On. (See Figure 6-4.)

Figure 6-4 Entering User name and Password

| e) e) + | @ ftp://10.211 | 1.1.24/ | | 💌 🍫 🗙 Google | 2. |
|-------------|------------------|----------------------|-----------------------------|-----------------------------------------|----------------------|
| Eile Edit y | /jew Favorites | Tools Help | | | |
| 2 42 6 | Internet Explore | er cannot display th | ne webpage | 🚹 • 🖬 - 🖶 · | • 🔂 Bage 🔹 🌀 Tools 🔹 |
| | | | | | |
| | Internet | Explorer | annot dicalay t | bo wohnago | |
| | Interne | t Explorer | | X | |
| | Mos 👰 | To log on to this | FTP server, type a user nan | ne and password. | |
| | • 🔍 | | | | |
| | 1 | FTP server: | 10.211.1.24 | | |
| | | User name: | rtp_user | | |
| | Wha | Password: | ••••• | | |
| | | After you log on | you can add this server to | your Favorites and return to it easily. | |
| | ~ | | mously | | |
| | • | | | Log On Cancel | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| .1 | | | | | |
| • | | | | | |

7 Once the computer connects to the FTP site, a window similar to Figure 6-5 is displayed. Once the connection is verified, click "X" to close the window.

Figure 6-5 FTP site

| e Ede yew Fgroves 10.211.1.24 | e Edit yew Fgrontes Iools Help | • () T <u>o</u> ols • |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Control of the second state of the second | FTP root at 10.211.1.24 The rest of the r | • () T <u>o</u> ols • |
| FTP root at 10.211.1.24 To view this FTP site in Windows Explorer, click Page, and then click Open FTP Site in Windows Explorer. Welcome to the Inficon FTP Site. Please use the incoming Folder to upload/download files. P 06/02/2009 02:54PH Directory CMS 06/02/2009 03:32AL 45,660 (Histor) CAS Ed PT 20090529 08.hps 06/03/200 09:32AL 950 (Histor) CAS Ed PT 20090529 08.hps 06/03/200 09:32AL Directory CMS 05/04/200 01:32AL Directory INFILON 05/04/2000 01:32AL | FTP root at 10.211.1.24 | - |
| FIF FOOL ALLULILILZ4 To view this FTP site in Windows Explorer, click Page, and then click Open FTP Site in Windows Explorer. Welcome to the Inficon FTP Site. Please use the incoming Folder to upload/download files. P 06/02/2009 02:54PM Directory CMS 06/03/2009 03:32AM 935 (MESODO CK Std FT 20090529 08.hps 05/24/2009 06:32PM Directory CMS 05/24/2009 06:32PM Directory CMS 05/24/2009 06:32PM Directory Explorer 05/24/2009 06:32PM Directory CMS 05/24/2009 06:32PM Directory CMS 05/24/2009 06:32PM Directory Explore 05/24/2009 06:32PM Directory CMS 05/24/2009 06:32PM Directory Markange 02/22/2009 07:32PM Directory Markange 02/22/2009 07:32PM Directory Markange 02/22/2009 07:32PM Directory Markange 03/22/2009 07:32PM Directory Markange 05/04/2009 20:35PM Directory Markange 05/04/2009 09:35PM Directory Markange 05/04/2009 09:35PM Directory Markange 05/04/2009 09:32AM Directory Markange 05/04/2009 09:32 | F IP root at 10.211.1.24 | |
| To view this FTP site in Windows Explorer, click Page, and then click Open FTP Site in Windows Explorer. | | |
| No vew us FIF set al wanows Explorer, use Fage, and use vale Open FIF Site in wanows Explorer. Welcome to the Inficon FTP Site. Please use the incoming Folder to upload/download files. P D6/02/2009 02:54EM Directory CMS 45,660 AUSON 02:54EM Directory CMS 45,660 AUSON 02:54EM Directory CMS 45,660 AUSON 02:54EM Directory CMS 45,747/2009 03:24M Directory INFICON APPROVED COMPONENTS LIST 17,757/2009 03:25FM Directory INFICON APPROVED COMPONENTS LIST 17,757/2009 03:54AM Directory MailArchives 15,7247/2009 03:54AM Directory MailArchives 15,7247/2000 03:54AM Directory MailArchives 15,7247/2000 | To view this ETD site in Windows Evaluese, slids Dage, and then slids Onen ETP Site in Windows Evalues | |
| Actionme to the Inficon FTP Site. Please use the incoming Folder to upload/download files. P De/02/2009 02:54PM Directory CMS De/03/2009 09:32AM 55,660 (<u>MS500 Ck Std FT 20090529 05.hes</u> D5/04/2009 06:32PM Directory CM-250 demo D5/24/2009 07:32PK Directory <u>Exchange</u> 22/22/2009 07:32PK Directory <u>Exchange</u> 23/22/2009 07:32PK Directory <u>Exchange</u> 23/22/2009 07:32PK Directory <u>Exchange</u> 23/22/2009 09:35PM Directory <u>Markin</u> 23/23/2008 12:46PK Directory <u>Markin</u> 23/23/2008 12:46PK Directory <u>Markin</u> 26/02/2009 09:32AM Directory <u>Markin</u> 26/02/2009 10:55AM Directory <u>Markin</u> 26/02/2000 12:55AM Directory <u>Markin</u> 26/02/2001 12:55AM Directory <u>Markin</u> 27/2001 12:55AM D | to view this FIP site in windows Explorer, click Fage, and then cack Open FIF one in windows Explore | er. |
| <pre>kelcome to the Inficon FTP Site. Please use the incoming Folder to upload/download files. P %elcome to the Inficon FTP Site. Please use the incoming Folder to upload/download files. P %f03/2000 02:15HM %f03/2000 02:032M %5.660 2M55000 CK Site FT 20090529 08.hps %f03/2000 02:032M %5.660 2M55000 CK Site FT 20090529 08.hps %f03/2000 02:032M %f03/2000 02:032M %f03/2000 02:032M %f03/2000 02:032M %f03/2000 02:05M %f03/2000 02:05M</pre> | | |
| D6/02/2009 02:54PM Directory CMS D6/03/2009 09:32AM 45,660 (M5500 CK Std FT 20090529 08.hes D6/03/2009 09:32AM 398 (M5500 CK Std FT 20090529 08.ret D5/24/2009 06:32PM Directory McHange D5/24/2009 07:32PK Directory McHange D2/22/2009 07:32PK Directory Mathematical D3/22/2009 09:35PK Directory Mathematical D3/22/2009 09:35PK Directory Mathematical D3/22/2009 09:35PK Directory Mathematical D3/22/2009 09:32AK Directory Mathematical D2/02/2009 09:32AK Directory McHange Directory McHange Director | Welcome to the Inficon FTP Site. Please use the incoming Folder to upload/download | files. Pl |
| 06/03/2009 02:54FM Directory CMS 06/03/2009 09:32AM 45,660 CMS500 CK Std FT 20090529 08.hps 06/03/2009 09:32AM 398 Directory CM-200 dems 06/03/2009 02:32FM Directory CM-200 dems 03/04/2009 02:32FM Directory Tecesoale 02/22/2009 07:32FM Directory Tecesoale 02/22/2009 07:32FM Directory TMSTM 02/22/2009 07:32FM Directory TMSTM 02/22/2009 09:32FM Directory TMSTM 1/25/2009 09:35AM Directory TMSTM 1/25/2009 09:35AM Directory TMSTM 05/01/2009 11:35FM Directory Maria 13/02/2009 09:35AM Directory Maria 13/02/2009 09:35AM Directory Maria 13/02/2009 09:35AM Directory Maria 13/02/2009 09:35AM Directory Maria 13/02/2009 09:32AM Directory Maria 13/02/2009 09:32AM Directory Maria 16/02/2009 09:32AM Directory Maria 16/02/2009 10:35AM Directory Maria | | |
| D6/02/2009 02:54PH Directory CMS D6/03/2009 09:32AM 45,660 (M5500 CK Std FT 20090529 08.hps D6/03/2009 09:32AM 398 (M5500 CK Std FT 20090529 08.rqt D5/24/2009 06:32PH Directory McHange D5/24/2009 07:32PH Directory McHange D2/22/2009 07:32PH Directory McHange D2/22/2009 07:32PH Directory McHange D2/22/2009 11:15AM Directory McHange D6/01/2009 01:32PH Directory McHange D5/04/2009 01:32PH Directory McHange D5/04/2009 01:32PH Directory McHange D5/04/2009 01:35AM Directory Matha D5/04/2009 05:35AM Directory Matha D3/23/2000 01:35AM Directory Matha D5/02/2009 05:35AM Directory Matha D5/02/2009 10:35AM Directory McHange D5/02/2001 10:55AM Directory McHange D1/20/2001 12:55AM Directory McHange D1/20/2001 | | |
| 06/02/2009 02:54PH Directory CMS 06/02/2009 02:52AM 55.660 (HS500 CK Etd FT_20090529_08.hps 06/03/2009 05:32AM 55.660 (HS500 CK Etd FT_20090529_08.rqt 05/04/2009 02:32PH Directory CdC-250 demo 03/04/2009 02:32PH Directory CdC-250 demo 03/04/2009 02:32PH Directory CdC-250 demo 02/22/2009 01:32PH Directory HAPSIM 02/22/2009 01:32PH Directory HAPSIM 02/22/2009 01:32PH Directory HAPSIM 02/22/2009 03:32PH Directory HAPSIM 02/22/2009 03:32PH Directory HAPSIM 05/04/2009 11:32PH Directory HAPSIM 05/04/2009 03:53AH Directory Harla 05/04/2009 03:53AH Directory Harla 05/04/2009 03:53AH Directory Harla 05/04/2009 03:53AH Directory Harla 05/04/2009 03:53AH Directory Harla 06/04/2009 10:54PH Directory Harla 06/04/2009 10:50AH Directory Harla | | |
| 06/03/2009 03:32AM 45.660 CK 536 FT 20390523 08.hps 06/03/2009 05:32AM 95 CK5500 CK 536 FT 20390529 08.rqt 05/24/2009 06:32PM Directory BCH-250 demo 03/22/2009 07:32PM Directory Exchange 02/22/2009 07:32PM Directory Exchange 02/22/2009 13:05PM Directory MAISIN 06/01/2009 11:15AM Directory MAISIN 06/01/2009 05:35PM Directory MAISIN 06/01/2009 05:35PM Directory MAISIN 06/02/2009 06:35PM DIRECTORY MAISIN 07/02/009 06:32PM DIRECTORY MAISIN 07/02/009 07/02/02/009 06:32PM DIRECTORY MAISIN 07/02/009 07/02/02/009 06:32PM DIRECTORY MAISIN 07/02/009 07/02/02/009 06:32PM DIRECTORY MAISIN 07/02/009 07/02/02/009 06:32PM DIRECTORY MAISIN 07/02/009 06:32PM DIRECTORY MAISIN 07/02 | 06/02/2009 02:54PM Directory CMS | |
| 06/09/2009 09:32AW 398 CM5500 CK 5td FT 20090529 08.rgt 05/24/2009 06:32HW Directory CM-250 demo 03/04/2009 02:31HW Directory CM-250 demo 03/04/2009 02:31HW Directory CM-250 demo 02/22/2009 07:31HW Directory TMFCOM APPROVED COMPONENTS LIST 02/22/2009 09:32HW Directory IMFCOM APPROVED COMPONENTS LIST 02/23/2009 09:35AW Directory IMFCOM APPROVED COMPONENTS LIST 02/2010/0009 09:35AW Directory IMFCOM APPROVED COMPONENTS LIST 05/02/2009 09:35AW Directory IMFCOM APPROVED COMPONENTS LIST 05/20/2009 09:35AW Directory IMFCOM 05/20/2009 09:35AW Directory IMFCOM 05/20/2009 09:35AW Directory IMFCOM 06/02/2009 10:35AW DIRECTORY IMFCOM 07/02/2009 1 | 06/03/2009 09:32AM 45,660 CMS5000 Ck Std PT 20090529 08.hps | |
| 05/24/2009 06:32FM Directory <u>BCH-250 demo</u> 03/24/2009 07:32FM Directory <u>BCH-350 demo</u> 02/22/2009 07:32FM Directory <u>BCH-350</u> 06/02/2009 11:36H Directory <u>IASSED</u> 06/02/2009 11:36H Directory <u>IASSED</u> 06/02/2009 01:35FM Directory <u>IASSED</u> 06/02/2009 09:35FM Directory <u>MatlArchives</u> 06/02/2009 09:35FM Directory <u>MatlArchives</u> 07/07/001 12:55FM Directory <u>MatlArchives</u> 07/07/07/001 12:55FM Directory <u>MatlAr</u> | 06/03/2009 09:32AM 398 CMS5000 Ck Std PT 20090529 08.rqt | |
| 03/04/2009 02:212H4 Directory <u>Krchang</u> 02/22/2009 07:32H4 Directory <u>Krchang</u> 02/22/2009 01:36HK Directory <u>KrstM</u> 02/22/2009 01:36HK Directory <u>KrstM</u> 02/22/2009 09:05HA Directory <u>KrstM</u> 04/04/2009 09:35AK Directory <u>KrstM</u> 06/01/2009 09:35AK Directory <u>KrstM</u> 06/01/2009 09:35AK Directory <u>KrstM</u> 06/02/2009 09:32AK Directory <u>KrstM</u> 07/02/2009 09:32AK Directory <u>KrstM</u> | 05/24/2009 06:32PM Directory DCM-250 demo | |
| 02/22/2009 07:32FW Directory <u>HARSEN</u> 06/02/2009 01:36FW Directory <u>HARSEN</u> 06/02/2009 11:5AM Directory <u>HARSEN</u> 02/102/000 12:35FM Directory <u>Intel</u> 02/102/000 12:35FM Directory <u>Intel</u> 02/102/000 12:35FM Directory <u>HARSEN</u> 02/102/000 12:35FM Directory <u>HARSEN</u> 12/02/007 06:34FM Directory <u>HARSEN</u> 02/02/007 06:34FM Directory <u>HARSEN</u> 06/02/2009 09:32AM Directory <u>HARSEN</u> 06/02/2009 10:50AM Directory <u>HARSEN</u> | 03/04/2009 02:21PM Directory Exchange | |
| 02/22/2007 01:96FM Directory <u>HAPSIM</u> 60/01/2003 11:15AM Directory <u>HAPSIM</u> 02/25/2003 06:02FM Directory <u>HITCOM APPROVED COMPONENTS LIST</u> 02/25/2003 09:02FM Directory <u>Haria</u> 06/01/2003 01:55FM Directory <u>Haria</u> 06/01/2003 01:945AM Directory <u>Haria</u> 02/2012/007 06:94FM Directory <u>Haria</u> 06/02/2003 01:50AM Directory <u>Haria</u> 06/02/2003 01:50AM Directory <u>Maria</u> 06/02/2003 01:50AM Directory <u>Maria</u> 06/02/2003 01:50AM Directory <u>Maria</u> 06/02/2003 01:50AM Directory <u>Maria</u> | 02/22/2009 07:32PM Directory freescale | |
| 06/01/2009 11:15AM Directory INFICOM APPROVED COMPONENTS LIST 02/10/2009 12:35FM Directory Intel 02/10/2009 02:35AM Directory MailArchives 05/28/2009 09:45AM Directory MailArchives 05/28/2009 09:45AM Directory MailB 00/23/2009 09:32AM Directory MailB 00/23/2009 09:32AM Directory Matchdesign 06/02/2009 09:32AM Directory MailB | 02/22/2007 01:36PM Directory HAPSIM | |
| 01/25/2008 08:02FM Directory <u>Intel</u> 02/07/2008 09:02FM Directory <u>Intel</u> 06/01/2009 09:35AM Directory <u>Harlarchives</u> 05/26/2009 09:45AM Directory <u>Harlaco</u> 12/09/2007 06:45FM Directory <u>Harlaco</u> 05/02/2009 09:32AM Directory <u>Harla</u> 06/02/2009 10:50AM Directory <u>Harla</u> 06/02/2009 10:50AM Directory <u>Harla</u> | 06/01/2009 11:15AM Directory INFICON APPROVED COMPONENTS LIST | |
| 02/10/2009 12:35PM Directory <u>MailArchives</u> 06/10/2009 09:45AM Directory <u>MailArchives</u> 05/28/2009 09:45AM Directory <u>Maila</u> 03/23/2009 12:45PM Directory <u>Maila</u> 03/23/2009 12:45PM Directory <u>Maila</u> 06/02/2009 10:50AM Directory <u>MCZ</u> 06/02/2009 12:50BM Directory <u>MCZ</u> | 01/25/2008 08:02PM Directory Intel | - |
| 06/01/2009 09:35AM Directory Marilarchives 05/20/2009 09:45AM Directory Maricos 12/09/2007 06:34FW Directory Marins 06/02/2009 09:32AM Directory Marins 06/02/2009 09:32AM Directory McC 06/02/2009 10:05AM D | 02/10/2009 12:35PM Directory japan | |
| 05/28/2009 09:45AM Directory MarCom 12/09/2007 05:45HP Directory Maxim 03/23/2008 12:46EM Directory Maxim 06/02/2009 19:50AM Directory MCP 06/02/2009 10:50AM Directory MCP 06/02/2009 10:50AM Directory MCP | 06/01/2009 09:35AM Directory MailArchives | |
| 12/09/2007 06:94FM Directory Maxim 09/29/2008 12:46FM Directory markedsign 06/02/2009 09:32AM Directory MCC 06/02/2009 10:50AM Directory MCC 04/07/2009 12:56FM Directory MCA | 05/28/2009 09:45AM Directory MarCom | |
| 03/23/2008 12:46PM Directory <u>maxtekdesign</u> 06/03/2009 93:3DM Directory <u>MEDI</u> 06/03/2009 10:50M Directory <u>MEDI</u> 04/03/2008 13:50M Directory <u>MEDI</u> | 12/03/2007 06:34PM Directory Maxim | |
| 06/02/2009 09:32AM Directory MCF 06/02/2009 10:55AM Directory MCAI 06/02/009 12:55AM Directory MCAI | 03/23/2008 12:46PM Directory maxtekdesign | |
| 06/02/2009 10:503M Directory MEAT 0//07/2004 17-542PM Directory MEAT | 06/02/2009 09:32AM Directory MCF | |
| NA/12/2009 12:59PM Directory MRMC | 06/02/2009 10:50AM Directory MEAI | |
| | 06/02/2009 12:59PM Directory MRMC | |
| The second se | | • |
| ne nternet 100% | | * 100% * |

8 Double-click the CMS IQ icon to open the software. (See Figure 6-6.)

Figure 6-6 CMS IQ icon





9 Double-click the Status icon. (See Figure 6-7.)

Figure 6-7 Status icon

| | Data Review | Run Method | COLDI SALANCE | Front Parrel Doplay | |
|------------------------------------------------------------------------------------------|---------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| C0101 Status Provides access to the | System | | | | C0101 Status Current Pressures Corrent Pressures Corrent Supply (#76) 37 Current Trespondures (C) Regulator Trengs 27 2 Regulator Trengs 27 2 |
| IMS5000's status Secent Files 10: "8221451.mih 10: Water Purge 19 Cmpd_20100325 | - i | | | | Valve Over. 30 0 Column: 30 0 Column: 00 Water Temperature: 21 0 CardCage: 32 0 |
| | | | | | |
| | W | | W | | |
| | 10 210 50 108 | [] | C0102 | | |

10 Click the Data Settings tab. (See Figure 6-8.)

Figure 6-8 Data Settings tab

| Statue | re Flows and Temperatures CMS Information — Berameters — CMS Time Zone — Input/Output — Data Settings — Functions |
|--------------|-------------------------------------------------------------------------------------------------------------------|
| Event Da | sta |
| Notifica | tion |
| Erro | nrs 🦳 Warnings |
| | Items |
| | |
| Log Pa | th: C:\CMS IQ\C100\Events\ |
| | Maintain Logs: 📀 for 🛛 🔁 Days 🔿 Indefinitely |
| - Directoria | S Brown Di Di Di Di |
| Sensor: | C:\CMSTQ\C100\ Browse |
| Data: | C:\CMS IQ\C100\Data\ Browse |
| Report: | C:\CMS IQ\C100\Data\ Browse |
| FTP: | Configure FTP Settings |
| | |
| | |
| | |
| | |
| | |



11 Click Configure FTP Settings. (See Figure 6-9.)

Figure 6-9 Configure FTP Settings button

| СМ\$5000 С | 100 Properties | | | | | X |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------|--------------------------------------------|-----|------------|
| Pressur | e Flows and Temperatures | 5 | CMS I | nformation | | Parameters |
| Status | CMS Time Zone | Data Settin | igs | Functions | | |
| Event Dat ✓ Erro Logged ✓ Erro Log Pat + Directorie: Sensor: Data: Report: FTP: | a ion ion Items ts Varnings V ts Varnings V ts C:\CMS IQ\C100\Even Aaintain Logs: I for S C:\CMS IQ\C100\Data\ C:\CMS IQ\C100\Data\ C:\CMS IQ\C100\Data\ C:\CMS IQ\C100\Data\ | Even | nts ➡ Days ∩ | Indefinitely Browse Browse Browse | | |
| | | | ОК | Can | cel | Help |

12 The **FTP Config** window is displayed. Enable the number of FTP servers to upload by selecting the **Enable FTP** checkboxes. **Enable FTP1** is selected by default. Up to three FTP servers can be enabled. (See Figure 6-10.)

Figure 6-10 FTP Config window

| FTP Config | X |
|------------------------------------------------------|--------------------------|
| FTP1 Enable FTP1 🔽 | Upload Compress |
| FTP Server IP: 0 . 0 . 0 . 0 | Data Files (.hps): 🔽 🔲 |
| FTP User Name: | Quant Reports(.rot): |
| FTP Password: | |
| Connection Timeout: 10 sec # of Upload Retries: 2 | _ |
| Upload Timeout: 9999 sec State: Running |] |
| Enable FTP2 | Upload Compress |
| FTP Server IP: 0 . 0 . 0 . 0 | Data Files (.hps): 🔽 🗖 |
| FTP User Name: | Quant Reports(.rgt): 🔽 🔲 |
| FTP Password: | |
| Connection Timeout: 10 sec # of Upload Retries: 2 | |
| Upload Timeout: 9999 sec State: Running |] |
| Enable FTP3 | Upload Compress |
| FTP Server IP: 0.0.0.0 | Data Files (.hps): 🔽 🗖 |
| FTP User Name: | Quant Reports(.rgt): 🔽 🔽 |
| FTP Password: | |
| Connection Timeout: 10 sec # of Upload Retries: 2 | |
| Upload Timeout: 9999 sec State: Running 🚽 |] |
| Network Settings 🔽 Enable FTP Logging Clear FTP Uplo | DK Cancel |

13 Enter:

- FTP Server IP address
- FTP User Name
- FTP Password
- **Connection Timeout** (the amount of time CMS5000 will wait for a response from the FTP site)
- Upload Timeout (the allotted time for a single file to upload)
- # of Upload Retries (the number of times CMS5000 will attempt to communicate with the FTP server if the Upload Timeout is reached)
- **NOTE: State** will display **Standby** mode. When CMS5000 is actively transmitting data to the FTP server, **State** will display **Running**. (See Figure 6-11.)

Figure 6-11 Entering FTP server information

| F | TP Config | | | | | | Þ |
|---|-----------------------|-----------|----------------------|--------------|--------------|------------------------|------------|
| | FTP1 Enable FTP1 | | | | | | |
| | ETD Sorver ID: | 10 | 210 | 1 24 | | Upload | d Compress |
| | FTF Serverin. | ftn user | 210 . | 1 . 24 | _ | Data Files (.hps): M | |
| | FTF User Name: | ****** | | | _ | Quant Reports(.rqt): 💌 | |
| | FIF Fassword. | 10 | tt of Uplea | d Batrias: 2 | _ | | |
| | Liste and Timeout | 5 | + OI Opida Chatas | Standbu | Ţ | | |
| _ | Upload Limeout: | la sec | State. | Jordinaby | - | | |
| | Enable FTP2 | | | | | Upload | d Compress |
| | FTP Server IP: | 0. | 0. | 0.0 | | Data Files (.hps): 📈 | Ē |
| | FTP User Name: | | | | | Quant Reports(.rqt): 🔽 | |
| | FTP Password: | | | | | | |
| | Connection Timeout: | 10 sec | # of Uploa | d Retries: 🔽 | | | |
| | Upload Timeout: | sec | State: | Standby | \mathbf{v} | | |
| | - FTP3 Enable FTP3 | | | | | | |
| | Endbier In 5 J | 0 | 0 | 0 0 | | Upload | I Compress |
| | FIP Server IP: | | 0. | 0.0 | _ | Data Files (.hps): 🔟 | |
| | FIF User Name: | | | | _ | Quant Reports(.rqt): 📝 | |
| | FIFFassword: | 10 | # of Uploa | d Batriaa | _ | | |
| | Lonnection Limeout: | sec | + or Opica | Standby | _ | | |
| | Upload I imeout: | l sec | State: | Jorandby | <u> </u> | | |
| | Network Settings | Enable FT | P Logging | Clear FTP L | ploa | ad Queues OK | Cancel |



14 Click **Network Settings**. The **Network Settings** window is displayed. (See Figure 6-12.)

| FTP Config |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CETP1 |
| Enable FTP1 Unload Compress |
| FTP Server IP: 0 . 0 . 0 . 0 Data Files (.hps); 📈 🔽 |
| FTP User Name: Quant Reports(.rgt): 🔽 🗖 |
| FTP Password: |
| Connection Timeout: 10 sec # of Upload Retries: 2 |
| Upload Timeout: 19999 sec State: Running 🔽 |
| FTP2 Enable FTP2 Network Settings Upload Compress |
| FTP Server IP: |
| FTP User Name: Network Gateway to the test rot: The test r |
| FTP Password: |
| Connection Timeout: |
| Upload Timeout: State: promining |
| FTP3 Enable FTP3 Upload Compress |
| FTP Server IP: 0 . 0 . 0 Data Files (.hps): 🔽 🗖 |
| FTP User Name: Quant Reports(.rqt): 🔽 🦵 |
| FTP Password: |
| Connection Timeout: 10 sec # of Upload Retries: 2 |
| Upload Timeout: 9999 sec State: Running 💌 |
| Network Settings] Enable FTP Logging Clear FTP Upload Queues OK Cancel |

Figure 6-12 Network Settings button and Network Settings window

15 To locate the Network Gateway, click Start. (See Figure 6-13.)

Figure 6-13 Start button



16 Click Run.... (See Figure 6-14.)

Figure 6-14 Selecting Run...

| | | Set Program Access and Defaults | |
|-------|----|---------------------------------|---|
| | 10 | Windows Catalog | |
| | | Windows Update | |
| | | Programs | • |
| | C | Documents | • |
| Inal | 1 | Settings | • |
| essic | P | Search | • |
| Prof | ? | Help and Support | |
| s XP | | Run 📐 | |
| wopu | 1 | Undock Computer | |
| Wil | 0 | Shut Down | |



17 The Run window is displayed. (See Figure 6-15.)

Figure 6-15 Run window



18 Enter cmd and click OK. (See Figure 6-16.)

Figure 6-16 Entering cmd and OK button



19 At the command prompt, type **route PRINT**. (See Figure 6-17.)

Figure 6-17 Entering route PRINT



20 The Default Gateway: setting is displayed. (See Figure 6-18.)

Figure 6-18 Default Gateway displayed

| C:\W/INDOW/S\eveto | m32\cmd eve | | | |
|--------------------|------------------------------------|-------------------|------------------|--------------|
| | III SE CHINI.CAC | | | |
| ket Scheduler Mini | port | | | ▲ I |
| 0×300 1b 77 d1 | . ae 7c Inte | 1(R) PRO/Wireless | s 3945ABG Networ | k Connection |
| - Packet Schedule | r Miniport | | | |
| | | | | |
| Active Routes: | | | | |
| Network Destinatio | n Netmask | Gateway | Interface | Metric |
| 0.0.0.0 | 0.0.0.0 | 10.211.2.100 | 10.211.50.77 | 10 |
| 10.208.0.0 | 255.252.0.0 | 10.209.134.18 | 10.209.134.18 | 30 |
| 10.209.134.18 | 255.255.255.255 | 127.0.0.1 | 127.0.0.1 | 30 |
| 10.211.0.0 | 255.255.0.0 | 10.211.50.77 | 10.211.50.77 | 10 |
| 10.211.50.77 | 255.255.255.255 | 127.0.0.1 | 127.0.0.1 | 10 |
| | 255.255.255.255 255.255.255.255 | 10.207.134.18 | 10.207.134.18 | 30 |
| 127 0 0 0 | 255.255.255.255 | 127 0 0 1 | 127 0 0 1 | 10 |
| 224.0.0.0 | 240.0.0.0 | 10.209.134.18 | 10.209.134.18 | 30 |
| 224.0.0.0 | 240.0.0.0 | 10.211.50.77 | 10.211.50.77 | 10 |
| 255.255.255.255 | 255.255.255.255 | 10.209.134.18 | 10.209.134.18 | 1 |
| 400.400.400.400 | 499.499.499.499 | 10.211.50.77 | 10.211.50.77 | 1 |
| Default Gateway: | 10.211.2.100 | | | |
| | | | | |
| None | | | | |
| Holle | | | | |
| H:\> | | | | - |
| P | | | | |



21 Type the **Default Gateway:** setting in the **Network Gateway** box. (See Figure 6-19 and Figure 6-20.)

Figure 6-19 Network Settings window

| Network Gateway | • |
|-----------------|-------|
| ок с | ancel |

Figure 6-20 Entering Network Gateway

| Network Settings | |
|------------------------------------|--|
| Network Gateway 10 . 211 . 2 . 100 | |
| OK Cancel | |
| | |

22 Confirm the default gateway at the bottom of the window matches the Network Gateway setting in CMS IQ. If not, re-enter the default gateway setting displayed on the computer into CMS IQ. (See Figure 6-21.)

Figure 6-21 Matching gateway settings

| I construction | CMS IQ-6port - [System Setup File Functions System Tools Vi |) ew Window Help | or CAWRHOUNSUsytemai2cond.exe _ ○ X Los Schendus Filsiport | - 0 |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 10.210.50.104 | Control of the c | Data Review Rus Hethod Sof | Active Point Description Description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<> | 28 |
| | | 10.210.50.104 | | |



23 Click OK to accept the Network Gateway settings. (See Figure 6-22.)

Figure 6-22 Accepting Network Gateway settings

| Network Setti | ngs | × |
|----------------|---------|-----------|
| Network Gatewa | ay 10.2 | 211.2.100 |
| | ОК | Cancel |

NOTE: Select **Enable FTP Logging** to send reports from CMS5000 to the desired FTP site. (See Figure 6-23.)

| TP Comig | | | | | |
|---------------------|----------|------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Enable FTP1 | | | | | |
| FTP Server IP: | 0. | 0. | 0.0 | Upload | |
| FTP User Name: | | | | Data Files (.rips). | |
| FTP Password: | | | | guant reports(.rqt). | |
| Connection Timeout: | 10 sec | # of Uploa | d Retries: 2 | - | |
| Upload Timeout: | 9999 sec | State: | Running | - | |
| -FTP2 | | | | - | |
| Enable FTP2 🕅 | | | | Upload | d Compress |
| FTP Server IP: | 0. | 0. | 0.0 | Data Files (.hps): 🔽 | Г |
| FTP User Name: | | | | Quant Reports(.rqt): 🔽 | Г |
| FTP Password: | | | | | |
| Connection Timeout: | 10 sec | # of Uploa | d Retries: 2 | | |
| Upload Timeout: | 9999 sec | State: | Running | - | |
| Enable FTP3 | | | | Upload | 1 Compress |
| FTP Server IP: | 0. | 0. | 0.0 | – Data Files (hps): | Г |
| FTP User Name: | | | | Quant Benorts(rot): | Г |
| FTP Password: | | | | and the second s | , |
| Connection Timeout: | 10 sec | # of Uploa | d Retries: 2 | _ | |
| Unional Timore de | 9999 | State: | Bunning | 7 | |

Figure 6-23 Enable FTP Logging checkbox option



24 Click OK to accept the FTP Server settings. (See Figure 6-24.)

Figure 6-24 Accepting FTP Config settings

| TP Config | | | | | | | Þ |
|-----------------------|------------|------------|------------|---------|---------------------|-------------------------|----------|
| - FTP1 | | | | | | | |
| Enable FTP1 🔽 | | | | | | I beola | Compress |
| FTP Server IP: | 10 . | 210 . | 1. | 24 | Data Files (hns): | | |
| FTP User Name: | ftp_user | | | | Quant Benorts(rat) | | Г |
| FTP Password: | ***** | | | | | | |
| Connection Timeout: | 10 sec | # of Uploa | d Retries: | 2 | | | |
| Upload Timeout: | 5 sec | State: | Standt | y 🔻 | | | |
| -FTP2 | | | · · | | | | |
| Enable FTP2 | | | | | 1 | Jpload (| Compress |
| FTP Server IP: | 0. | 0. | 0. | 0 | Data Files (.hps): | | |
| FTP User Name: | | | | | Quant Reports(.rqt) | $\overline{\mathbf{V}}$ | Г |
| FTP Password: | | | | | | | |
| Connection Timeout: | 10 sec | # of Uploa | d Retries: | | | | |
| Upload Timeout: | sec | State: | Standt | y 🔻 | | | |
| - FTP3 Enable FTP3 | | | | | | | _ |
| Endbier n o j | | | | | | Jpload I | Compress |
| FTP Server IP: | 0. | 0. | 0. | 0 | Data Files (.hps); | V | Г |
| FTP User Name: | | | | | Quant Reports(.rqt) | | Г |
| FTP Password: | | | | | | | |
| Connection Timeout: | 10 sec | # of Uploa | d Retries: | | | | |
| Upload Timeout: | sec | State: | Standt | y 🔻 | | | |
| Network Settings | Enable FTI | P Logging | Clear FT | P Uploa | ad Queues | ОК | Cancel |

25 Click OK to close the Properties window. (See Figure 6-25.)

Figure 6-25 Closing the CMS5000 C100 Properties window

| Pressur | e Flows and Temperatures | - | CMS Inf | ormation | | Parameters |
|------------|--------------------------|---------|---------|--------------|----|------------|
| Status | CMS Time Zone | Input/0 | Output | Data Settin | gs | Functions |
| Event Da | ta | | | | | |
| Notifical | tion | | | | | |
| Loggod | rs Warnings | | | | | |
| | reins re 🔽 Warninge 🔽 | Evente | | | | |
| | is je wannings je | LYCINS | | | | |
| Log Pat | h: C:\CMS IQ\C100\Ever | nts/ | | | | |
| I | Maintain Logs: 💿 for 🏾 | 10 🕂 | Days 🔿 | Indefinitely | | |
| Directorie | \$ | | | 1 | | |
| Sensor: | C:\CMS IQ\C100\ | | | Browse | | |
| Data: | C:\CMS IQ\C100\Data\ | | | Browse | | |
| Report: | C:\CMS IQ\C100\Data\ | | | Browse | | |
| FTP: | Configure FTP Settings | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

26 The FTP site(s) should now be defined and communicating.

6.3 System Integration

System I/O integration allows only input commands. This includes the selection and start of a method created in the CMS IQ software. See section 6.4, Defining Startup Methods below, for details on how to input methods. See section 6.5, Input Methods, on page 6-15 for details on triggering methods with the I/O port. For more advanced integration details, please contact INFICON.

6.4 Defining Startup Methods

CMS5000 can be operated automatically. In the **Parameters** tab, a **Startup Method** that will automatically run when powering on the system can be defined. Additionally, a method sequence can be selected as a startup method. See section 6.6, Method Sequence, on page 6-17 for information on creating a method sequence.

1 On the **System Setup** window of CMS IQ software, double-click the **Status** icon. (See Figure 6-26.)

Figure 6-26 Status icon

| Status | |
|--------|--|

2 Select the Parameters tab. (See Figure 6-27.)

Figure 6-27 Parameters tab

| Statu DMS Time Zone Data Satings Heardown -Current Pressues -Current Pressues -Current Pressues -Current Pressues -Current Pressues 605 IS Supply (IP-2) -Current Pressues -Current Pressues -Current Pressues 605 IS Supply (IP-2) -Current Pressues -Current Pressues -Courter Terms 605 IS Continet -Sold Col. (IP-2) -Col. (IP-2) -Mater Terms 2022 Reservoir (IP-2) -Col. (IP-2) -Col. (IP-2) -Mater Terms 2000 Total MS Pressue(IP-2) 2.67e -Statinite Baterise DMS 5000 Ohage: -Col. (IP-2) -Fili Date CMS 5000 Ohage: -Col. (IP-3) -Col. (IP-3) -Filis Conc. (pm) SM Vohage: -SM Vohage -Col. (IP-3) Sample Input Device | Parameters | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--|
| Current Temperatures (C) Current Pressues Column 605 IS Supply (IP-a); ValvedTven: 450 Carries Cupy (IP-a); CKStd: 500 Carries Cupy (IP-a); NGD: Not Innatide GC Cot. (IP-a); Water Temp: 2022; Reservoir (IP-a); 15 Carrister 800 Total MS Pressure(IP-a); 2.67e 15 Carrister Batteries; 200 Total MS Pressure(IP-a); 2.67e 15 Carrister Batteries; S000 Volaga; Carrise Cups; S.5000 Volaga; Expiration Date: CMS 5000 Volaga; SM Volaga; SM Volaga; SM Volaga; Sample Input Device Type; Not Installed Pressure (IR-a); N/A | | |
| Column 605 IS Supply (Ik-Pa): ValveDiven: 45.0 Carrier Supply (Ik-Pa): CStat: 500 GC Coll (Ik-Pa): NEG:: Not Installed GC Coll (Ik-Pa): Valvet Tenno: 200 Total MS Pressure(Pa): 2.67e Heated Lines: 90.0 Total MS Pressure(Pa): 2.67e Expiration Date: CMS 5000 Volage: Expiration Date: CMS 5000 Volage: Expiration Date: CMS 5000 Charge (%): SM Volage: SM Volage: Sample Input Device SM Charge (%): N/A | | |
| ValveQiver: 450 Carier Supply (kPa): CKSt: 500 Carier Supply (kPa): VStar: Not Installed Carier Supply (kPa): Water Tenpo: 2022 Reservoir (kPa): Hoaded Lines: 90.0 Total MS Pressure[Pa]: 2.67e St Consister Batterise: DMS 5000 Voltage: 2.67e FIID Date: CMS 5000 Voltage: Expression Date CMS 5000 Voltage: TRIS Conc. (ppm): SM Voltage: SM Voltage: SM Voltage: Sample Input Device Type: Not Installed N/A | 68 | |
| CKSid: 500 GC Col. (kPa) NG: Notination GC Col. (kPa) Water Terge: 2002 Reservoir (kPa): Heated Lines: 900 Total MS Pressure[Pa]: 2.67e Si Conister Batterie Batterie Expristion Date: CMS 5000 Volage: Fili Date: CMS 5000 Charge (½) SM Volage: SM Volage: BFTB Conc. (ppm) SM Charge (½): SM Polage: Sample Input Device Type: Not Installed Pressure (kPa): N/A N/A | 43 | |
| NEG: Not Installed Water Temp: 2022; Reservoit [[Fa]: Heated Lines: 90.0 Total MS Pressure[Pa]: 2.67e IS Canister Elibate: Oxf S000 Volage: Expiration Date CMS 5000 Charge (%) TRIS Conc. (ppm): SM Volage: BPFB Conc. (ppm): SM Charge (%) Sample Input Device Type: Not Installed Pressure (I/Pa): N/A | 1 | |
| Water Lengt: 2032 Total MS Pressure(Pa); 2.67e IS Canister Batteries: Batteries: 2.67e IS Canister Batteries: CMS 5000 Voltage: 2.67e Fill Date: CMS 5000 Voltage: 2.67e Expression Date: CMS 5000 Voltage: 2.67e FTIS Conc. (ppm): SM Voltage: 2.67e BFFB Conc. (ppm): SM Voltage: 2.67e Type: Not Installed Pressure (kPa): | | |
| Flock Social MS (Firsture(Fig)) Extra fig FID Date DMS 5000 Volkage: Expiration Date: DMS 5000 Charge (%) FIT Date: DMS 5000 Charge (%) BFFE Conc. (ppm) SM Volkage: BFFE Conc. (ppm) SM Charge (%) Sample Input Device Type: Type: Not Installed Pressure (kPa): N/A | 2.67a-00 | |
| IS Lamier batter CMS Store (%) Expiration Date CMS 5000 Cohage: (%) TRIS Conc. (ppm) SM Cohage: (%) BPFB Conc. (ppm) SM Charge (%) Sample Input Device Type: Not Installed Pressure (%Po): N/A | 010-00 | |
| rali Uale: CMS 5000 Volage: Explainion Date: CMS 5000 Charge (%) TRIS Conc. (ppm): SM Volage: BPFB Conc. (ppm): SM Charge (%) Sample Input Device Type: Not Installed Pressure (kPa): N/A | ы. | |
| Expresent Date: CMS 5000 Charge [2]: TRIS Conc. (ppm) SM Volkage: SM Volkage: BPFB Conc. (ppm) SM Charge [3]: Sample Input Device Type: Not Installed Pressure (kPa): N/A | N/ | |
| I HIS Lonc. (ppm): SM Vorage: BPFB Conc. (ppm): SM Charge (%): Sample Input Device Type: Not Installed Pressure (kPa): N/A | N/ | |
| BHH B Conc. (ppm): SM Charge (%): Sangke Input Device Type: Not Installed Pressure (kPa): N/A | 197 | |
| Sample Input Device Type: Not Installed Pressure (IkPo): N/A | N/ | |
| Type: Not Installed Pressure (kPa): N/A | | |
| Type: Not Installed Prossure (kPa): N/A | | |
| Pressure (kPa): N/A | | |
| | | |
| | | |
| | | |
| | | |


3 Click Browse to select a startup method. (See Figure 6-28.)

Figure 6-28 Browse... button

4 Double-click the desired method from the method folder, or select the method and click **OK**. (See Figure 6-29.)

Figure 6-29 Choosing a startup method

| elect Startup Method | | | Ŀ |
|----------------------------------------------------------------------------|----------|-----------------------|--------------|
| C PC | | CMS5000 | |
| Folder /Method | | | |
| | | | |
| Name | Size | Date | |
| Production Test | | 4/28/2010 10:37:08 AM | |
| Demo | | 2/25/2010 6:06:17 AM | |
| Test | | 11/19/2009 9:35:42 AM | |
| Uynamic Range | | 9/25/2009 7:49:45 AM | |
| Destroy where | | 9/21/2009 1:16:44 PM | |
| CMCCOCO Ulabar Dimension - 1 | 1K | 6/16/2010 9:51:04 AM | |
| CMS5000 Water Purgeo1.mth | 4UK | 5/11/2010 10:38:59 AM | |
| Ducon chi, chi uniti | 2K | 2/12/2010 1:14:19 PM | |
| CMSE000 Ck Std wtb | 106 | 2/12/2010 7:57:24 AM | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| File Name: CMS5000 Ck Std.mth | | | |
| File Type: Method Files (*.mth; *.xmth) | | | • |
| HAPSITE Method File | | <u>^</u> N | lanage Files |
| | | | ПК |
| File modified = 12/11/09 05:15:34 CMS 5000, Check Standard Method, Tri- | and Conc | | |



5 The selected method is displayed. (See Figure 6-30.)

Figure 6-30 Startup method

| Enable Parametes Enable Vater Adjuttment Chable Water Adjuttment CkStd Mulipiler (1.30000) CkStd Mulipiler (1.30000) CkStd Mulipiler (1.30000) CkStd Mulipiler Max (1.30000) CkStd Mulipiler Max (1.30000) CkStd Mulipiler Max (1.30000) Superime Scan Count (200) Baseline Scan Count (200) CkStd Mulipiler Max (1.3000) Ck | Bun Time Florate Enable Method Ready Method Ready Method Ready Method Finished Summay Report Options Show Conpounds No Found Show Conpounds No Found Show Call Valent Temp Show Unidentified Compounds |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

NOTE: Click **Clear Startup Method** to clear the startup method. (See Figure 6-31.)

Figure 6-31 Clear startup method button

|--|



6.5 Input Methods

In the **Input/Output** tab, up to four input methods can be selected. An input method will begin when a relay contact, which has been integrated into the water/air control system, triggers it to start. A method sequence can be defined as an input method, if desired. See section 6.6, Method Sequence, on page 6-17 for information on creating a method sequence.

1 To enter input methods, click **Browse** for the desired input method. (See Figure 6-32.)

| MS5000 10.210.50.108 Properties | |
|--------------------------------------------------------------------|----------------------------------------------|
| Pressure Hows and Lemperature Status CMS Time Zone Input/Output | mation Parameters Data Settings Functions |
| Input 1 Method | |
| Innut 2 Method | Browse |
| /Method/CMS5000 Water Purge.mth | Browse |
| Input 3 Method | |
| j | Browse |
| Input 4 Method | Browse |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | Cancel Help |
| | |

Figure 6-32 Input browse buttons

2 Double-click the desired method from the method folder or select the method and click **OK**. (See Figure 6-33.)

Figure 6-33 Choosing input method

| C PC | | CMS5000 | |
|-------------------------------------------------------------------------|------|-----------------------|-------------|
| older: Method | | | |
| Name | Size | Date | 1 |
| Production Test | | 4/28/2010 10:37:08 AM | |
| Demo | | 2/25/2010 6:06:17 AM | |
| 🔁 Test | | 11/19/2009 9:35:42 AM | |
| 🚞 Dynamic Range | | 9/25/2009 7:49:45 AM | |
| Seq | | 9/21/2009 1:16:44 PM | |
| Stability.×mth | 1K | 5/11/2010 10:45:36 AM | |
| CMS5000 Water Purge01.mth | 40K | 5/11/2010 10:38:59 AM | |
| LOOP Water runs.xmth | 2K | 2/12/2010 1:14:19 PM | |
| LOOP Chk Std.xmth | 1K | 2/12/2010 7:37:24 AM | |
| CM55000 Ck Std.mth | 10K | 12/11/2009 5:15:34 AM | |
| ile Name: CMS5000 Ck Std.mith | | | |
| ile Type: Method Files (*.mth; *.xmth) | | | |
| HAPSITE Method File | | ~ | Manage File |
| file timestamp = 05/20/09 16:48:53 file modified = 12/11/09 05:15:34 | 1.0 | | UN |



The selected input method will display in the corresponding Input Method box.
 To clear the input method, click Browse for the desired method.
 (See Figure 6-34.)

Figure 6-34 Clearing input method

| Status (DMS Time Zone Input/Dutput Data Settings Function rigut 1 Method Method/Method nput 2 Method rigut 3 Method nput 4 Method Browse | riessuier | ows and Temperature | s CMS I | nformation | Parameters |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|------------------|---------------|------------|
| npu 1 Method Biowee npu 2 Method Biowee npu 3 Method npu 3 Method npu 4 Method Biowee npu 4 Method Biowee | Status | CMS Time Zone | Input/Output | Data Settings | Functio |
| Method/Production Test/Water Purge 19 Drypd mth Browse nput 2 Method Browse nput 3 Method Browse nput 4 Method Browse | nput 1 Metho | d | | | _ |
| nput 2 Method Browse | /Method/Pro | duction Test/Water P | urge 19 Cmpd.mth | B | rowse |
| npul 3 Method Browse npul 4 Method Browse | nput 2 Metho | d | | | |
| nput 3 Method Browse | | | | B | rowse |
| nput 4 Method Browse | nput 3 Metho | d | | | 1 |
| ngut 4 Method Browse | | | | B | rowse |
| Browse | nput 4 Metho | d | | | |
| | | | | B | rowse |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

4 Click "X" without selecting a method. (See Figure 6-35.)

Figure 6-35 Clicking "X" button

| | G. 84 M M |
|----------------------------------------|------------------------------|
| C PC | CMS 5000 |
| older: /Method | b |
| Name | Size Date |
| CMS5000 Ck Std.mth | 9K 7/1/2009 2:11:22 PM |
| BTEX Acceptance90.mth | 9K 7/1/2009 2:10:54 PM |
| CMS5000 Water Purge.mth | 9K 6/30/2009 8:46:13 AM |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| < | |
| ile Name: | |
| ile Type: Method Files (*.mth; *.xmth) | |
| | Manage Fil |
| | |
| | |
| | OK |



5 The method will be cleared from the selected input method line or select the method and click **OK**. (See Figure 6-36.)

Figure 6-36 Input method cleared

| Pressure Flows and Temperatures |) CMS Ir | formation | Parameters |
|---------------------------------|--------------|---------------|------------|
| Status CMS Time Zone | Input/Output | Data Settings | Functions |
| | | | |
| nput 1 Method | | | Irounoo |
| 1011 1 | | | 10wse |
| nput 2 Method | | | towse |
| | | | 101136 |
| nput 3 Method | | | |
| | | | 101130 |
| nput 4 Method | | | line l |
| | | | nowse |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | Course | . [|

6.6 Method Sequence

A sequence of methods, including consecutive runs, can be selected to run at timed intervals. Once a sequence has been started, it can run unattended and unprompted until the sequence has finished, or it can be set to run continuously. Follow the instructions below to create a method sequence.

1 From the CMS IQ Setup window, double-click the **Method Editor** icon. (See Figure 6-37.)

Figure 6-37 Method Editor icon





2 The **Edit Method** window is displayed. Click **Method Sequence**. (See Figure 6-38.)

Figure 6-38 Edit Method window and Method Sequence button

| <unknown sensor=""></unknown> | Open |
|-------------------------------|-----------------|
| 10.210.50.104 | New |
| | Method |
| | Method Sequence |
| | Default Method |

3 In the **Method Name** box, type a name for the method sequence or use the name provided. Verify that the file extension for the method name is *.xmth. (See Figure 6-39.)

Figure 6-39 Method Name box

| | 1 | - Nu | noor or nerduoris. | | rian containabuoly | |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------|--------------------------------|-------------------------------------|---------------------|
| Method | Sample Name | Start Run | End Run | End Run 1 | ime (hh:mm:ss) | |
| | | | | | | Move Up Move Dov |
| | | | | | | |
| xample.xmth Method | Sample Name | 🗉 Start F | lun Ei | nd Run I | ind Run Time (hh:mm:ss) | |
| Method method01.mth | Sample Name Method01_ <date_time>_<>>>.</date_time> | Start F hps Run B | lun Ei utton 🔽 Si | nd Run 🛛 🛛 | ind Run Time (hh:mm:ss) 10:03:00 | |
| xample.xmth Method method01.mth method02.mth | Sample Name Method01_ <date_time>_<>>>. Method02_<date>_>>>>></date></date_time> | Start F hps Run B Immed | lun Ei utton 💌 Si iately 💌 | nd Run I eep until 💌 (💌 | ind Run Time (hh:mm:ss) 00:03:00 | |
| Method method01.mth method02.mth What is it? | Sample Name Sample Name Method01_ <date_time>_<>>> Method02_<date>_</date></date_time> | Start F hps Run B Immed | tun Ei utton ⊻ Si iately ⊻ | nd Run I eep until 💌 (| ind Run Time (hh:mm:ss) 10:03:00 | |



4 Click Browse (...) to add a method. (See Figure 6-40.)

Figure 6-40 Browsing for method file

| Marked. | - Carl Name - Carl Day | |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Method | | |
| | | Move Up Move Dow |
| xample xmth | | |
| xample.xmth | Samole Name - I Start Run End Run End Run Time (hrvmnss) | |
| xample.xmth Method method01.mth | Sample Name Start Run End Run = End Run Time (ht/mm:ss) | |
| xample.xmth Method method01.mth method02.mth | Sample Name Istart Run End Run End Run Time (htmm:ss) Method01_c0ATE_TIME5_0000 hps Run Button Istep unit V 00.03:00 Method02_c0ATE0000 hps Immediately V V V | |
| xample.xmth Method method01.mth method02.mth What is it? | Sample Name Istar Run End Run End Run End Run Time (Hrmm:ss) Method01_CDATE_TIME>_0000 hps Run Button Steep until 00.03.00 Method02_CDATE00000 hps Immediately | |

5 A list of methods is displayed. Double-click the desired method for sequencing. (See Figure 6-41.)

Figure 6-41 Selecting method for a sequence

| C PC | | CMS5000 | |
|-------------------------------------------------------------------------|------|---------------------|--------------|
| | | | |
| nider /Method/Test | | | |
| | | | |
| Name | Size | Date | |
| Sequences | | 11/19/2009 9:35:08 | AM |
| CM55000 Ck Std.mth | 9K | 11/19/2009 2:05:52 | PM |
| Common and the second | 46K | 11/12/2009 12:24:0 | 6 PM |
| CMS5000 Column Conditioning.mtn | 58 | 11/6/2009 5:17:59 A | 4M 3M |
| CMS5000 water Purge.mtn | 40K | 3/14/2009 1:04:10 r | 1M 1M |
| CMDD000 Blank.mith | 26 | //20/2009 2.39.04 P | 111 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| ile Name: CMS5000 CK Std.mtn | | | |
| ile Turner Method Files (* mth: * vmth) | | | - |
| te type. Interformer (| | | _ |
| HAPSITE Method File | | <u>^</u> N | danage Files |
| T1 OF 100 100 40 40 F0 | | _ | |
| File timestamp = 05/20/09 16:48:53 File modified = 11/19/09 14:05:52 | | | |



6 The selected method is displayed in the **Method** column. (See Figure 6-42.) *Figure 6-42 Selected method*

| I | Method /Method/Test/Cl | MS500 | 0 Ck Std.mth | Sample N CMS5000 | ame ICk Std_ <date< th=""><th>⊡ E><xx3.hps< th=""><th>Start Run Immediately</th><th>End F</th><th>Run o for</th><th>End Run</th><th>Time (hh:mm:ss</th><th>s)</th></xx3.hps<></th></date<> | ⊡ E> <xx3.hps< th=""><th>Start Run Immediately</th><th>End F</th><th>Run o for</th><th>End Run</th><th>Time (hh:mm:ss</th><th>s)</th></xx3.hps<> | Start Run Immediately | End F | Run o for | End Run | Time (hh:mm:ss | s) |
|----|----------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------|--------------|------------------------|----------------|----------|
| | | | | | | | | | | | | Move Up |
| | | | | | | | | | | | | Move Dow |
| | | | | | | | | | | | | Movesow |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| E> | kample.xmth | | | | | | | | | | | |
| E> | xample.xmth Method | | Sample Name | 1 | | Start Run | Er | nd Run | En | d Run Time (h | h:mm:ss) | |
| E> | xample.xmth Method method01.mth | | Sample Name Method01_ <d< td=""><td>ATE_TIME>_<</td><td>⊥ XXX0.hps</td><td>Start Run Run Button</td><td>Er Sh</td><td>nd Run sep until</td><td>En:</td><td>d Run Time (h 03:00</td><td>h:mm:ss)</td><td></td></d<> | ATE_TIME>_< | ⊥ XXX0.hps | Start Run Run Button | Er Sh | nd Run sep until | En: | d Run Time (h 03:00 | h:mm:ss) | |
| Ex | xample.xmth Method method01.mth method02.mth | | Sample Name Method01_ <d Method02_<d< td=""><td>ATE_TIME>_<</td><td>⊥ XXX>.hps hps</td><td>Start Run Run Button Immediately</td><td>Er Si</td><td>nd Run sep un til</td><td>En:</td><td>d Run Time (h 03:00</td><td>h:mm:ss)</td><td></td></d<></d | ATE_TIME>_< | ⊥ XXX>.hps hps | Start Run Run Button Immediately | Er Si | nd Run sep un til | En: | d Run Time (h 03:00 | h:mm:ss) | |
| Ex | xample.xmth Method method01.mth method02.mth What is it? | | Sample Name Method01_ <d Method02_<d< td=""><td>ATE_TIME>_<</td><td></td><td>Start Run Run Button Immediately</td><td>Er V Si</td><td>nd Run sep until</td><td>En:</td><td>d Run Time (h 03:00</td><td>h:mm:ss)</td><td></td></d<></d | ATE_TIME>_< | | Start Run Run Button Immediately | Er V Si | nd Run sep until | En: | d Run Time (h 03:00 | h:mm:ss) | |

- 7 In the **Start Run** column, select either **Immediately** or **Run Button** for each method. This selection determines how each method in the sequence is started. (See Figure 6-43.)
 - **NOTE:** If **Run Button** is selected, the Run button on the front panel of the computer must be pressed to start the method. If **Immediately** is selected, the method will automatically commence.

Figure 6-43 Start Run option selection

| | Method /Method/Test/CM | 19500 | Sample Name | | Start F | Run En | d Run wan for ▼ | End Run | Fime (hh:mm:s | 5] |
|----|----------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------|------------------------|------------------------|-------------|---------------|----------|
| | The second and the second | | | _0/511 | Immed Run Bi | lately utton | | 55.50.00 | | |
| | | | | | | | | | | Move Up |
| | | | | | | | | | | Move Dov |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Ex | sample.xmth | | | | | | | | | |
| E× | kample.xmth Method | | Sample Name | | Start Run | End Run | End Ri | un Time (hł | r.mm:ss) | |
| Ex | ample.xmth Method method01.mth | | Sample Name Method01_ <date_time>_<>>> H</date_time> | nps | Start Run Run Button | End Run Sleep until | End Ri 00.031 | un Time (hh | r.mm:ss) | |
| Ex | sample.xmth Method method01.mth method02.mth | | Sample Name Method01_ <date_time>_<<<</date_time> | - nps | Start Run Run Button Immediately | End Run Sleep until | End Ri | un Time (hř | rmm:ss) | |
| Ex | sample.xmth Method method01.mth method02.mth What is it? | ···· | Sample Name Method01_ <date_time>_<>>>> Method02_<date>_<>>>>> hps</date></date_time> | ± nps | Start Run Run Button Immediately | End Run | End Ri 00:03:1 × | un Time (hř | rmm:ss) | |



- 8 In the End Run column, select Sleep for or Sleep until for each method. (See Figure 6-44.)
 - **NOTE:** The **Sleep for** option is used to enter a time period between method runs, such as one hour. The **Sleep until** option is used to start a method at a specific time, such as one o'clock. Time is shown in military notation (e.g. 3 p.m. is shown as 15:00:00.)

Figure 6-44 End run option selection

| | Marina di | | Canada Manas | - I | Charl Day | | d D | 1 |
|-----|---------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|--------------------------------------|--------------------------------|----------------------|
| | /Method/Test/ | CMS5000 Ck Std mth | CMS5000 Ck Skd_ <d< th=""><th>ATE> (XX).hps</th><th>Immediately V</th><th>leep for leep tor leep until</th><th>21001 Tang (#110035) 200:00</th><th>Move Up Move Down</th></d<> | ATE> (XX).hps | Immediately V | leep for leep tor leep until | 21001 Tang (#110035) 200:00 | Move Up Move Down |
| [| Method | Sample Name | | 🖃 Start Run | End Run | End Run | Time (hh:mm:ss) | |
| | method01.mth | Method01_ <da< td=""><td>TE_TIME>_<xxx>.hps</xxx></td><td>Run Button</td><td>Sleep un</td><td>i 📃 00:03:00</td><td></td><td></td></da<> | TE_TIME>_ <xxx>.hps</xxx> | Run Button | Sleep un | i 📃 00:03:00 | | |
| - 8 | method02.mth | Method02_ <da< td=""><td>TE>_<>>.hps</td><td>Immediately</td><td>v</td><td>v</td><td></td><td></td></da<> | TE>_<>>.hps | Immediately | v | v | | |
| | What is it? | | | | | | | |
| - | | | | | Run Method | method02.mth; wed in this file or | file format: | |

- **9** In the **End Run Time** column, enter the desired time for the next method to start or the length of time to sleep before the next method starts. (See Figure 6-45.)
 - Enter **0:00:00** to run the next method immediately after the previous method has finished
 - Sleep for will not account for the run time of methods
 - Sleep until does not recognize earlier timestamps. For example, if the sequence was started at 6 AM and the sequence said to Sleep until 3:00:00, instead of sleeping until 3 AM the next day, after running the first method the sequence would proceed immediately to the next method
 - **HINT:** If using **Sleep until** in a sequence, adding a check standard method to run at **11:59:00** ensures methods always start at the desired times.



| Figure 6-45 End Run Time colur |
|--------------------------------|
|--------------------------------|

| th | od Sequence | |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| etł | nod Name: Method01.xmth | Number of Iterations: 1 Fun Continuously |
| | Method Sample Nam | e 🔄 Start Run End Run End Run Time (hh:mm:ss) |
| _ | /Method/Test/CMS5000 Ck Std.mth CMS5000 Ck | .Std_ <date><∞>.hps Immediately 	Sleep for 	D0:00:00</date> |
| _ | | |
| | | Move Up |
| | | |
| | | Move Down |
| | | |
| | | |
| | | |
| Ex. | ample.xmth | |
| F | Method Sample Name | Start Run End Run End Run Time (hh:mm:ss) |
| 1 | method01.mth Method01_ <date_time>_<xx< td=""><td>X>.hps Run Button Sleep until 00:03:00</td></xx<></date_time> | X>.hps Run Button Sleep until 00:03:00 |
| 1 | method02.mth Method02_ <date>_<>>.hps</date> | Immediately |
| - | What is it? | |
| - | > Run Method method01.mth; Data to be saved in this file or file format; Statt method01.mth upon Run Button pressed; Sleep for 00:03:00 after method01.mth is finished; | ==> Run Method method02.mth; Data to be saved in this file or file format; Start method02.mth immediately. |
| | | |

10 Repeat Step 4 through Step 9 to add additional methods for sequencing. Alternately, right-click on the added method and select **Duplicate Row**. (See Figure 6-46.)

Figure 6-46 Duplicate Row option

| | Method | Sample Name | | Start Run | EndRu | h End Run Time (h | ih:m |
|--------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------|-------------------|-----------------------------------|---------|
| | /Method/Test/CMS5000 Ck Std.m | th CMS5000 Ck Std_ <dat< td=""><td>E><>>> hps</td><td>Immediately 👱</td><td>Sleep fo</td><td>r 🗾 00:00:00</td><td></td></dat<> | E><>>> hps | Immediately 👱 | Sleep fo | r 🗾 00:00:00 | |
| 2 | /Method/CMS5000 Water P | Duplicate Row | <date><>></date> | Immediately | Sleep fo | r • 00:00:00 | _ |
| | | · | | | | | Move Up |
| | | | | | | | |
| Ex F | kample.xmth Method Sample N | ame •/ | Start Bun | End Bun | F | nd Bun Time (khommiss) | _ |
| Ex F | xample.xmth Method Sample N method01.mth Method01 | ame <u> </u> | Start Run Run Button | End Run | E | nd Run Time (hh:mm:ss) 3:03:00 | |
| Ex F | Kample.xmth Method Sample N method01.mth Method01 method02.mth Method02 | ame | Start Run Run Button Immediately | End Run | E I <u>v</u> O | nd Run Time (hh:mm:ss) 0:03:00 | |
| Ex r r | xample.xmth Method Sample N method01.mth Method01 method02.mth Method02 What is it? | ame | Start Run Run Button Immediately | End Run V Sleep un | E I V V | nd Run Time (hh:mm:ss) 0:03:00 | |



11 When the desired sequence has been entered, type a number in the Number of Iterations box to repeat the sequence a set number of times. (See Figure 6-47.)

| ethod Name: Method | iSequnce.xmth | | Number of | Iterations: 🚺 | | ⊟ R | un Ci | ontinuously | |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------|-----------|-------------|--------------------|-------------|
| Method | | Sample Name | | statt mun | | enu Run | | End Run Time (hh:m | |
| /Method/Test/CMS50 | 00 Ck Std.mth | CMS5000 Ck Std_< | DATE> <xx>.hps</xx> | Immediately | - | Sleep for | • | 00:00:00 | |
| /Method/Test/CMS50 | 00 Blank.mth | CMS5000 Blank_<[| DATE>_ <xx>.hps</xx> | Immediately | • | Sleep for | • | 00:00:00 | |
| /Method/CMS5000 | Water Purge.mth | CMS5000 Water Pu | urge_ <date><xx< td=""><td>Immediately</td><td>-</td><td>Sleep for</td><td>•</td><td>00:00:00</td><td></td></xx<></date> | Immediately | - | Sleep for | • | 00:00:00 | |
| /Method/CMS5000 | Water Purge.mth | CMS5000 Water Pu | urge_ <date><xx< td=""><td>Immediately</td><td>-</td><td>Sleep for</td><td>•</td><td>00:00:00</td><td>Movelle</td></xx<></date> | Immediately | - | Sleep for | • | 00:00:00 | Movelle |
| /Method/CMS5000 | Water Purge.mth | CMS5000 Water Pu | urge_ <date><xx< td=""><td>Immediately</td><td>-</td><td>Sleep for</td><td>-</td><td>00:00:00</td><td>move op</td></xx<></date> | Immediately | - | Sleep for | - | 00:00:00 | move op |
| /Method/CMS5000 | Water Purge.mth | CMS5000 Water Pu | urge_ <date><xx< td=""><td>Immediately</td><td>-</td><td>Sleep for</td><td>•</td><td>00:00:00</td><td>Mous Down</td></xx<></date> | Immediately | - | Sleep for | • | 00:00:00 | Mous Down |
| | | | | | - | | - | | - Move Dowr |
| -vample with | | | | | | | | | |
| xample.xmth | Sample Name | | •1 Start Bun | End B | un | End | Bun | Time (bb:rom:ss) | |
| Example.xmth | Sample Name | IF TIMF> ‹XXX> hns | ⊻ Start Run Bun Button | End Ri | un | End | Run 3:00 | Time (hh:mm:ss) | |
| Xample.xmth Method method01.mth method02.mth | Sample Name Method01_ <da< td=""><td>.TE_TIME>_<∞∞>.hps</td><td>⊥ Start Run Run Button Immediately</td><td>End Ri Sleep</td><td>un until</td><td>End</td><td>Run 3:00</td><td>Time (hh.mm.ss)</td><td></td></da<> | .TE_TIME>_<∞∞>.hps | ⊥ Start Run Run Button Immediately | End Ri Sleep | un until | End | Run 3:00 | Time (hh.mm.ss) | |
| Example.xmth Method method01.mth What is it? | Sample Name Method01_ <da< td=""><td>TE_TIME>_0000.hps</td><td>Start Run Run Button Immediately</td><td>End Ri</td><td>un until</td><td>End</td><td>Run 3:00</td><td>Time (hhr.mm:ss)</td><td></td></da<> | TE_TIME>_0000.hps | Start Run Run Button Immediately | End Ri | un until | End | Run 3:00 | Time (hhr.mm:ss) | |

Figure 6-47 Number of Iterations option

- **12** Select the **Run Continuously** checkbox to run a continuous loop of the sequence without stopping. (See Figure 6-48.)
 - **NOTE:** When using **Run Continuously**, the **Number of Iterations** box is unavailable.

Figure 6-48 Run Continuously checkbox

| | Method | | Sample Name | -1 | Start Bun | | End Bun | | End Bun Time (h | hm | |
|-------|---------------------------------------------------------------------------------------------|------|---------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------|-----------|-------------|-----------------|----|-----------|
| | /Method/Test/CMS5000 Ck Std mth | | CMS5000 Ck Std 2DAT | E> <xx> hps</xx> | Immediatelu | - | Sleep for | - | 00.00.00 | | |
| | /Method/Test/CMS5000 Blank mth | | CMS5000 Black (DATE | > XXX hns | Immediatelu | - | Sleep for | - | 00:00:00 | | |
| 1 | /Method /CMS5000 Water Purge with | | CMS5000 Water Purge | | Immediatelu | - | Sleep for | - | 00:00:00 | | |
| | /Method /CMS5000 Water Purge.mth | | CMS5000 Water Purge | «DATE» | Immediately | - | Sleep for | - | 00:00:00 | | |
| 1 | /Method/CMS5000 Water Purge.mth | | CMS5000 Water Purge | <date><xx< td=""><td>Immediately</td><td>-</td><td>Sleep for</td><td>-</td><td>00:00:00</td><td></td><td>Move Up</td></xx<></date> | Immediately | - | Sleep for | - | 00:00:00 | | Move Up |
| 1 | /Method/CMS5000 Water Purge.mth | | CMS5000 Water Purge | <date><xx< td=""><td>Immediately</td><td>-</td><td>Sleep for</td><td>-</td><td>00:00:00</td><td>_</td><td></td></xx<></date> | Immediately | - | Sleep for | - | 00:00:00 | _ | |
| + | | - | | | | - | | - | | | Move Dowr |
| | , sample.xmth | | | | | | | | 1 | | |
| - NA | sample.xmth | | | | | | | | T- (1) | | |
| XI | sample.xmth Method Sample Name | | - | Start Run | End R | lun | End | Run | Time (hh:mm:ss) | | |
| XI N | xample.xmth Method Sample Name method01.mth Method01_C/D | ATE. | | Start Run Run Button | End F | lun unti | End | Run 3:00 | Time (hh:mm:ss) | | |
| N n | xample.xmth Method Sample Name method01.mth Method01_<0/ method02.mth Method02_<0/ | ATE, | | Start Run Run Button Immediately | End R Sleep | lun unti | End | Run 3:00 | Time (hh:mm:ss) | | |
| 1 Sil | Method Sample Name method01.mth Method01_<0/ method02.mth Method02_<0/ What is it? | ATE, | | Start Run Run Button Immediately | End F | łun unti | End | Run 3:00 | Time (hh:mm:ss) | | |

13 Click **Save** when the method sequence is complete. (See Figure 6-49.)

| Figure 6-49 | Saving | Method | Sequence |
|-------------|--------|--------|----------|
|-------------|--------|--------|----------|

| | Method | | Sample Name | | Start Run | End Run | | End Run Time (hh:m | 1 |
|----------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------|-------------------|----------------|--------------------|-------------|
| | /Method/Test/CMS5000 Ck Str | d.mth | CMS5000 Ck Std_ <da1< td=""><td>TE><xx>.hps</xx></td><td>Immediately</td><td>Sleep for</td><td>-</td><td>00:00:00</td><td></td></da1<> | TE> <xx>.hps</xx> | Immediately | Sleep for | - | 00:00:00 | |
| | /Method/Test/CMS5000 Blank. | .mth | CMS5000 Blank_ <dati< td=""><td>E>_<xx>.hps</xx></td><td>Immediately 💌</td><td>Sleep for</td><td>-</td><td>00:00:00</td><td></td></dati<> | E>_ <xx>.hps</xx> | Immediately 💌 | Sleep for | - | 00:00:00 | |
| T | /Method/CMS5000 Water Pu | rge.mth | CMS5000 Water Purge | <date><>></date> | Immediately 💌 | Sleep for | - | 00:00:00 | |
| T | /Method/CMS5000 Water Pu | rge.mth | CMS5000 Water Purge | <date><xx< td=""><td>Immediately</td><td>Sleep for</td><td>-</td><td>00:00:00</td><td>Movello</td></xx<></date> | Immediately | Sleep for | - | 00:00:00 | Movello |
| | /Method/CMS5000 Water Pu | rge.mth | CMS5000 Water Purge | <date><xx< td=""><td>Immediately</td><td>Sleep for</td><td>-</td><td>00:00:00</td><td>move op</td></xx<></date> | Immediately | Sleep for | - | 00:00:00 | move op |
| | /Method/CMS5000 Water Pu | rge.mth | CMS5000 Water Purge | <date><xx< td=""><td>Immediately</td><td>Sleep for</td><td>-</td><td>00:00:00</td><td>Move Down</td></xx<></date> | Immediately | Sleep for | - | 00:00:00 | Move Down |
| T | | | | | | | - | | - Move Down |
| × | ample.xmth | | | | | | | | |
| Exa N | ample.xmth | Name | | Start Bun | End Bun | Enc | 1Bun | Time (hhrmm:ss) | |
| XX N | ample.xmth fethod Sample | ⇒Name ±01 <date< td=""><td></td><td>Start Run Run Button</td><td>End Run</td><td>Enc</td><td>1 Run 03:00</td><td>Time (hh:mm:ss)</td><td></td></date<> | | Start Run Run Button | End Run | Enc | 1 Run 03:00 | Time (hh:mm:ss) | |
| N n | ample.xmth /ethod Sample nethod01.mth Methoc nethod02.mth Methoc | ≥ Name 101_ <date 102_<date< td=""><td></td><td>Start Run Run Button Immediately</td><td>End Run</td><td>Enc iil 🗾 00:1</td><td>1 Run 03:00</td><td>Time (hh:mm:ss)</td><td></td></date<></date | | Start Run Run Button Immediately | End Run | Enc iil 🗾 00:1 | 1 Run 03:00 | Time (hh:mm:ss) | |
| X2 | ample.xmth /ethod Sample nethod01.mth Methoc ethod02.mth Methoc What is it? | ≥ Name d01_ <date d02_<date< td=""><td><u>×1</u> TIME>00000.hps i>00000.hps</td><td>Start Run Run Button Immediately</td><td>End Run</td><td>Enc il 💌 00:1</td><td>1 Run 03:00</td><td>Time (hh:mn:ss)</td><td></td></date<></date | <u>×1</u> TIME>00000.hps i>00000.hps | Start Run Run Button Immediately | End Run | Enc il 💌 00:1 | 1 Run 03:00 | Time (hh:mn:ss) | |

14 Save the method sequence to the desired location. Click **OK**. (See Figure 6-50.)

Figure 6-50 Saving Method Sequence

| C PC | CMS 5000 |
|------------------------------------------|-------------------------|
| | |
| Folder: /Method | <u></u> |
| Name | Size Date |
| Chk Std Low Temp Variable Delay Seq.xmth | 3K 6/26/2009 2:43:11 PM |
| Check Std 4micron variable delay.xmth | 4K 6/24/2009 5:56:46 PM |
| | |
| < | |
| File Type: Method List Files (*.xmth) | |
| | Manage Fi |



Chapter 7 System Status

7.1 Introduction

The **STAT** button on the CMS5000 front panel provides real time data regarding system parameters **SYS** (system), **TIME**, **NET** (network), **STAT** (status), and **FIRM** (firmware). Tap **STAT** on the Main Menu to access these parameters. (See Figure 7-1.)





7.2 SYS Function

The first function, SYS, provides basic system information. (See Figure 7-2.)

Figure 7-2 SYS function



Navigate through the **SYS** options by tapping **UP** or **DOWN**. Information on the System page includes:

| Hostname | Used for computer communication |
|---------------------|-------------------------------------------------------------------|
| Serial Num (Number) | Serial number of the CMS5000 (Used for identification) |
| Version | Version of CMS5000 software that is running the system |
| Built on | . Date and time that the software was released |
| Free Disk | Amount of free disk space available for data storage |
| Startup | . Method that will automatically run when CMS5000 is turned on |

7.3 TIME Function

The **TIME** function gives **Date**, **Time** (in a 24 hour format), and **Time Zone** information. **TIME** is used to timestamp the data files. (See Figure 7-3.) See section 10.3, Set Date, Time and Time Zone, on page 10-3 for instructions to set the **TIME** function.

Figure 7-3 TIME function





7.4 NET Function

The **NET** function displays the **IP Address**, **Subnet Mask**, and **User Host**. The IP address and subnet mask are used to set up communication between CMS5000 and a computer. This communication will allow data transfer from CMS5000 to a remote computer for analysis and storage. **User Host** displays the computer communicating with CMS5000. (See Figure 7-4.)



Figure 7-4 NET function

7.5 STAT Function

The **STAT** (status) function displays temperature information and carrier gas pressure. (See Figure 7-5.) This includes:

- Current temperature and set point temperature of the following heated components: Regulator, Check Standard, Valve Oven, Column, and Detector
- State of the heaters (**on**, **off**, or **ctrl**), with **ctrl** indicating that the heaters are within range of their set point
- Temperature of the water sample and the temperature of the card cage, which contains the CMS5000 circuit boards
- Argon Supply pressure

Figure 7-5 STAT function



NOTE: If the argon pressure is 550 kPa or less, an Argon Pressure Low! message will appear. (See Figure 7-6.) If the argon pressure is 345 kPa or less, a **REPLACE ARGON CYLINDER!** message will be displayed. (See Figure 7-7.)

Figure 7-6 Argon Pressure Low! message



Figure 7-7 REPLACE ARGON CYLINDER! message

| ESC |
|------|
| |
| UP |
| DOWN |
| SEL |
| |
| |
| 3 |
| |



7.6 FIRM Function

The **FIRM** (firmware) function displays the firmware version for the **GC** (gas chromatograph) and **FP** (front panel). (See Figure 7-8.)

Figure 7-8 FIRM function



Chapter 8 Basic Operation

8.1 Introduction

CMS5000 can be programmed remotely or from the front panel to operate continually or at timed intervals. Following a method run, analysis results can be uploaded to an FTP server allowing for data review at an off-site location. The results are also stored directly on the CMS5000 storage drive.

CMS5000 will commence sampling the air sample or the headspace above the water sample at the beginning of the method run. During the run, results will be displayed on the front panel.

NOTE: When accessing data from a remote computer, results will be available immediately following the method run.

8.2 Default Methods

Default methods included with CMS5000:

- **Ck Std** verifies that the retention time and response of the internal check standard is within range and is used for both air and water analysis
- Water Purge 19 Cmpd method detects specifically selected VOCs during water monitoring
- BTEX in Air method detects benzene, toluene, ethylbenzene, and xylenes during air monitoring

8.3 System Check Standard

A toluene permeation tube is used to check the CMS5000 detector and has a life span of approximately 6 to 8 years. CMS5000 software will use this check to automatically compensate for normal fluctuations in the instrument.



8.4 Operating CMS5000 Using the Front Panel

1 Tap ESC until the CMS5000 Main Menu is displayed. (See Figure 8-1.)

Figure 8-1 CMS5000 Main Menu



2 Run Method will be highlighted. Tap SEL. (See Figure 8-2.)

Figure 8-2 Selecting Run Method



3 Tap **UP** or **DOWN** to highlight the desired method. Tap **SEL** to run the method. (See Figure 8-3.)

NOTE: Recent Methods will display the 10 most recently run methods.

Figure 8-3 Highlighting method



4 Prior to the method starting, the system will prepare by heating the components to the required set points. (See Figure 8-4.)

Figure 8-4 Heaters status grid





5 Once all the components are at the correct temperature, CMS5000 will begin sample collection. "**Start Scanning in...**" will display to show the time remaining before the detector begins to record data. (See Figure 8-5.)

Figure 8-5 Start Scanning message

| DUN | Method: CMS5000 Water Purge.mth | ESC |
|------|---------------------------------|------|
| KUN | | ESC |
| STOP | | UP |
| | Start Scanning in 3:55 | DOWN |
| | | |
| STAT | Other. 0.02 | SEL |
| | | |
| | | |
| | SAVE 60 77 8 9 0 | |

6 A chromatogram will display while the method is running. Figure 8-6 depicts a finished chromatogram.

Figure 8-6 Finished chromatogram





7 If desired, tap **RUN** to repeat the same method. (See Figure 8-7.)

Figure 8-7 Run button



8 Tap SEL to view the results of the run. (See Figure 8-8.)

Figure 8-8 Select to view run results



NOTE: For information on viewing reports, see Chapter 9, Review Data Function.



9 Tap ESC to return to CMS5000 Main Menu. (See Figure 8-9.)

Figure 8-9 Returning to CMS5000 Main Menu

| RUN Wa | ter Purge 19 Cmpd_20160413_03 DataFile: MXX = 10,000 RESP = 479 | ESC |
|--------|-----------------------------------------------------------------------|------|
| STOP | | UP |
| | 0.60 5.00 10.00 15:00 20:00 | DOWN |
| STAT | SEL for results or ESC | SEL |
| | CLR 1 2 3 4 5 SAVE 6 7 8 9 0 | |

NOTE: To move data files to the computer, see section 12.5, Manage Files, on page 12-39.

Chapter 9 Review Data Function

9.1 Review Data Function

This function recalls data files for review. To access data files, follow the instructions below.

1 Tap **ESC** on the front panel until the **CMS5000 Main Menu** is displayed. (See Figure 9-1.)

Figure 9-1 CMS5000 Main Menu

| RUN | CMS5000 Main Menu 1. Run Method 2. Review Data 3. System 4. Exit | ESC UP |
|------|-------------------------------------------------------------------------------------|-----------|
| STAT | Select a method to run | DOWN |
| | | |

2 Tap **DOWN** to highlight the second function, **Review Data**, and tap **SEL**. (See Figure 9-2.) Alternately, tap **2** followed by **SEL**. (See Figure 9-3.)

Figure 9-2 Selecting Review Data







Figure 9-3 Using the number keys to select Review Data

3 The data will be arranged in folders by method name. Tap **UP** or **DOWN** to select the desired folder, then tap **SEL**. (See Figure 9-4.)

Figure 9-4 Method folders

| RUN | Data Review: Method 1. Recent Methods 2. BTEX Acceptance 3. CMS5000 Ck Std PT 4. CMS5000 Water Purge | ESC UP DOWN |
|------|------------------------------------------------------------------------------------------------------------------|-------------------|
| STAT | CLR 1 2 3 4 5 SAVE 6 7 8 9 0 | SEL |

- NOTE: Recent Methods will display the ten most recently run methods.
- **NOTE:** While method sequences may appear in the list, nothing will occur if they are selected. The individual methods that make up a method sequence must be selected instead.

- **4** Tap **UP** or **DOWN** to highlight the desired data file, then tap **SEL**. (See Figure 9-5.)
- **NOTE:** Files are named in the following default format: method name_yearmonthday_ sequential number of run for that date. Files will be in chronological order with the most recent data file at the top of the list. To change the file format of new data files, see section 16.8.2, Date and Time Appendix, on page 16-21.



| [| | |
|-----------|------------------------------------|-----|
| | Review Data: CMS5000 Ck Std PT 🥂 🦯 | |
| RUN | 1. CMS5000 Ck Std PT_20090629_04 | sc |
| | 2. CMS5000 Ck Std PT_20090629_03 | |
| \square | 3. CMS5000 Ck Std PT_20090629_02 | |
| (STOP) | 4. CMS5000 Ck Std PT_20090629_01 | IP |
| | 5. CMS5000 Ck Std PT_20090626_02 | |
| \sim | 6. CMS5000 Ck Std PT_20090626_01 | |
| | 7. CMS5000 Ck Std PT_20090625_09 | |
| HELP | 8. CMS5000 Ck Std PT_20090625_08 | WIN |
| | 9. CMS5000 Ck Std PT_20090625_07 | |
| | 10. CMS5000 Ck Std PT_20090625_06 | |
| STAT | 11. CMS5000 Ck Std PT_20090625_05 | EL |
| | Mon Jun 29 08:53:54 2009 | |
| | | |
| | | |
| | | |
| | | |
| | SAVE 6 7 8 9 0 | |
| | | |

5 The selected file is displayed. (See Figure 9-6.)

Figure 9-6 Recalled data file





- 6 Tap SEL to retrieve results in a report format.
- A Summary report is displayed. This report contains the Date and Time the sample was run, the Calibration Method, Tune File, Method Description, Data File name and Data Info. Tap UP or DOWN to scroll through the full report. (See Figure 9-7.)

Figure 9-7 Summary report

| | CMS5000 Ck Std PT 20090622 23 |
|---------------|-----------------------------------------------------------|
| RUN | 1. Summary 2. Quant |
| KUN | Unknown iden lification Report |
| | Date: 06/22/09 Time: 13:19:02 |
| | Calibration Method: |
| $ / \rangle$ | /Haps/Method/CMS5000 Ck Std PT.mth |
| (STOP) | Tune File: UP |
| | default.tun |
| \sim | Method Description: |
| | CMS 5000, Tri-bed Conc |
| | DOWN |
| | Data File: DOWN |
| | /Haps/Data/CMS5000 Ck Std PT/CMS5000 Ck Std PT_20090622_2 |
| - | Data Info: |
| | |
| STAT | SEL |
| | |
| | |
| | |
| | |
| | |
| | |
| | SAVE 6 7 8 9 0 |
| | |
| L | |

- 8 To access the Quant (Quantitative) Report, tap Quant. This report contains the REC# (Compound Library Number), CAS# (Chemical Abstracts Service Registry Number), Target Name, and PredRT (predicted retention time). Tap UP or DOWN to scroll through the report. (See Figure 9-8.)
- **NOTE:** The screen truncates the data file. Accessing the data file through CMS IQ software shows **Actual RT** (actual retention time), **Area**, **Conc** (Concentration adjusted by the check standard and/or water temperature adjustment in units defined by the method), **No Adjust** (Concentration without adjustment), **Limit** (alarm limits established in method), and **Flag** (additional notes when needed). See section 13.6.3, Quantitative Reports, on page 13-8.

Figure 9-8 Quantitative report



9 Tap ESC to return to the previous screen.

Chapter 10 System Function

10.1 Introduction

System Function is used to set the date and time, network addresses and language settings.

10.2 System Function

To select the System function:

1 Tap ESC until the CMS5000 Main Menu is displayed. (See Figure 10-1.)

Figure 10-1 CMS5000 Main Menu



2 Tap DOWN until System is highlighted. (See Figure 10-2.)

Figure 10-2 System function

| | CMS5000 Main Menu | |
|-----------|-----------------------|------|
| RUN | 1. Run Method | ESC |
| | 2. Review Data | |
| \square | 3. System | |
| STOP | 4. Exit | UP |
| | | DOWN |
| STAT | | SEL |
| | Run a system function | |
| | | |
| | SAVE 6 7 8 9 0 | |



3 Tap SEL. (See Figure 10-3.)

NOTE: Alternately, tap 3 followed by SEL. (See Figure 10-4.)

Figure 10-3 Selecting System



Figure 10-4 Using the number keys to select System

| | CMS5000 Main Menu | |
|-----------|-----------------------|------|
| RUN | 1. Run Method | ESC |
| | 2. Review Data | |
| \square | 3. System | |
| STOP | 4. Exit | UP |
| | | DOWN |
| STAT | Due a custom function | |
| | Run a system function | |
| | | |
| 1 | | |

10.3 Set Date, Time and Time Zone

Set Date and Time is used to timestamp the data files.

1 Tap **SEL** to select **Set Date and Time**. (See Figure 10-5.)

Figure 10-5 Set Date and Time



2 The Current Date and Time screen is displayed. To change the date, tap SEL when Date is highlighted. (See Figure 10-6.) Alternately, tap 2 followed by SEL.

Figure 10-6 Setting the date





3 Tap the **number keys** to enter the date in the format **mm/dd/yyyy**. Tap **STOP** to enter a forward slash. Tap **SEL** to save the date. (See Figure 10-7.)

Figure 10-7 Entering the date

| RUN Enter Date Date: 10/30/2012 | ESC |
|-------------------------------------------|------|
| STOP is / SEL to save ESC to cancel | UP |
| | DOWN |
| STAT M/D/Y or M/D or D | SEL |
| | |
| SAVE 6 7 8 9 0 | |

- **4** Upon saving, the **Current Date and Time** screen is displayed.
- **5** To change the time, tap **DOWN** to highlight the **Time** option. Tap **SEL**. (See Figure 10-8.)

Figure 10-8 Time function





6 Enter the time using the **number keys** in the format **HH:MM:SS**. The time is entered in 24-hour notation (e.g. 3 p.m. is entered as 15:00:00.) To enter a colon, tap **STOP**. To save, tap **SEL**. (See Figure 10-9.)

Figure 10-9 Setting the time



7 Upon saving, the **System** menu will be displayed. (See Figure 10-10.)

Figure 10-10 System menu



10.3.1 Set Network Info

Set Network Info is used to change the CMS5000 IP address.

NOTE: The CMS5000 IP address should only be changed if it conflicts with an existing network.



1 Tap DOWN to highlight Set Network Info. (See Figure 10-11.)

Figure 10-11 Set Network Info option

| | 121 x | |
|------|--------------------------------|--------------|
| RUN | System 1. Set Date and Time | ESC |
| Non | 2. Set Network Info | |
| | 3. Set Language | |
| STOP | | UP |
| | | \sim |
| | | DOWN |
| | | \mathbf{X} |
| STAT | | SEL |
| | Set the IP address | |
| | | |
| | SAVE 6 7 8 9 0 | |
| | | |

2 Tap SEL. (See Figure 10-12.)

Figure 10-12 Selecting Set Network Info

| | 2 x |
|------|--------------------------------------------------------|
| RUN | System 1. Set Date and Time 2. Set Network Info ESC |
| STOP | 3. Set Language |
| | DOWN |
| STAT | Set the IP address |
| | |
| | SAVE 6 7 8 9 0 |

- 3 The CMS5000 IP address is displayed on the **Network Addresses** screen.
- **4** If an additional or alternate IP address is desired, tap **DOWN** to highlight **Add IP Address**. Tap **SEL**. (See Figure 10-13.)

Figure 10-13 Add IP Address function



5 Tap the **number keys** to enter the new IP address. To enter periods, tap **STOP**. Tap **SEL** to save. (See Figure 10-14.)

Figure 10-14 Enter IP Address screen





6 The Network Addresses screen is displayed. (See Figure 10-15.)

Figure 10-15 Network Addresses screen

| RUN | Network Addresses | ESC |
|------|-------------------|------|
| STOP | 2. Add IP Address | UP |
| | | DOWN |
| STAT | | SEI |
| | | |
| | | |
| | | |

7 To delete an IP address, highlight the IP address to be deleted. (See Figure 10-16.)

Figure 10-16 Select IP Address to be deleted



8 Tap the **CLR** button. Tap the button to **Save Changes**. The IP Address is now deleted. (See Figure 10-17.)

Figure 10-17 Save Changes



10.3.2 Set Language

Set Language is used to select the desired language displayed on the front panel.

1 Tap ESC until CMS5000 Main Menu is displayed. (See Figure 10-18.)

Figure 10-18 CMS5000 Main Menu




2 Tap DOWN until System is highlighted. (See Figure 10-19.)

Figure 10-19 System function



3 Tap SEL. (See Figure 10-20.)

Figure 10-20 Selecting System



4 Tap DOWN to highlight Set Language. Tap SEL. (See Figure 10-21.)

Figure 10-21 Set Language option

| | System | |
|------|---------------------------------------------|------|
| RUN | 1. Set Date and Time 2. Set Network Info | ESC |
| | 3. Set Language | |
| STOP | | UP |
| | | DOWN |
| STAT | | SEL |
| | Set Language | |
| | | |
| | SAVE 6 7 8 9 0 | |



5 The Set Language screen is displayed. (See Figure 10-22.)

Figure 10-22 Set Language menu



6 To change language settings, tap **UP** or **DOWN** to highlight the desired language. Tap **SEL**. The system will restart and the desired language will be displayed. (See Figure 10-23.)

Figure 10-23 Changing language options



Chapter 11 Exit Function

11.1 Exit Function

Exit will restart the program or reboot the system.

- · Restart Program turns off the system and then restarts it
- Reboot System resets the CMS5000 microprocessor and reloads drivers

In the event of a power outage, CMS5000 will automatically restart when power becomes available. If the option to define a startup method has been selected, than CMS5000 will start that method after restarting. (See section 6.4, Defining Startup Methods, on page 6-12.)

CMS5000 will restart automatically after a software update.

11.2 Accessing Exit Options

1 Tap ESC until the CMS5000 Main Menu is displayed. (See Figure 11-1.)

Figure 11-1 CMS5000 Main Menu





2 Tap **DOWN** to highlight **Exit**. (See Figure 11-2.)

Figure 11-2 Exit function



3 Tap SEL. (See Figure 11-3.)

NOTE: Alternately, tap 4 followed by SEL. (See Figure 11-4.)

Figure 11-3 Selecting Exit



Figure 11-4 Using the number keys to select the Exit function



11.3 Restart System

1 With Restart Program highlighted, tap SEL. (See Figure 11-5.)

Figure 11-5 Restart Program option



2 Restart Program? is displayed. Tap UP to highlight Yes. Tap SEL. (See Figure 11-6.)

Figure 11-6 Confirming Restart



3 CMS5000 will restart.

11.4 Reboot System

1 Tap **DOWN** to highlight **Reboot System**. Tap **SEL**. (See Figure 11-7.)

Figure 11-7 Reboot System option



2 Reboot System? will display. Tap **UP** to highlight **Yes**. Tap **SEL**. (See Figure 11-8.)

Figure 11-8 Confirming Reboot



3 CMS5000 will reboot.

11.5 Return to CMS5000 Main Menu

Select the **Return to Main Menu** option to display the **CMS5000 Main Menu**. Alternately, tap **ESC** until the **CMS5000 Main Menu** is displayed.

Chapter 12 CMS IQ System Setup

12.1 Introduction

The **System Setup** window controls instrument operation. **System Setup** is used to run analyses, access data files, create or edit methods, and set parameters of various CMS5000 components.

12.2 System Setup

To access **System Setup**, launch CMS IQ by double-clicking **1**. The **System Setup** window is displayed. (See Figure 12-1.)

Figure 12-1 System Setup window

| CMS IO - [System Setup] | | |
|---------------------------------------------------------------------|---------------------------------------------------------|-------------------|
| File Functions System Tools Vi | ew Window Help | _ 6 |
| | | |
| PINFICON | Data Review Safety DB Managa Files Method Editor Status | |
| × | | C0101 Status |
| CMS IQ | System | Sensor is offline |
| CO101 his is a CMS5000 sensor | | |
| his sensor is Offline | | |
| ecent Files C: "8221451.mth C: ER Survey SIM Tetrachloroethen | | |
| C Water Purge 19 Cmpd_20100325 | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | × | |
| | 10.210.50.108 | |
| | | Adva |

12.2.1 Connecting to CMS5000

When CMS IQ is launched, CMS5000 will not automatically connect. To connect to CMS5000, click the desired CMS5000 sensor status icon.

NOTE: If CMS IQ is configured to connect to multiple instruments, right click the desired CMS5000 sensor status icon and click **Bring Online**. (See Figure 12-2.)

Figure 12-2 Bringing CMS 5000 Online

| | 2 | |
|-----------|-------------------------|--|
| | Eront Panel Display | |
| m 10.210. | <u>O</u> verlay | |
| m | ID Unknowns | |
| | ⊆alibrate | |
| | <u>R</u> un Method • | |
| | Edit Method | |
| | Log | |
| | <u>T</u> une Reports | |
| | D <u>a</u> ta Review | |
| | <u>M</u> anage Files | |
| | Update CMS5000 Software | |
| | Bring Online | |
| | Disable Connection | |
| | Properties | |

12.2.2 System Setup Menu

The main menu toolbar includes **File**, **Functions**, **System**, **Tools**, **View**, **Window**, and **Help** options. (See Figure 12-3.)

Figure 12-3 Main Menu toolbar





12.2.3 File Menu

The File menu is shown in Figure 12-4.

Figure 12-4 File menu

| Functions | System | Tools | View | Window | Help |
|-------------------------------------------------------------|--------------------------------------------|-----------------------------|----------------------------|------------------|--------|
| Open | | | | | Ctrl+0 |
| ⊆lose | | | | | |
| <u>S</u> ave | | | | | Ctrl+S |
| Save <u>A</u> s | | | | | Ctrl+A |
| View <u>L</u> og | | | | | |
| Method <u>E</u> dito | or | | | | |
| <u>M</u> anage Files | ; | | | | |
| Generate Tre | end Repor | t | | | |
| Print | | | | | Ctrl+P |
| Print Pre <u>v</u> iev | / | | | | |
| Print Setup | | | | | |
| PC: CMS500 PC: Air Samp PC: Air_Tri-B PC: Air_001. | 0 Air Purg ling_2010 ed_PPM_9 hps | e_1005 0513_0 5tandar | 14-05.H 3.hps d_2010 | nps 10514_002 | .hps |
| | • | | | | |
| | | | | | |

| Open | Opens a data file from either CMS5000 or the computer |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Close | Closes a data file |
| Save | Unavailable when in the System Setup window. When a data file is opened, the Data Review window is displayed. See section 13.2, Accessing the Data Review Feature, on page 13-1. Save is activated in the Data Review window. Changes to the data file can be saved |
| Save As | Unavailable in the System Setup window. When a data file is opened, the Data Review window is displayed. Save As is activated in the Data Review window. The data file can be saved with a different name and/or to a different location |
| View Log | Opens event log (*.evt) files. Examples of information logged are warnings, errors, events, and run history. See section 12.6.6.2, Logged Items, on page 12-61 |
| Method Editor | Functions the same as the Method Editor icon. See Chapter 16, Method Editor |

| Manage Files | Functions the same as the Manage Files icon. See section 12.5, Manage Files, on page 12-39 |
|-------------------------|------------------------------------------------------------------------------------------------------------------------|
| Generate Trend Report | Analyzes data collected over a specified period of time. See section 12.2.3.1 |
| Print | Prints files and is active in the Data Review window |
| Print Preview | Displays a preview of the final print layout and is active in the Data Review window |
| Print Setup | Accesses the printer setup options |
| Recently Accessed Files | Displays a list of recently accessed files. Click a file name to open it in the Data Review window |
| Exit | Closes CMS IQ software |



12.2.3.1 Generate Trend Report

To generate a trend report:

1 Determine the time period the trend report should cover. Alternatively, determine the date and time of the first and last data file to be used in the trend report. The date and time for the data file is displayed at the bottom of the Recall window. Take note of the date and time. (See Figure 12-5.) Click Cancel.

Figure 12-5 Recall data file date and time

| Recall | |
|------------------------------------------------------------------------------------------------------|---------------------------|
| | C CMS5000 |
| Drive: 🗇 OS (C:) | |
| Folder: C:\CMS IQ\C0102\Data\Water Purge 19 Cmpd | 💼 🦂 |
| · · · · · · · · · · · · · · · · · · · | |
| Name | Size Date |
| Reports | 3/25/2010 1:34:12 PM |
| Water Purge 19 Cmpd_20100325_04.hps | 294K 3/26/2010 9:42:58 AM |
| Water Purge 19 Cmpd_20100325_01.hps | 294K 3/26/2010 9:23:10 AM |
| Water Purge 19 Cmpd_20091218_01.hps | 294K 3/25/2010 1:33:56 PM |
| Water Purge 19 Cmpd_20091218_02.hps | 294K 3/25/2010 1:33:56 PM |
| Water Purge 19 Cmpd_20091218_03.hps | 294K 3/25/2010 1:33:55 PM |
| Water Purge 19 Cmpd_20091218_04.hps | 294K 3/25/2010 1:33:53 PM |
| Water Purge 19 Cmpd_20100302_01.hps | 294K 3/25/2010 1:33:52 PM |
| Water Purge 19 Cmpd_20100302_02.hps | 294K 3/25/2010 1:33:51 PM |
| Water Purge 19 Cmpd_20100302_03.hps | 294K 3/25/2010 1:33:50 PM |
| Water Purge 19 Cmpd_20100303_01.hps | 294K 3/25/2010 1:33:49 PM |
| Water Purge 19 Cmpd_20100303_02.hps | 294K 3/25/2010 1:33:48 PM |
| Water Purge 19 Cmpd_20100303_03.hps | 294K 3/25/2010 1:33:48 PM |
| Water Purge 19 Cmpd_20100325_02.hps | 294K 3/25/2010 1:33:46 PM |
| Water Purge 19 Cmpd_20100325_03.hps | 294K 3/25/2010 1:33:45 PM |
| K | > |
| File Name: Water Purge 19 Cmpd_20100325_02.hps | |
| File Tune: Data Files (*.hps: *.hpz: *.acg) | • |
| CMS Data File File timestamp = 3/25/2010 - 10:28:46 AM File modified = 3/25/2010 - 12:33:46 PM | Manage Files |
| J | Cancel |

2 Click File and select Generate Trend Report. (See Figure 12-6.)

Figure 12-6 Select Generate Trend Report

| Functions | System | Tools | View | Window | Help |
|-----------------------|-------------|---------|---------|----------|--------|
| Open | | | | | Ctrl+O |
| ⊆lose | | | | | |
| <u>S</u> ave | | | | | Ctrl+S |
| Save <u>A</u> s | | | | | Ctrl+A |
| View <u>L</u> og | | | | | |
| Method <u>E</u> di | tor | | | | |
| <u>M</u> anago Fil | | | | | _ |
| Generate T | rend Repor | t | | | |
| Print | | | | | Ctrl+P |
| Print Pre <u>v</u> ie | W | | | | |
| Print Setup | | | | | |
| PC: CMS50 | 00 Air Purg | e_1005 | 14-05.H | ips | |
| PC: Air Sam | pling_2010 | 0513_0 | 3.hps | | |
| PC: Air_Tri- | Bed_PPM_: | 5tandar | d_2010 | 0514_002 | .hps |
| PC: Air_00 | .hps | | | | |
| | | | | | |

3 The Generate Trend Report window is displayed. (See Figure 12-7.)

Figure 12-7 Generate Trend Report

| Generate Trend Report | |
|---------------------------------------------------|---|
| Begin Duration 2014-01-14 13:30:20 ▼ 31 Days ▼ | |
| End 2014-02-13 13:30:20 | |
| Data Path | |
| Output Path | |
| Output File Name Trend.csv | _ |
| Generate | |



4 Duration sets the length of the trend report. There are three preset durations, 31 Days, 365 Days, and 7 Days. For a duration of any different length, select Custom. (See Figure 12-8.)

Figure 12-8 Duration

| Generate Trend Report | | × |
|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---|
| Begin 2014-01-13 13:30:20 End 2014-02-13 13:30:20 Data Path Output Path Output File Name Trend.csv | Duration SI Days SI Days SI Days Custom Custom Generate Close | : |

- **5** Select **Begin** or **End** to set the date and time for the beginning or end of the trend report. The date and time can be entered by selecting each box and typing in the appropriate year, month, day, hour, minute, and second. The date can also be selected from the shortcut menu by selecting a calendar date. (See Figure 12-9.)
- **NOTE:** If **Begin** is selected, **End** will adjust to fit the selected **Duration** and vice versa. If **Duration** is set to **Custom**, **Begin** and **End** must each be selected individually.

| | Be | egin 2013 | -12-0 | 1 1 | D: 08:1 | 19 | - | Duration Custom | • | | | | |
|-------|-----|--------------|-------|-------|---------|-----|---|--------------------|---|------|------|---|---|
| • | D | ece | mber | , 201 | 3 | | | | | | | | |
| Sun I | Mon | Tue | Wed | Thu | Fri | Sat | • | | | | | | |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 | | | | | | | |
| • | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | _ | 1 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 | | | | | | | |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 | | | | | | | |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 | | | | | | _ | 1 |
| 29 | 30 | 31 | - 1 | 2 | 3 | 4 | | | | | | | |
| 2 | Тос | lay: | 3/17 | //201 | 4 | | | | | | | | |
| | Т | rend. | CSV | | | | | | | | | | |
| | | | | | | | | | | | | | |

Figure 12-9 Begin and End



6 Click **Browse** (...) to set the **Data Path** to the **Reports** folder to contain the trend report data. (See Figure 12-10.)

| Generate Tre | nd Report | | | | X |
|---------------------|---------------|--------------------|-----------|-------|----------|
| Begin 2013-12-01 | 10:08:19 👻 | Duration Custom | - | | |
| End 2013-12-31 | 11:08:19 | | | | |
| Data Path | | | | | |
| Output Path | | | | | |
| Dutput File Nam | e | | | / | |
| | | | Generate | Clo | se |
| Select Folde | | | | | ? |
| Look in: 🛅 | Ck Std | | • | • 🖻 🖆 | * |
| | | | | | |
| Reports | | | | | |
| Reports | | | | | |
| Reports | _ | | | | |
| Reports | | | | | |
| Folder: | C:\CMS\10.210 | .39.117\Dat | ∍\Ck Std\ | - | Open |

Figure 12-10 Data Path/Reports folder

- **NOTE:** The **Reports** folder may not contain all desired data reports. Data reports must be transferred from CMS5000 to the computer. See section 12.5, Manage Files, on page 12-39 for information on transferring data files to the computer.
- 7 Double-click the **Reports** folder, or highlight the **Reports** folder and click **Open**. (Refer to Figure 12-10.)



8 Click **Browse** (...) to set the **Output Path** where the report file will be saved. (See Figure 12-11.)

Figure 12-11 Output Path

| ustom 💌 | | | | | | | | |
|-------------------------------|------------|------------|--|--|--|--|--|--|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| d\Benorte\ | | | | | | | | |
| uvnepoitsv | | | | | | | | |
| | | | | | | | | |
| Output File Name Trend.csv | | | | | | | | |
| | d\Reports\ | d\Reports\ | | | | | | |

 9 Enter the Output File Name for the trend report. The default report name is Trend.csv. The file can be renamed after it has been generated. (See Figure 12-12.)

Figure 12-12 Output File Name

| Begin 2013-12-01 | 10:08:19 | • | Duration Custom | • | | |
|----------------------------------|-------------|--------|--------------------|-------|------|------|
| End 2013-12-31 | 11:08:19 | • | | | | |
| Data Path C:\CMS\10.2 | 10.39.117\D | ata\Ck | Std\Repo | irts\ | | |
| Output Path C:\Output\ | | | | | | |
| , Output File Na Trend.csv | me | | | | | -1 |

10 Click Generate. (See Figure 12-13.)

Figure 12-13 Generate the trend report

| Begin | Duratio | n | |
|--------------------|--------------------|--------|------|
| 2013-12-01 10:08 | 3:19 🚽 Custor | n 💌 | |
| End | | | |
| 2013-12-31 11:08 | 3:19 👻 | | |
| Data Path | | | |
| C:\CMS\10.210.39.1 | 117\Data\Ck Std\Re | ports\ | |
| Output Path | | | |
| C:\Output\ | | | |
| Output File Name | | | |
| Trend.csv | | | |

11 CMS IQ will parse every report within the data path and add reports with the appropriate dates to the trend report. A window displays the files being parsed and a trend report is generated. Depending on the number of files in the data path, the window may extend below the bottom of the screen. Click "**X**" to close the window. (See Figure 12-14.)

Figure 12-14 Parsing Files

| CMS IQ | |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ţ) | Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130307_01.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130319_01.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130319_02.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130319_03.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130319_03.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130319_05.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130319_06.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130319_06.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130325_50.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130325_51.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130325_51.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130325_53.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130325_53.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130325_55.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130325_55.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130325_55.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130325_55.rqt Parsing C:\CMS\10.210.39.117\Data\Ck Std\Reports\Ck Std_20130325_56.rqt Parsing C:\CMS\10.210.39.117\D |





12 The trend report is saved as **Output File Name>.CSV** in the **Output Path** folder and opened as a Microsoft Excel spreadsheet. (See Figure 12-15.)

| Figure 12-15 | Trend Report in Excel |
|--------------|-----------------------|
|--------------|-----------------------|

| XII | 🚽 🖉 • (°= - = | | | | | | | | | | | Trend csv - | Microsoft | Evcel | | | |
|-----|------------------|-------|---------|----------------------------|--------------|-----------|--------|-------------|------------|-------------|------|---------------|-------------|-----------------------|--------------|----------------|-------|
| Fi | e Home I | nsert | Page | Layout Form | nulas Da | ata Rev | iew V | /iew | | | | mentalear | inici o son | LACCI | | | |
| ľ | Cut | C | alibri | * 11 | · A A | = = [| »» | 📑 Wrap T | ext | General | | - | | Normal Bi | ad | Good | Neut |
| Pas | te Format Painte | er I | 8 I I | 1 - 🖽 - 🖇 | • <u>A</u> - | = = = | ÷= 6 | 🚝 🔛 Merge | & Center 🔻 | \$ - % , | .00 | Conditiona | Format | Calculation | heck Cell | Explanatory | Input |
| | Clipboard | 5 | | Font | G. | | Alig | nment | 5 | Number | | G | | | Styles | | |
| | A1 | - | • | <i>f</i> _x Date | | | | | | | | | | | | | |
| | A | В | С | D | E | F | G | н | 1 | J | K | L | | м | | N | 0 |
| 1 | Date | REC # | # CAS # | Target Name | Pred. RT | Actual RT | Area | Conc. (ppm) | No Adjust | Limit (ppm) | Flag | Water Temp(C |) Water | Femp (Calibraion)(C) | Argon Supply | Pressure(kPa) | |
| 2 | 12/6/2013 10:07 | | 1 | Toluene | 06:17.7 | 06:14.7 | 396505 | 1 | 1.473 | | | | | | | 605 | 5 |
| 3 | 12/6/2013 10:17 | | 1 | Toluene | 06:17.7 | 06:14.7 | 391399 | 1 | 1.454 | | | | | | | 605 | 5 |
| 4 | 12/6/2013 10:27 | | 1 | Toluene | 06:17.7 | 06:13.2 | 518375 | 1 | 1.054 | | | | | | | 614 | 1 |
| 5 | 12/6/2013 10:36 | | 1 | Toluene | 06:17.7 | 06:14.3 | 402414 | 1 | 1.495 | | | | | | | 607 | 7 |
| 6 | 12/6/2013 10:46 | | 1 | Toluene | 06:17.7 | 06:14.4 | 399915 | 1 | 1.486 | | | | | | | 607 | 7 |
| 7 | 12/6/2013 10:56 | | 1 | Toluene | 06:17.7 | 06:14.4 | 404451 | 1 | 1.503 | | | | | | | 607 | 7 |
| 8 | 12/6/2013 11:06 | | 1 | Toluene | 06:17.7 | 06:14.4 | 401114 | 1 | 1.491 | | | | | | | 607 | 7 |
| 9 | 12/6/2013 11:16 | | 1 | Toluene | 06:17.7 | 06:14.6 | 403602 | 1 | 1.5 | | | | | | | 607 | 7 |
| 10 | 12/6/2013 11:26 | | 1 | Toluene | 06:17.7 | 06:14.6 | 405474 | 1 | 1.507 | | | | | | | 607 | 7 |
| 11 | 12/6/2013 11:35 | | 1 | Toluene | 06:17.7 | 06:14.5 | 402327 | 1 | 1.495 | | | | | | | 607 | 7 |
| 12 | 12/6/2013 11:45 | | 1 | Toluene | 06:17.7 | 06:15.0 | 396004 | 1 | 1.472 | | | | | | | 608 | 3 |
| 13 | 12/6/2013 11:55 | | 1 | Toluene | 06:17.7 | 06:14.9 | 400674 | 1 | 1.489 | | | | | | | 608 | 3 |
| 14 | 12/6/2013 12:05 | | 1 | Toluene | 06:17.7 | 06:14.9 | 400023 | 1 | 1.486 | | | | | | | 608 | 3 |
| 15 | 12/6/2013 12:15 | | 1 | Toluene | 06:17.7 | 06:14.9 | 399406 | 1 | 1.484 | | | | | | | 608 | 3 |
| 16 | 12/6/2013 12:25 | | 1 | Toluene | 06:17.7 | 06:15.0 | 399934 | 1 | 1.486 | | | | | | | 608 | 3 |
| 17 | 12/6/2013 12:34 | | 1 | Toluene | 06:17.7 | 06:14.4 | 393125 | 1 | 1.461 | | | | | | | 605 | 5 |
| 18 | 12/6/2013 12:44 | | 1 | Toluene | 06:17.7 | 06:14.6 | 398562 | 1 | 1.481 | | | | | | | 605 | 5 |
| 19 | 12/6/2013 12:54 | | 1 | Toluene | 06:17.7 | 06:14.8 | 395131 | 1 | 1.468 | | | | | | | 608 | 3 |
| 20 | 12/6/2013 13:04 | | 1 | Toluene | 06:17.7 | 06:14.5 | 412666 | 1 | 1.533 | | | | | | | 612 | 2 |
| 21 | 12/6/2013 13:14 | | 1 | Toluene | 06:17.7 | 06:14.3 | 418012 | 1 | 1.553 | | | | | | | 612 | 2 |

13 Click Close to exit the Generate Trend Report window. (See Figure 12-16.)

Figure 12-16 Close Generate Trend Data window

| Begin 2013-12-01 10:0 | 819 👻 | Duration | | |
|--------------------------|------------|------------------|------|---|
| [201312 01 10.0 | 0.10 | | | |
| 2013-12-31 11:0 | 8:19 👻 | | | |
| | | | | |
| Data Path | 1170-1-100 | Chill Discontrol | | _ |
| L: /CMS /10.210.39. | | StavReportsv | | |
| Output Path | | | | |
| C:\Output\ | | | | |
| Output File Name | | | | |
| Trend.csv | | | | _ |
| | | | | |

12.2.4 Functions Menu

The **Functions** menu contains **Run Method**, **Calibrate**, **Overlay**, and **Front Panel Display**. (See Figure 12-17.) These options behave identically to their icons on the toolbar. See:

- Chapter 14, Run Method
- Chapter 17, Calibration
- Chapter 15, Chromatogram Overlay
- section 12.7, Front Panel Display Icon, on page 12-70

NOTE: ID Unknowns is unavailable.

Figure 12-17 Functions menu



12.2.5 System

The System menu is shown in Figure 12-18.

Figure 12-18 System menu





Click **Properties** to display the **System Properties** window. (See Figure 12-19.)

Figure 12-19 System Properties window

| | I VDE | | | | | | | | | |
|-----------------------------------------|-------------------------------------------|-------------------|------------------|---|--|--|--|--|--|--|
| HapsTCP | HAPS | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | _ | | | | | | |
| HapsTCP is H | lapsTCP | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | 1 | | | | | | | | | |
| Add Port (to add a Communications Port) | | | | | | | | | | |
| | CMS5000 List (to add or remove a CMS5000) | | | | | | | | | |
| CMS500 | 10 List (t | o add or remove a | a cimo 3000) | | | | | | | |
| CMS500 | 00 List (t | o add or remove a | unications Port) | | | | | | | |

12.2.5.1 Port Settings

The **Port Settings** tab is displayed. (See Figure 12-20.)

NOTE: Add Port and Remove should only be used by INFICON personnel.

CMS5000 List is used to:

- add, change, or delete a CMS5000 instrument from CMS IQ. The instrument name is displayed in the CMS IQ System Setup window
- connect CMS5000 to the computer via TCP/IP. Refer to Chapter 4, Setting Up Computer Communication



To change the system name:

1 Click CMS5000 List. (See Figure 12-20.)

Figure 12-20 System Properties window

| TOR | T, | /pe | | |
|-----------------|---------|------------------|-------------------|-----|
| HapsTCP COM1 | H/ R | APS 5-232 | | - 1 |
| | | | | |
| | | | | |
| HapsTCP is I | HapsTCP | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Add I | Port | (to add a Commun | ications Port) | |
| CHORD | 00134 | 1 | - CHCE000 | |
| CMSSU | UU LISI | to add or remove | a CMSSUUUJ | |
| - | ove | Ito remove a Com | munications Port) | |

- **2** If a CMS5000 has not been previously connected, the list will be blank. Type in the CMS5000 Name (C####) or IP address. Click **Add**. (See Figure 12-21.)
- **NOTE:** To find the CMS5000 Name or IP address, refer to section 4.2, Configuring the Computer for CMS5000 Communication, on page 4-1.

Figure 12-21 Adding CMS5000

| CMS5000/TCP Settings for HapsTCP | × |
|----------------------------------------|--------|
| CMS5000 List CMS5000/TCP Settings | |
| CMS5000 Name or IP Address System Name | Remove |
| Enter New CMS5000 Name or IP Address: | |
| | Add |
| OK Cancel | Help |



3 Double-click **System Name** to highlight, then edit the text to change the Host Name or IP address. (See Figure 12-22.)

Figure 12-22 CMS5000 list

| CMS5000/TCP Settings for HapsTCP | X |
|-------------------------------------------------|--------|
| CMS5000 List CMS5000/TCP Settings | |
| CMS5000 Name or IP Address System Name C0101 | Remove |
| Enter New CMS5000 Name or IP Address: | Add |
| OK Cancel | Help |

4 Click **OK**. The new CMS5000 **System Name** for CMS5000 is displayed in the **System Setup** window. (See Figure 12-23 and Figure 12-24.)

Figure 12-23 New system name

| CMS5000/TCP Settings for Haps | CMS5000/TCP Settings for HapsTCP | | | | | | | |
|-------------------------------------|----------------------------------|--------|--|--|--|--|--|--|
| CMS5000 List CMS5000/TCP Setting | js | 1 | | | | | | |
| CMS5000 Name or IP Address C0101 | Sustem Name Effluent | Remove | | | | | | |
| Enter New CMS5000 Name or IP Add | Add | | | | | | | |
| | | | | | | | | |
| OK | Cancel | Help | | | | | | |

Figure 12-24 Renamed CMS5000



12.2.5.2 Display

The **Display** tab is used to change the appearance of CMS IQ, including screen layout, color, font, and plot parameters. (See Figure 12-25.)

Figure 12-25 Display tab

| Colors Response Colors Change Color Resp. 1 Increment List Resp. 2 Decrement List Resp. 2 Poreground Resp. 4 Foreground Text Background Text Plot Plot Plot Thickness Point Size Plot Points V Connect Points | Port Setting: Display Miscellaneous Screen Layout ✓ Main Toolbar ✓ Sensor Toolbar ✓ Function Toolbar Toolbars Use Large Icons | ✓ Sensor Status Grid ✓ Show Tabs |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Restore Color and Font Defaults Plot Plot Thickness Point Size Image: Connect Points | Colors Change Color Increment List Decrement List Foreground Background Text | Fonts Sample Text Title Title Text Text Axes Axes |
| | Restore Color and Font Defaults Plot Plot Plot Thickness Point Size | ☐ Plot Points ☑ Connect Points |

12.2.5.2.1 Screen Layout

The **Screen Layout** pane sets the configuration of the main CMS IQ window. (See Figure 12-26.)

Figure 12-26 Screen layout section



| Main Toolbar | Selecting or clearing the Main Toolbar checkbox displays or hides the toolbar icons for Close, Open, Method Editor, Save As, Data Review, Manage Files, Print, About, and Help |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensor Toolbar | Selecting or clearing the Sensor Toolbar checkbox displays or hides the toolbar icons for System Setup, Sensors shortcut menu, Run Method, Calibrate, Chromatogram Overlay, and Front Panel Display |
| Function Toolbar | Unavailable |



| Toolbars Use Large Icons | Selecting or clearing the Toolbars Use Large Icons checkbox displays large or small toolbar icons |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensor Status Grid | Selecting or clearing the Sensor Status Grid checkbox displays or hides grids displaying information pertaining to the current state of valves and heaters |
| Show Tabs | Selecting or clearing the Show Tabs checkbox will enable or disable the appearance of tabs in the software |

12.2.5.2.2 Colors

Colors sets the color displayed when using **Data Review** and **Chromatogram Overlay**. (See Figure 12-27.)

Figure 12-27 Colors section

| Change Color Resp. 1 Increment List Resp. 2 Decrement List Resp. 4 Foreground Text | Colors- | Response Colors |
|----------------------------------------------------------------------------------------------------------------------|----------------|--------------------|
| Increment List Hesp. 2 Decrement List Resp. 3 Foreground Resp. 5 Background Text | Lhange Lolor | Resp. 1 🔨 |
| Decrement List Resp. 4 Foreground Resp. 5 Background Text | Increment List | Resp. 2 Resp. 3 |
| Foreground Tesp. 3 Background Text | Decrement List | Resp. 4 |
| Background | Foreground | Hosp. 0 |
| | Background | Text |

| Change Color | Select a color used when displaying data files. See section 12.2.5.2.3, Selecting Colors, on page 12-18 |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Increment List | Adds an additional Resp # to the Response Colors list that can be assigned a color |
| Decrement List | Removes a Resp # from the Response Colors list |
| Foreground | Select the color used for text and axes displayed when using the Data Review and Chromatogram Overlay functions. See section 12.2.5.2.3, Selecting Colors, on page 12-18 |
| Background | Select the background color when using the Data Review and Chromatogram Overlay functions. See section 12.2.5.2.3, Selecting Colors, on page 12-18 |

12.2.5.2.3 Selecting Colors

To select a new color, click the desired color and click OK. (See Figure 12-28.)

Figure 12-28 Changing colors

| Color | ? 🗙 |
|------------------------|-----|
| Basic colors: | |
| | |
| | |
| | |
| | |
| | |
| | |
| Custom colors: | |
| | |
| | |
| Define Custom Colors > | > |
| OK Cancel | |
| | |

To create custom colors:

- 1 Click **Define Custom Colors >>.** An expanded color selection is displayed.
- 2 Define the desired color with the color palette; Red, Green, and Blue values; or Hue, Saturation, and Tone. Click Add to Custom Colors, select the color in the Custom colors: menu, then click OK. (See Figure 12-29.)



Figure 12-29 Defining custom colors



12.2.5.2.4 Fonts

Fonts sets the fonts displayed when using the **Data Review** and **Chromatogram Overlay** functions. (See Figure 12-30.)

| Fonts Sample Text Title Title Text Text Axes Axes | Unavailable |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Text | Changes the font displayed for Response_ Max, Response/Response_Max, Response, etc. |
| Axes | Changes the font displayed for the axis text |

12.2.5.2.5 Restore Colors and Fonts Defaults

Restore Colors and Fonts Defaults reverts colors and fonts back to their default settings. (See Figure 12-31.)

Figure 12-31 Restore Colors and Fonts Defaults button

Restore Color and Font Defaults

12.2.5.2.6 Plot

The **Plot** pane sets the plot options that will be displayed when using the **Data Review** and **Chromatogram Overlay** functions. (See Figure 12-32.)

| Figure | 12-32 | Plot section |
|--------|-------|--------------|
|--------|-------|--------------|

| Plot | | |
|----------------|------|----------------|
| Plot Thickness | | Plot Points |
| Point Size | • | Connect Points |
| | | |

Plot Thickness Changes the thickness of the chromatogram trace

NOTE: Point Size, Plot Points, and Connect Points are unavailable.

12.2.5.3 Miscellaneous

The **Miscellaneous** tab is used to change default pathways, method editor defaults, and select the options **Method Editor in Wizard Mode** and **Allow Multiple Connections**. (See Figure 12-33.)

Figure 12-33 Miscellaneous tab

| Port Settings Display Miscellaneous Method Editor Defaults Default CMS Folder Browse Data file increment digits: 3 4 Default Safety DB Path Browse C:\DMS IQ\ Default Safety DB Path Browse C:\Nioshdbs\INDEX.HTM |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Method Editor Defaults Data file increment digits: 3 = Default CMS Folder Browse C:\CMS IQ\ Default Safety DB Path Browse C:\Nioshdbs\INDEX.HTM |
| Allow Multiple Connections |
| OK Cancel Help |



12.2.5.3.1 Data File Increment Digits

Data file increment digits sets the default number of digits (#) to be appended to a data file name in sequential order. For example:

- selecting 2 would set up the file name to read method_yearmonthday_##
- selecting 3 would set the file name to read method_yearmonthday_###

Click OK to save changes. (See Figure 12-34.)

Data file increments can also be set in Method Editor. See section 16.8, Data, on page 16-20.

Figure 12-34 Data File Increment digits

| System Properties | | | | |
|---------------------------------------------------------|------------------------|------------|--|--|
| Port Settings Display Miscellaneous | | | | |
| | | | | |
| Method Editor Defaults | Default CMS Folder | Browse | | |
| Data file increment digits: 3 📫 | | C:\CMS IQ\ | | |
| | Default Safety DB Path | Browse | | |
| | C:\Nioshdbs | VINDEX.HTM | | |
| Method Editor in Wizard Mode Allow Multiple Connections | | | | |
| C | IK Cancel | Help | | |

12.2.5.3.2 Default Pathways

Two default software pathways are displayed:

• **Default CMS Folder** displays the pathway to the folder where CMS IQ software is installed (See Figure 12-35.)

Figure 12-35 Default CMS Folder

| System Properties | × |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Port Settings Display Miscellaneous | \$ |
| Method Editor Defaults Data file increment digits: 3 📥 | Default CMS Folder Browse C:\CMS IQ\ Default Sefety DB Path Drowse C:\Nioshdbs\INDEX.HTM |
| 0 | K Cancel Help |

• **Default Safety DB Path** displays the pathway to the NIOSH database (See Figure 12-36.)

Figure 12-36 Default Safety DB Path

| System Properties |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Port Settings Display Miscellaneous |
| Method Editor Defaults Data file increment digits: 3 Default CMS Folder Browse C:\CMS.ID. Default Safety DB Path Browse C:\Nioshdbs\INDEX.HTM Method Editor in Wizard Mode Allow Multiple Connections |
| OK Cancel Help |

These pathways are automatically configured during software installation.



12.2.5.3.3 Changing Default CMS Folder

1 Click **Browse** for the **Default CMS Folder**. (See Figure 12-37.)

Figure 12-37 Browse button

| System Properties | | |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------|--|
| Port Settings Display Miscellaneous | | |
| Method Editor Defaults Data file increment digits: 3 💼 | Default CMS Folder Browse C:\CMS IQ\ Default Safety DB Path Browse C:\Nioshdbs\INDEX.HTM | |
| | DK Cancel Help | |

2 The Select Base Folder window is displayed. (See Figure 12-38.)

| Select Base Folder | × |
|-----------------------|---|
| Directory: C:\CMS IQ | ř |
| | |
| Refresh Select Cancel | |

Figure 12-38 Select Base Folder window

3 Click to highlight the desired folder. (See Figure 12-39.)

NOTE: Click Refresh if the desired folder is not displayed.



| Directory: C:\CMS IQ | ď |
|----------------------|-----|
| C:\ | < |
| Refresh Select Can | cel |

4 Click **Select** to set the pathway and close the window. (See Figure 12-40.)

Figure 12-40 Selecting the pathway

| Select Base Fold | ler | | X |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------|---|
| Directory: C:\CMS | IQ | | ď |
| C\ C\ | 23e927/b0cc93 210.50.108 Maps 101 102 00 IS5000 Software faultMethods | | |
| Refresh | Select | Cancel | |



12.2.5.3.4 Changing Default NIOSH Database Folder

1 Click Browse for the Default CMS Folder. (See Figure 12-41.)

Figure 12-41 Browse button

| System Properties | × |
|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Port Settings Display Miscellaneou | s] |
| Method Editor Defaults Data file increment digits: 3 🛖 | Default CMS Folder Browse C:\CMS IQ\ Default Safety DB Path Browse C:\Nioshdbs\INDEX.HTM |
| ✓ Method Editor in Wizard Mode ✓ Allow Multiple Connections | |
| | JK Cancel Help |

- 2 The **Open** window is displayed.
- **3** Click **Up One Level t** until the desired folder is visible.
- **4** Double-click the folder. (See Figure 12-42.) Alternately, highlight the folder and click **Open**.

Figure 12-42 Selecting desired folder

| Look in: 🗇 Local Disk (C:) | - 🖬 📩 - |
|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Petro PLUS Plus IQ Process Eye Program Files Program Files (x86) | C Pub_inc SAP C Silox Data C Silox Chart C Smart IQ C Smart_IQ |
| File name: start.htm Files of type: All Files (*.*) | Open Cancel |



5 The folder opens. Click **Open** and navigate to the correct folder. Select the folder and click **Select**. (See Figure 12-43 and Figure 12-44.)

Figure 12-43 Selecting the pathway

| Open | | | ? 🛛 |
|---------------|---------------------|-------|-----|
| Look in: 🗀 | Program Files (x86) | - + 🗉 | 📸 🎫 |
| C Microsoft S | 5QL Server | | |
| | | | |

Figure 12-44 Selecting the folder

| Select Base Folder | X |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| Directory: C:\CMS IQ | Ť |
| CA a022823e927/b0cc93 Analyze CMS 0 a 10.210.50.108 Bin Bin Bin Bin Bin Bin Bin Bin | |
| COLOTION COLOTION | ✓ |



12.2.5.3.5 Method Editor in Wizard Mode

Select **Method Editor in Wizard Mode** to enable Wizard Mode for method editing. Click **OK** to save changes. (See Figure 12-45.) See section 16.2, Wizard Mode, on page 16-2.

|--|

| System Properties | × |
|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Port Settings Display Miscellaneou | 31 |
| │ Method Editor Defaults Data file increment digits: 3 🛖 | Default CMS Folder Browse C:\CMS IQ\ Default Safety DB Path Browse C:\Nicshdbs\INDEX.HTM |
| Method Editor in Wizard Mode Allow Multiple Connections | |
| | DK Cancel Help |

12.2.5.3.6 Allow Multiple Connections

Select **Allow Multiple Connections** to connect to multiple CMS5000. When clear, connection is available to only one CMS5000. Click **OK** to save changes. (See Figure 12-46.)

| Linura | 10 16 | Connect to | multiple | avete me |
|--------|-------|------------|----------|----------|
| riyure | 12-40 | Connectio | munipie | Systems |

| System Properties | | |
|-------------------------------------------------------------|------------------------|------------|
| Port Settings Display Miscellaneou | s | |
| | | |
| Method Editor Defaults | Default CMS Folder | Browse |
| Data file increment digits: 3 📑 | | C:\CMS IQ\ |
| | Default Safety DB Path | Browse |
| | C:\Nioshdbs | VINDEX.HTM |
| | , | |
| Method Editor in Wizard Mode Allow Multiple Connections | | |
| | IK Cancel | Help |

12.2.6 Tools Menu

The Tools menu is shown in Figure 12-47.

Figure 12-47 Tools menu



12.2.6.1 System Setup

System Setup opens and closes the System Setup window.

12.2.6.2 System Properties

System Properties behaves identically to **Properties** in the **System** menu. Refer to section 12.2.5, System, on page 12-12.



12.2.6.3 Sensor Properties

Sensor Properties behaves identically to the **Status** icon on the **System Setup** window. See section 12.6, Status Icon, on page 12-46.

12.2.6.4 Set Access Level

Set Access Level... sets software access levels. There are two access levels: **Normal** and **Advanced**. Neither access level has a factory set password.

- Normal level allows running samples, viewing results and basic CMS5000 operations
- Advanced provides access to normal user functions plus method creation and editing, file deletion, changing alarm parameters and changing network settings

If desired, set an advanced access level password to restrict access to advanced functions. Once a password is set, it must be entered each time CMS IQ is run in advanced mode, or whenever the access level is changed from normal to advanced. See section 12.2.6.4.2, Setting or Changing the Access Level Password, on page 12-31.

12.2.6.4.1 Changing Access Levels

1 In System Setup, click Tools >> Set Access Level.... (See Figure 12-48.)

Figure 12-48 Set Access Level... option



- 2 Select the desired option (Normal or Advanced) from the Requested Access Level shortcut menu. Click OK to save changes. (See Figure 12-49.)
 - **NOTE:** If a password has been defined (for **Advanced** access only), type the password in the **Password** box before clicking **OK**.

Figure 12-49 Change Access Level window

| Change Access Level | | ? 🛛 |
|-------------------------|--------------------|------|
| Current Access Level: | Normal | |
| Requested Access Level: | Normal | • |
| Password: | Advanced Normal | - La |
| Change Password | OK Cancel | Help |

NOTE: When in **Advanced** access level, if **Normal** access level is selected, a prompt will appear stating that some areas of CMS IQ will have restricted access. Click **Yes** to continue. (See Figure 12-50.)

Figure 12-50 Restricted access prompt

| ? | The selected level will limit access to some areas of CMSIQ. Do you want to continue |
|---|--------------------------------------------------------------------------------------|
| ~ | |
| | |

3 The selected access level of the software is indicated in the bottom right corner of the CMS IQ program. (See Figure 12-51.)

Figure 12-51 Current access level shown in System Setup window

| File Functions System Tools | View Window Help | 0 . | | | | |
|------------------------------------------------------------------------------------|------------------|--------------------|---------------------------|-------------------------------|----|----------------------------------------------------------------------------------------------------|
| JINEICON | S | 📌 🔶 | | | | |
| | Data Review Ru | n Method Sarety DB | Manage Hies Method Editor | Status Pront Panel Display | | |
| | 3 | | | | | C100 Status |
| C100 | System | | | | | Current Pressures Carrier Supply (kPa): 668 |
| Front Panel Display Displays the current state of the ront panel LCD screen. | | | | | | Current Temperatures (C) Regulator Temp: 55.0 CKStd: 55.0 Valve0ven: 49.7 Column: 60.5 |
| Recent Files | | | | | | Detector: 80.0 WaterTemp: 21.4 |
| | | | | Advanc | ed | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
12.2.6.4.2 Setting or Changing the Access Level Password

- 1 Select Advanced from the Requested Access Level shortcut menu.
- 2 Click Change Password. (See Figure 12-52.)

Figure 12-52 Change Password... button

| Change Access Level | ? 🛛 |
|-------------------------|----------------|
| Current Access Level: | Advanced |
| Requested Access Level: | Advanced |
| Password: | |
| Change Password | OK Cancel Help |

3 The Change Password window will display. (See Figure 12-53.)

Figure 12-53 Change Password window

| hange Password | | ? |
|-----------------------|----------|------|
| Current Access Level: | Advanced | |
| Old Password | . [| |
| New Password | | |
| Verify New Password | | |
| | Canada 1 | Help |

- **4** Type the current password in the **Old Password** box. The **Old Password** box should be left blank when creating a password for the first time.
- 5 Type the new password in New Password and Verify New Password box.
- **6** Click **OK** to set the new password, or click **Cancel** to exit without setting the new password.
- 7 Click OK to close the Change Access Level window.
 - **NOTE:** When closed, CMS IQ retains the last access level. Upon re-opening the program, CMS IQ will return to the last access level utilized. If CMS IQ opens in advanced level, and a password has been set, the correct password is required to obtain advanced access. If the password is unknown, select normal access.
 - NOTE: If password is lost or forgotten, contact INFICON to reset it.

12.2.7 View Menu

View menu sets the toolbars to display. (See Figure 12-54.)

Figure 12-54 View menu

| View Window Help | | | | | | | |
|----------------------------|--|--|--|--|--|--|--|
| ✓ Main Toolbar | | | | | | | |
| ✓ Sensor Toolbar | | | | | | | |
| Eunction Toolbar | | | | | | | |
| Toolbars Use Large Icons | | | | | | | |
| Sensor Status <u>G</u> rid | | | | | | | |

12.2.7.1 Main Toolbar

Select to display the **Main Toolbar**, the default condition. (See Figure 12-55.) See Table 12-1, System Setup icons, on page 12-34.

Figure 12-55 Main toolbar



12.2.7.2 Sensor Toolbar

Select to display the **Sensor Toolbar**, the default condition. (See Figure 12-56.) See Table 12-1 on page 12-34, **System Setup icons**.

Figure 12-56 Sensor toolbar



12.2.7.3 Function Toolbar

Function Toolbar is only available when the **Data Review** window is open. (See Figure 12-57.) Refer to section 13.4, Data Review Toolbar, on page 13-5.

Figure 12-57 Function toolbar



12.2.7.4 Toolbars Use Large Icons

Toolbars Use Large Icons increases the size of toolbar icons.



12.2.7.5 Sensor Status Grid

Sensor Status Grid will display the current status of CMS5000 Gas/Valves and Heaters.

The Gas/Valves tab displays the current status (on or off) for:

- CMS5000 valves
- GC column pressure
- carrier gas supply pressure

The **Heaters** tab displays the current temperatures and set points of the heated components. (See Figure 12-58.)

```
Figure 12-58 Sensor Status Grid
```

| • | Gas/Valves H | leaters | | | | | | | | | | | |
|--------|---------------|-----------|---------|----------------|---------|--------|--------|-------|--------|-------------|-----|----------|------------|
| Ξſ | Sensor | Status | Process | Process Status | GC Flow | HSFlow | Sample | Purge | Ck Std | Sample Pump | VSO | VSODrive | GC Col Pre |
| υ Γ | 10.210.70.108 | 🔵 Offline | None | | | | | | | | | 0 | 0 |
| Ser | < | | | | | | | | | | | | > |

12.2.8 Window Menu

Window Menu will display various window configuration options. (See Figure 12-59.)

Figure 12-59 Window menu



Cascade, **Tile Horizontally**, and **Tile Vertically** determine the arrangement of open windows on the screen.

Arrange lcons aligns the icons along the top row.

Windows currently open are listed. The current view is the selected view.



12.2.9 Help Menu

Please contact INFICON at www.inficon.com for assistance.

12.3 System Setup Icons

Table 12-1 System Setup icons

| lcon | Name | Description |
|------|---------------|-------------------------------------------------------------------------------------------------------------------|
| | Close | Closes a data file |
| 2 | Open | Opens a data file |
| | Method Editor | See Chapter 16, Method Editor |
| H | Save As | Saves a data file to the computer. Will be unavailable when a data file is not selected |
| S | Data Review | See Chapter 13, Data Review |
| l, | Manage Files | See section 12.5, Manage Files, on page 12-39 |
| 4 | Print | Prints a copy of the chromatogram of the selected data file. Will be unavailable when a data file is not selected |
| 67 | About | Displays the installed software version |
| ? | Help | Unavailable. Contact INFICON at www.inficon.com for assistance |
| | System Setup | Switches between the System Setup and either the Data Review or Run Method views |



Table 12-1 System Setup icons

| lcon | Name | Description | | | | |
|------------------------|---------------------|----------------------------------------------------------------|--|--|--|--|
| Aun Method | Run Method | See Chapter 14, Run Method | | | | |
| | Calibrate | See Chapter 17, Calibration | | | | |
| <u></u> | ID Unknowns | Unavailable | | | | |
| | Overlay | See Chapter 15, Chromatogram Overlay | | | | |
| Front Panel Display | Front Panel Display | See section 12.7, Front Panel Display Icon, on page 12-70 | | | | |
| Safety DB | Safety Database | See section 12.4, Safety DB, on page 12-36 | | | | |
| Tatus | Status | See section 12.6, Status Icon, on page 12-46 | | | | |
| System | System | Refer to section 12.2.5, System, on page 12-12 | | | | |
| | Sensor Status | See section 12.8, CMS5000 Sensor Status Icon, on page 12-71 | | | | |

12.4 Safety DB

Safety DB accesses the NIOSH Safety Database used to locate NIOSH REL, OSHA PEL, CAS Numbers, synonyms, IDLH's, and safety recommendations.

1 Double-click Safety DB . The NIOSH Pocket Guide to Chemical Hazards and Other Databases window is displayed. (See Figure 12-60.)

Figure 12-60 NIOSH / Pocket Guide to Chemical Hazards and Other Databases window



2 Click NIOSH Pocket Guide to Chemical Hazards. The NIOSH Pocket Guide to Chemical Hazards window is displayed. (See Figure 12-61.)

Figure 12-61 NIOSH Pocket Guide to Chemical Hazards link

| 🥜 • 🚺 C. (Noshdo Noshdo / pgpgatar. Nn | | Y 😽 🗙 Live Search |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------|
| et - 📸 Select | | |
| 🔋 🙁 🔹 🍘 MEOSH / Pocket Guide to Che 🖉 MEOSH / Pocket Guide to Che 🖉 MEOSH / Pocket Guide | to X | 💁 • 🖾 · 🖶 • |
| | | |
| OSF The National Institute for Occupational Safety and Health | | |
| SH Publication No. 2005-151: | | |
| IOSH Pocket Guide to Chemical Hazards | | |
| NIDSH Pecket Guide to Chemical Hazardo (IP-D) is intended as a source of general industrial ene information on several indused on terminalizations for working, emptyper, and poton lending tradeouts. The IP-D code on cleans an analysis of a perfect data, it is present by information and patient in abhemated or tabular perfect data. The perfect data is the perfect on the perfect data is a perfect data in a perfect data in concert. The information data patient is the perfect data is the concert patient data in the perfect data is the IP-D should help users incorpore and control patient chemical hazards. | | |
| ntents | TIOSH | |
| Introduction | POCKET GUIDE TO | |
| Index of Chemical Names, Synamyse and Trade Names | HAZARDS | |
| Index of Primary Chemical Names | Manafestral for site Te and a man strategy | |
| Inter of CAS Numbers | Santon Na Filomona Sunton and Providence Restance methods for this spectrum Restly surfacesh | |
| Index of RTECS Numbers | | |
| <u>Appendices</u> | ID-ROH Start page | |
| | WOSH Pocket Guide | |
| at's Inside | Infortuction Infort of Chemical | |
| Pocket Guide includes the following: | Names, Synonyma and Trade Names | |
| Chemical names, synonyms, trade names, conversion factors, C4S, RTECS, and DDT numbers | Index of Parines Index of Parines Index of Parines | |
| NIOSH Recommended Expoure Limits (NIOSH RELs) | Index of RTECS | |
| Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) | Appendices | |
| NIOSH Immediate Dangerous to Life and Health values (NIOSH IDLHs) (documentation for those values) | Other Databases | |
| A physical description of the agent with chemical and physical properties | mportant information | |
| Measurement methods | | |
| Personal protection and sanitation recommendations | | |
| Respirator recommendations | | |
| Information on health hazards including route, symptoms, first aid and target organ information | | |



3 Click Index of Chemical Names, Synonyms, and Trade Names. (See Figure 12-62.)

Figure 12-62 Index of Chemical Names, Synonyms and, Trade Names



4 The **Index Of Chemical Names, Synonyms, and Trade Names List** window with the components of the database listed in alphabetical order is displayed. (See Figure 12-63.)

Figure 12-63 Index Of Chemical Names, Synonyms, and Trade Names List



5 In Figure 12-64, benzene is selected by clicking **B** and clicking the **SEQ** number (**0049***) associated with benzene.

Figure 12-64 benzene example

| 0 | <i>B</i> Rec(((C))Noshdbs/Neshdbs/rpg/NPG200000.htm#8 | | | 🛩 🐓 🗶 Live Search | |
|---------|----------------------------------------------------------------------------------|------------|-------------------------|-------------------|--------------|
| Convert | t - 📸 Select | | | | |
| dr. | 198 • AMOSH / Pocket Guide to Che AMOSH / Pocket G | ude to Che | 201 / Pocket Guide to X | 💁 = 🔝 - 📾 = 🖓 Pa | pe + 🌍 Tools |
| | ABCDEFGHIJKLMNOPORS | TUVWX | Z | | |
| | | | | | |
| 3 | | | | | |
| SEQ | CHEMICAL NAME | CAS No. | ITECS No. | | |
| 0572 | Bacilius subtilis | 1395-21-7 | 09450000 | | |
| 0572 | Bacillus subtilis BPN | 1395-21-7 | 09450000 | | |
| 0572 | Bacilius subtilis Carlsburg | 1395-21-7 | 09450000 | | |
| 0247 | Banana oli | 123-92-2 | 159800000 | | |
| 0047 | Barite | 7727-43-7 | R0500000 | | |
| 00451 | Barium chlorida (as Ba) | 10351-37-2 | 08750000 | | |
| 2045 | Barlum dichlori de | 10351-37-2 | 08750000 | | |
| 0040 | Barium dinitrate | 10022-31-8 | 09625000 | | |
| 0046 | Barium(II) nitrate (1:2) | 10022-31-8 | 02625000 | | |
| 2245* | Barium nitrate (as Ba) | 10022-31-8 | 09625000 | | |
| 0048 | Barium salt of nitric acid | 10022-31-8 | 09625000 | | |
| 0047 | Barium salt of sulfuric acid | 7727-43-7 | R050000 | | |
| 0047* | Barlum sulfate | 7727-43-7 | R0500000 | | |
| 0247 | Barytes (natural) | 7727-43-7 | R0500000 | | |
| 0181 | Basudin® | 333-41-5 | F3325000 | | |
| 0577 | Battery adid | 7664-93-9 | V85500000 | | |
| 9285 | Baytex | 55-38-9 | F9625000 | | |
| 0128 | BCNE | 542-88-1 | 31575000 | | |
| 0574 | Beet sugar | 67-50-1 | 1145500000 | | |
| 0048* | Benomil | 17804-35-2 | 06475000 | | |
| | | 62-53-3 | W6650000 | | |
| 0049* | Benzene | 71-43-2 | 0/1400000 | | |
| 0121 | Benzene chloride | 108-90-7 | 20175000 | | |
| 0495 | 1, 4-Benzenediamine | 106-50-3 | 198050000 | | |
| 0513 | 1, 3-Benzenedicarbonitrile | 626-17-5 | 21800000 | | |
| 0512 | 1, 2-Berzenedicarborylic anhydride | 85-44-9 | 13150000 | | |
| 0571 | 1, 3-Benzenedimethanamine | 1477-55-0 | F8970000 | | |
| 0109 | 1, 2-Benzenediol | 120-80-9 | IX1050000 | | |
| 0543 | 1, 3-Bercanediol | 108-46-3 | 69625000 | | |
| 0338 | 1, 4-Benzenediol | 123-31-9 | N3501000 | | |
| | | - | | | |

6 The benzene window is displayed. (See Figure 12-65.)

Figure 12-65 benzene information window

| 🎒 😔 🔹 💋 Crivieshdesi Noshdosinogi rogdili 49. M | 💌 🏘 🗙 Uve Search | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------|
| Convert - 🔂 Select | | | | |
| 🐼 😥 - 🍘 NBOSH / Pocket Guide to Che 👔 | MOSH / Packet Guide to Che 🎽 MOSH Podiet Guide to C 🗴 | | 🏠 • 🖾 - 🖶 • 🕞 | Page - 🕥 Tools |
| NOSH | | | | CDO |
| | NIOSH F | Pocket Guide to Chemical Hazar | rds | |
| Benzene | | | CAS 71-43-2 | |
| 546 | | | RTECS 071620020 | |
| ynonyms & Trade Names Ienzol, Phenil hydride | | | DOT ID & Guide 1114 130 | |
| Exposure | NIOSH REL: Ca TWA 0.1 ppm ST 1 ppm Se | a Appendix A | | |
| Limits | OSHA PEL: (1910.1028) TWA 1 ppm ST 5 pp | m <u>See Appendix F</u> | | |
| DLH Ca (500 ppm) See: 71432 | | Conversion 1 ppm = 3.19 mg/m ³ | | |
| Physical Description Coloriess to light-yellow liquid with an aromatic odor. | (Note: A solid below 42°F.) | | | |
| AVC 78.1 | 0P: 1767F | FRZ: 42'F | Sol: 0.07% | |
| P:75 mmHg | IP:9.24 eV | | Sp.Gr. 0.88 | |
| LP: 12"F | UEL: 7.8% | LEL: 12% | | |
| lass IB Flammable Liquid: FLP, below 73'F and BP | at or above 100°F. | | | |
| ncompatibilities & Reactivities Strong oxidizers, many fluorides & perchlorates, nitric | acid | | | |
| Reasurement Methods (IOSH 1500 1501, 3700 3800: OSHA 12, 1005 Rev: 181441 tr OSHA Methods | | | | |
| Avrennel Protection & Senitation (See acolection) Sin: Prevent skin contact (sei: Prevent eje contact (sei: Ariver, and acolection) Senioe (Thema wit (Earmakle)) Dange, No recommendation Prode: Ejewash, Duick direch | | Firet Add Gitte accordingts) Eye, Imgate Immediately Bits: Dough wash Immediately Bitsathing: Respiratory support diviatiow: Medical attention Immediately diviatiow: Medical attention Immediately | | |
| mostarti additional information about reselvator selv baspirator Recommondations (Bea Jopanshi E) HO k concentrations above the HOSH REL, or where it AFF = 10,000 Ary self-contened breathing apparent PF = 10,000 Ary self-contened breathing apparent PF = 10,000 Ary self-contened breathing apparent Scape: JFF = 50 Ary air-purthing, full-facepiece respirator (| ction GH GH is han has a full backgive and is operaided in a pressure-demand UI foreprice and its (sperated in a pressure-demand or other post gas mask) with a chin-ship, first- or back-meunted organic vapor | v ofter positive-oreasure mode Ne pressure mode in combination with an auxiliary self-contained positive p anistavilyry appropriate escape-type, self-contained breathing apparatus | ressure breathing apparatus | |
| xposure Routes inhalation, skin absorption, ingesti | on, skin andior eye contact | | | |
| ymptoms Initation eyes, skin, nose, respiratory syst | em; dizziness; headache, nausea, staggered gait; anorexia, lassib | de (weakness, enhaustion); dermatilis; bone marrow depression; (potential | l occupational carcinogen) | |
| arget Organs Eyes, skin, respiratory system, blood, | central nervous system, bone marrow | | | |
| Cancer Site (leukemia) | | | | |
| See also: INTRODUCTION See ICSC CARD: 0015 | See MEDICAL TESTS 0022 | | | |
| | | | | |
| | | | | |



12.5 Manage Files

Manage Files transfers files between CMS5000 and the computer. Files can be renamed or deleted.

Double-click 🎩 to open the Manage Files window. (See Figure 12-66.)

| Figure 12 | -66 Mana | ge Files | window |
|-----------|----------|----------|--------|
|-----------|----------|----------|--------|

| Manage Files | | | | |
|-------------------------------------|-------------|--------------|-------------|--------------|
| PC Files | | | c | MS5000 Files |
| Folder: C:\VSS\TWare32.3\10.210.50. | 108\ 🗈 💣 | | 1 | |
| Name | Size Date | | Name | Size Date |
| Events | 9/2/2009 | | Log | 9/2/2009 |
| Data | 8/31/2005 | | Data | 8/26/2005 |
| Method | 8/31/2009 | | Method | 8/26/2005 |
| SmartStatus.log | 1K 9/2/2009 | < Copy | | 8/7/2009 |
| | | | | 6/6/2007 |
| | | < Backup | nepolis | 6/6/2007 |
| | | | | |
| | | < Backup All | | |
| | | | J | |
| | | | 1 | |
| | | Rename | | |
| | | | | |
| | | Delete | | |
| < | | | | > |
| 4 Object(s) | | | 6 Object(s) | |
| Drive: 🖙 Local Disk (C:) | - | | | |
| , | | | | |
| | | | | |
| | | | | 100 |
| 1 | | | | |
| | | | | Done |

12.5.1 Copy Function

Copy--> will copy methods from the computer to CMS5000.

<--Copy will copy methods, data reports, and data files from CMS5000 to the computer. (See Figure 12-67.)

NOTE: Data reports are located inside the **Data** subfolder.

NOTE: Data files cannot be copied from the computer to CMS5000.

Figure 12-67 Copy function

| PC Files | | | | CMS5000 Files |
|--------------------------------|------------------------------------|--------------|----------------|----------------------------------|
| Folder: C:\VSS\TWare32.3\10.21 | 0.50.108\ 🗈 🛉 | 1 | 7 | _ |
| Name | Size Date | | Name | Size Date |
| 💼 Events 💼 Data 🚞 Method | 9/2/2009 8/31/2009 8/31/2009 | Сору> | Data Method | 9/2/2009 8/26/200 8/26/200 |
| SmartStatus.log | 1K 9/2/2009 | < Copy | Lib Reports | 8/7/2005 6/6/2007 6/6/2007 |
| | | < Backup All | | |
| | | Rename | | |
| • 11 | | Delete | | |
| 4 Object(s) | | - | 6 Object(s) | |
| Drive: 🖙 Local Disk (C:) | - | | | |
| | | | | <u>_</u> |
| | | | | |



12.5.2 Backup Function

<--Backup will backup selected files from CMS5000 to the computer.

<--Backup All will backup all files from CMS5000 to the computer.

NOTE: Advanced level permission is required to backup files. Refer to section 12.2.6.4, Set Access Level, on page 12-29 to change access levels.

- Backup will copy and compress files into <backupfilename>.tgz
- **Copy** does not compress files and keeps their <originalfilename>.hps or <originalfilename>.mth (See Figure 12-68.)

Figure 12-68 Backup function

| Manage Files | |
|-----------------------------|---------------------|
| PC Files | CMS5000 Files |
| Folder: C:\CMS IQ\C100\ | |
| Name Size Date Name | Size Date |
| Renamed Folder 6/28/2010 | 6/9/2010 |
| Events 6/28/2010 Copy> | 5/17/2010 |
| Data 5/8/2010 Rename | ed Folder 5/11/2010 |
| Benote 6/7/2010 < Copy | 9/7/2010 |
| SmartStatus log 1K 6/28/201 | 6/6/2007 |
| < Backup | 6/6/2007 |
| | |
| < Backup All | |
| | |
| | |
| Hename | |
| | |
| Delete | |
| C Object(s) | |
| | |
| Drive: S OS (C:) | |
| | <u>^</u> |
| | |
| | ~ |
| | |
| | Done |

12.5.3 Rename Function

Rename will rename folders or files.

- **NOTE:** Advanced level permission is required to rename folders or files. Refer to section 12.2.6.4, Set Access Level, on page 12-29 to change access levels.
- **1** To rename a folder or file, click the desired folder or file and click **Rename**. (See Figure 12-69.)

Figure 12-69 Rename function

| PC Files | | | | | CMS5000 Files |
|-------------------------------|-----------|-----------|--------------|-------------|---------------|
| older: C:\VSS\TWare32.3\10.21 | 0.50.108\ | ا ک | | 7 | |
| Name | Size D |)ate | | Name | Size Date |
| Events | 9 | 3/2/2009 | | Log | 9/2/2009 |
| 🔁 Data | 8 | 3/31/2005 | | 🚞 Data | 8/26/200 |
| Method | 8 | 3/31/2005 | | ' 🧰 Method | 8/26/200 |
|] SmartStatus.log | 1K S | 3/2/2009 | < Copy | Tune | 8/7/2009 |
| | | | | Lib | 6/6/2007 |
| | | | < Backup | Reports | 6/6/2007 |
| | | | | 4 | |
| | | | < Backup All | | |
| | | | Rename | | |
| | | | Delete | | |
| < | | > | | | > |
| Object(s) | | | | 6 Ubject(s) | |
| rive: 😪 Local Disk (C:) | | - | | | |
| 1 | | | | | |
| | | | | | |
| | | | | | |
| | | | | | ~ |

2 The **Rename** window is displayed. **Rename**: displays the current folder name. Type the new name in the **To**: box and click **OK**. (See Figure 12-70.)

Figure 12-70 Renaming folder

| Rename | × |
|----------------|------------------------|
| Rename: To: | Data Renamed Folder |
| | OK Cancel |
| | |



3 The renamed folder will appear in the Manage Files window. (See Figure 12-71.)

| Manage Files | | | | | X |
|-------------------------|------|-----------|--------------|------------------|--------------|
| PC Files | | | | C | MS5000 Files |
| Folder: C:\CMS IQ\C100\ | | 1 | | 1 | |
| Name | Size | Date | | Name | Size Date |
| E vents | | 6/28/2010 | | Log | 6/9/2010 |
| 🚞 Data | | 6/8/2010 | Copy> | Alarma | 5/17/2010 |
| i Method | | 6/7/2010 | | 📄 Renamed Folder | 5/11/2010 |
| Reports | | 6/7/2010 | < Copy | Method | 5/11/2010 |
| SmartStatus.log | 1K | 6/28/2010 | | Tune | 8/7/2009 |
| | | | Zu Backup | Lib | 6/6/2007 |
| | | | (Backup | Reports | 6/6/2007 |
| | | | | | |
| | | | < Backup All | | |
| | | | | | |
| | | | During | | |
| | | | Hename | | |
| | | | | | |
| | | | Delete | | |
| <u><</u> | | > | | 7 Obie etfe) | |
| 5 Ubject(s) | | | | / Object(s) | |
| Drive: S OS (C:) | | - | | | |
| | | | | | |
| | | | | | <u> </u> |
| | | | | | |
| | | | | | ~ |
| | | | | | Done |
| | | | | | Dono |

12.5.4 Delete Function

Delete removes folders or files.

NOTE: Advanced level permission is required to delete folders or files. Refer to section 12.2.6.4, Set Access Level, on page 12-29 to change access levels.



1 Highlight the desired folder or file and click **Delete**. (See Figure 12-72.)

Figure 12-72 Delete function

| PC Files | | | CMS! | 5000 Files |
|------------------------|--------------|--------------|----------------|------------|
| older: ICACMS IOAC100A | | Ĺ | 1 | |
| Name | · · | |)r Nama | Size Date |
| Benamed Folder | 6/28/2010 | | | 6/9/2010 |
| Events | 6/28/2010 | | Alarm | 5/17/201 |
| Data | 6/8/2010 | | Renamed Folder | 5/11/2010 |
| Method | 6/7/2010 | Copy | 1 🗀 Method | 5/11/201 |
| Reports | 6/7/2010 | (copy | 🗕 🚞 Tune | 8/7/2009 |
| SmartStatus.log | 1K 6/28/2010 | | 1 🗀 Lib | 6/6/2007 |
| | | < Backup | Reports | 6/6/2007 |
| | | | 1 | |
| | | < Backup All | | |
| | | | | |
| | | - | 1 | |
| | | Hename | | |
| | | | | |
| - 10 | | Delete | | |
| | | | 7 Object(a) | > |
| 5 Ubject(s) | | | 1 Object(s) | |
| Drive: See OS (C:) | • | | | |
| 1 | | 1 | | ~ |
| | | | | |
| | | | | |
| | | | | Y |
| | | | | |

2 A confirmation message is displayed. Click **Yes** to delete the folder or file. (See Figure 12-73.)

Figure 12-73 Warning message





3 Click **Done** to exit the **Manage Files** window. (See Figure 12-74.)

Figure 12-74 Folder or file deleted

| Manage Files | | | | |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PC Files | | | | CMS5000 Files |
| Folder: C:\CMS IQ\C100\ | E B | | 7 | |
| Name Events Data Method Reports SmartStatus.log | Size Date 6/28/2010 6/8/2010 6/7/2010 6/7/2010 6/7/2010 1K 6/28/2010 1K | Copy> < Copy < Backup < Backup All | Name Log Alarm Method Tune Lib Reports | Size Date 6/9/2010 5/17/2010 5/17/2011 5/11/2010 8/7/2009 6/6/2007 6/6/2007 6/6/2007 |
| S Object(s) | | Rename Delete | 7 Object(s) | <u>×</u> |
| Drive: S (C:) | • | | | Done |

12.6 Status Icon

| 1 | |
|---|-------|
| | - 200 |
| | QF . |
| | |

Double-click **Status** ^{status} to display the **Properties** window. Several parameters such as CMS5000 time, Input/Output, and data settings can be accessed.

12.6.1 Status

The **Status** tab displays current temperatures of the column, valve oven, check standard, heated lines, sample water (if running a water method), and regulator. Carrier gas pressure is displayed. (See Figure 12-75.)

Figure 12-75 Status tab

| Protoure | lows and Temperature | es | CMS Ir | formation | Parameters | |
|---------------|----------------------|------|-------------|-------------|--------------|-----|
| Status | CMS Time Zone | Inpu | it/Output | Data Settin | ngs Function | s |
| -Current Temp | eratures (C) | | Current Pre | essures | | |
| Column: | | 60.9 | Carrier Sup | ply (kPa): | | 643 |
| Valve0ven: | | 50.0 | | | | |
| CkStd: | | 55.0 | | | | |
| Heated Lines: | | 79.8 | | | | |
| WaterTemp: | | 24.0 | | | | |
| Regulator Lem | ір (L): | 55.0 | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |



12.6.2 CMS5000 Time Zone

The **CMS5000 Time Zone** tab sets CMS5000 date and time. Data files are stamped with date and time based on the **CMS5000 Time Zone** setting. (See Figure 12-76.)

Figure 12-76 CMS5000 Time Zone tab



12.6.2.1 Setting the Time Zone

To set the time zone, select the desired time zone from the shortcut menu. (See Figure 12-77.)

NOTE: Click Select GMT if Greenwich Mean Time is desired.

Figure 12-77 Selecting time zone





12.6.2.2 Setting Date and Time

There are two options to set the date and time.

12.6.2.2.1 Sync Date and Time to Computer

Click **Set CMS5000 Date/Time to PC Date/Time** to automatically synchronize CMS5000 to the computer date and time. (See Figure 12-78.)

Figure 12-78 Set CMS5000 Date/Time to computer Date/Time button



12.6.2.2.2 Enter Date and Time Manually

1 Click Set CMS5000 Date/Time. (See Figure 12-79.)

Figure 12-79 Set CMS5000 Date/Time button



2 The Set Date/Time window will display. (See Figure 12-80.)

Figure 12-80 Set Date/Time

| 4:32: | 03 PI | OK | | | | | |
|-------|-------|------|--------|-----|-----|-----|--|
| • | S | epte | Cancel | | | | |
| Sun | Mon | Tue | Wed | Thu | Fri | Sat | |
| 30 | 31 | • | 2 | 3 | 4 | 5 | |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | |
| 27 | 28 | 29 | 30 | 1 | 2 | 3 | |
| 4 | 5 | 6 | - 7 | 8 | 9 | 10 | |
| ~ | | | | | | | |



3 Use the top arrow buttons, to the right of the displayed time, to select the desired time. (See Figure 12-81.)

Figure 12-81 Time selection arrow buttons

| ſ | 4:32: | 03 PI | м | OK | | | | | |
|---|-------|---------|--------|------|-------|-----|----------|--------|--|
| | 4 | S | epte | nber | , 200 |)9 | F | Cancel | |
| | Sun | Mon | Tue | Wed | Thu | Fri | Sat | | |
| | 30 | 31 | Ð | 2 | 3 | 4 | 5 | | |
| | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | |
| | 13 | 14 | 15 | 16 | 17 | 18 | 19 | | |
| | 20 | 21 | 22 | 23 | 24 | 25 | 26 | | |
| | 27 | 28 | 29 | 30 | 1 | 2 | 3 | | |
| | 4 | 5 | 6 | - 7 | 8 | 9 | 10 | | |
| ľ | Cuno | conia | tion | | | | | | |
| | Syric | 10fil2d | auori. | | | | | | |

4 Highlight minutes, seconds, or AM/PM. Use the arrow buttons to change the highlighted value. (See Figure 12-82.)

Figure 12-82 Setting the time

| ſ | 5:33: | 4 🖻 | M | | | | ÷ | ОК |
|---|-------|---------|-------|------|-------|-----|-----|--------|
| ſ | 4 | S | epte | mber | , 200 |)9 | • | Cancel |
| | Sun | Mon | Tue | Wed | Thu | Fri | Sat | |
| | 30 | 31 | • | 2 | 3 | 4 | 5 | |
| I | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| I | 13 | 14 | 15 | 16 | 17 | 18 | 19 | |
| I | 20 | 21 | 22 | 23 | 24 | 25 | 26 | |
| I | 27 | 28 | 29 | 30 | 1 | 2 | 3 | |
| I | 4 | 5 | 6 | - 7 | 8 | 9 | 10 | |
| ľ | Cuna | romin | diam | | | | | |
| Γ | Sync | IUFIIZ(| auon. | | | | | |

5 Click the arrow to scroll to the desired month. Click the desired date. (See Figure 12-83.)

Figure 12-83 Setting date

| 5:33 | :45 📔 | M | | | | ÷ | OK |
|------|-------|------|------|------|-----|-----|--------|
| | S | epte | mber | , 20 | J9 | • | Cancel |
| Sun | Mon | Tue | Wed | Thu | Fri | Sat | |
| 30 | 31 | • | 2 | 3 | 4 | 5 | |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | |
| 27 | 28 | 29 | 30 | 1 | 2 | 3 | |
| 4 | 5 | 6 | - 7 | 8 | 9 | 10 | |
| C | | | | | | | |

6 Select **PC** to synchronize CMS5000 time with the computer time. Select **None** if synchronization is not required. (See Figure 12-84.)

Figure 12-84 Synchronization

| 5:33 | :45 📔 | M | | | | • | UK | |
|------|-------|------|------|-------|-----|----------|-------|--|
| • | S | epte | mber | , 200 |)9 | F | Cance | |
| Sun | Mon | Tue | Wed | Thu | Fri | Sat | | |
| 30 | 31 | • | 2 | 3 | 4 | 5 | | |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 | | |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | | |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | | |
| 27 | 28 | 29 | 30 | 1 | 2 | 3 | | |
| | | - | | - | ~ | 4.0 | | |

7 Click OK to close the window. (See Figure 12-85.)

Figure 12-85 Setting date and time

| 5:33 | :45 📄 | М | | | | + | OK |
|------|-------|-------|------|-------|-----|----------|--------|
| 4 | S | epter | nber | , 200 | 9 | F | Cancel |
| Sun | Mon | Tue | Wed | Thu | Fri | Sat | |
| 30 | 31 | Ð | 2 | 3 | 4 | 5 | |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | |
| 27 | 28 | 29 | 30 | 1 | 2 | 3 | |
| | E | 8 | 7 | 8 | - 9 | 10 | |



12.6.3 CMS5000 Information

The **CMS Information** tab displays CMS5000 system information. (See Figure 12-86.)

Figure 12-86 CMS Information tab

| :MS5000 C | 0158 Properties | | | | | | × |
|-------------|----------------------|---------------|--------|-----------|------------|------|----------|
| Status | CMS Time Zone | Input/9 | tput - | De | e Cettings | F | unctions |
| Pressur | e Flows and Temperat | ures | CMS | Informati | on | Para | meters |
| – Status In | formation | | | | | | |
| | Status: | | Onlin | э | | | |
| | Process: | | None | | | | |
| - Version I | nformation | | | CHC 1 0 | c 000 | | |
| | CMS Software Ver | sion: | Hev. | LMS-1.0 | 6.002 | | |
| | CC Firmware Versi | er: | UMS: | 0.51 | 41 | | |
| | GC Filmware Versi | on: | nev. | 0.51 | | | |
| | 0140 10 | UD A LL | | | | | |
| | CMSTP | IP Address | | Connectio | on | | |
| | | 10.210.39.174 | - I | themet | | | |
| | | 1 | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | _ | | | |
| | | | OP | | Connel | | Liste |

| Status | Indicates if CMS5000 is online or offline |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Process | Displays None when CMS5000 is idle. Displays Run Method when CMS5000 is running a method or is preparing the next method |
| | NOTE: Process will not refresh until the CMS5000 Properties window is closed and reopened. |
| CMS Software Version | Current version of software loaded on CMS5000 |
| CMS Serial Number | Serial number of the connected CMS5000 |
| GC Firmware Version | Current version of GC card firmware |
| CMS IP | Displays the IP address and Connection type |

12.6.4 Pressure Flows and Temperatures

The **Pressure Flows and Temperatures** tab displays carrier gas **Pressures**, **Method Start Temp Tolerances**, and **Carrier Gas Alarm** information. (See Figure 12-87.)

| Figure 12-87 | Pressure | Flows and | Offsets tab |
|--------------|----------|-----------|-------------|
|--------------|----------|-----------|-------------|

| Pressure Flows and Ten | nperatures | CMS Information | settings | Parameters |
|-----------------------------------|------------------------|----------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Pressures Carrier Pres Offset: | 0 kPa | Method Start Te Regulator Ck Std Valve Dven Column Detector | mp Tolerar Low 1.0 2.0 2.0 10.0 | High C* 1.0 C* 2.0 C* 2.0 C* 10.0 C* |
| Warning Level Error Level | 550.0 kPa 345.0 kPa | | | |



12.6.4.1 Pressures

The **Pressures** pane displays the **Carrier Pres Offset**. This value is set at the factory and cannot be changed. (See Figure 12-88.)

Figure 12-88 Pressures

| CMS5000 C100 Properties | Vitrut Data Settings Europions |
|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Pressure Flows and Temperatures | CMS Information Parameters |
| Pressures Carrier Pres Offset: 0 kPa | Method Start Temp Tolerances Low High Regulator 1.0 1.0 C* Ck Std 1.0 1.0 C* |
| | Valve Oven 2.0 2.0 C* Column 2.0 2.0 C* |
| ✓ Carrier Gas Alarm Warning Level 550.0 Error Level 345.0 | |
| Update Log | |
| | |
| | OK Cancel Help |

12.6.4.2 Method Start Temperature Tolerances

The **Method Start Temp Tolerances** pane sets the operating temperature range for temperature regulated components. (See Figure 12-89.)

| MS5000 C100 Properties Status CMS Time Zone Input/0 | utput Data Settings Functions |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pressure Flows and Temperatures | CMS Information Parameters |
| Pressures Carrier Pres Offset: kPa | Method Start Temp Tolerances Low High Regulator 1.0 1.0 C° Ck Std 1.0 1.0 C° Valve Oven 2.0 2.0 C° Column 2.0 2.0 C° Detector 10.0 10.0 C° |
| Warning Level [550.0 kPa Error Level 345.0 kPa Update Log | |
| [| OK Cancel Help |

Figure 12-89 Method Start Temperature Tolerances



12.6.4.3 Carrier Gas Alarm

The **Warning Level 550.0 kPa** (default) and **Error Level 345.0 kPa** (default) are displayed. (See Figure 12-90.)

Carrier gas warning and error level values are adjustable.

When the carrier gas pressure reaches the **Warning Level**, an **Argon Pressure Low!** warning message is displayed on the CMS5000 front panel. Refer to Figure 7-6 on page 7-4.

When the carrier gas pressure reaches the **Error Level**, a **REPLACE ARGON CYLINDER!** error message is displayed on the CMS5000 front panel. Refer to Figure 7-7 on page 7-4.

When Error Level is reached, the column heater will turn off, preventing operation.



Do not set Carrier Gas Alarm Error Level below 345 kPa. Levels below 345 kPa will not provide sufficient carrier gas flow and will damage the column.

Figure 12-90 Carrier Gas Alarm

| CMS5000 C100 Properties | |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Status UMS Time∠one Input/U Pressure Flows and Temperatures | CMS Information Parameters |
| Pressures Carrier Pres Offset: kPa | Method Start Temp Tolerances Low High Regulator 1.0 1.0 C* Ck Std 1.0 1.0 C* Valve Oven 2.0 2.0 C* Column 2.0 2.0 C* |
| ✓ Carrier Gas Alarm Warning Level 550.0 Error Level 345.0 | |
| Update Log | |
| | |
| | OK Cancel Help |

12.6.5 Input/Output

The desired methods for input triggers are entered in the **Input/Output** tab. (See Figure 12-91.) For instructions on defining input methods, refer to section 6.3, System Integration, on page 6-12.

Figure 12-91 Input/Output tab

| Pressure Flows and Temperatures | fermation Parameters |
|-----------------------------------|-------------------------|
| Status CMS Time Zone Input/Output | Data Settings Functions |
| Input 1 Method | |
| /Method/CMS5000 Ck Std.mth | Browse |
| Input 2 Method | |
| /Method/CMS5000 Water Purge.mth | Browse |
| Input 3 Method | |
| | Browse |
| Input 4 Method | |
| | Browse |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | Canaal Hala |
| OK | Cancel Help |



12.6.6 Data Settings

The **Data Settings** tab **Event Data** pane provides settings for **Notification**, **Logged Items**, the **Log Path**, and **Directories**. (See Figure 12-92.)

Figure 12-92 Data Settings tab

| CMS Time Zone Input/Dutput Data Settings Functions Event Data Notification Image: Construct of the settings Functions Votification Image: Construct of the settings Functions Functions Logged Items Image: Construct of the settings Functions Functions Logged Items Image: Construct of the settings Functions Functions Log Path: C:\IQ Software\Bin\CMSIQ\10.210.50.107\Events\ Maintain Logs: Image: Construct of the settings Forewse Directories Sensor: C:\IQ Software\Bin\CMSIQ\10.210.50.107\Events\ Maintain Logs: Browse Data: C:\IQ Software\Bin\CMSIQ\10.210.50.107\Events\ Browse Browse Report: C:\IQ Software\Bin\CMSIQ\10.210.50.107\Events\ Browse Browse FTP: Configure FTP Settings Figure FTP Settings | MS5000 1 | 0.210.50.107 Properties |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------|
| Otacis Civit Control Event Data Notification ✓ Errors ✓ Brows ✓ Brows ✓ Brows ✓ C:\UQ Software\Bin\CMSIQ\10.210.50.107\ Browse Data: C:\UQ Software\Bin\CMSIQ\10.210.50.107\ Browse Report: C:\UQ Software\Bin\CMSIQ\10.210.50.107\ Browse FTP: Configure FTP Settings | Statue | CMS Time Zone Input/Output Data Settings Eurotions |
| Notification ✓ Errors ✓ Warnings Logged Items ✓ Errors ✓ Errors ✓ Warnings ✓ Errors ✓ Maintain Logs: ✓ for 30 ⇒ Days Ondefinitely Directories Sensor: C.\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse Browse Report: C.\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse FTP: Configure FTP Settings | - Event Da | ta |
| Image: Image | _ Notifica | tion |
| Logged Items If Errors If Warnings If Events Log Path: [C:\IQ Software\Bin\CMSIQ\10.210.50.107\Events\ Maintain Logs: Indefinitely Directories Indefinitely Indefinitely Data: [C:\IQ Software\Bin\CMSIQ\10.210.50.107\] Browse Report: [C:\IQ Software\Bin\CMSIQ\10.210.50.107\] Browse FTP: Configure FTP Settings Indefinitely | 🔽 Erro | rs 🦵 Warnings |
| ✓ Errors ✓ Warnings ✓ Events Log Path: C:\IQ Software\Bin\CMSIQ\10.210.50.107\Events\ Maintain Logs: for 30 30 30 30 50.107\Events Browse Data: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse Report: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse FTP: Configure FTP Settings Indefinite Indefinit Indef | - Logged | Items |
| Log Path: C:\IQ Software\Bin\CMSIQ\10.210.50.107\Events\ Maintain Logs: | Erro | rs 🔽 Warnings 🔽 Events |
| Cogn and John Software\So | Log Pal | P. D. D. C. (Warder Disk Child Did D 210 E0 107) Events |
| Maintain Logs: (* for]3U Days (* Indefinitely Directories Sensor: C:\UQ Software\Bin\CMSIQ\10.210.50.107\ Browse Data: C:\UQ Software\Bin\CMSIQ\10.210.50.107\ Browse Report: C:\UQ Software\Bin\CMSIQ\10.210.50.107\ Browse FTP: Configure FTP Settings | Log Fa | CLAUS Software Bin CMSIQ TU. 210.501 U/LEvents |
| Directories Sensor: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse Data: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse Report: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse FTP: Configure FTP Settings From Settings | | Maintain Logs: 🕐 for 30 📺 Days 🔿 Indefinitely |
| Sensor: [L:NQ Software\Bin\CMSIQ\10.210.50.107\] Browse Data: [C:NQ Software\Bin\CMSIQ\10.210.50.107\] Browse Report: [C:NQ Software\Bin\CMSIQ\10.210.50.107\] Browse FTP: Configure FTP Settings | - Directorie | S |
| Data: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse Report: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse FTP: Configure FTP Settings FTP | Sensor: | L:\/Q_Software\Bin\CMSIQ\10.210.50.107\Browse |
| Report: C:\lQ Software\Bin\CMSIQ\10.210.50.107\ Browse FTP: Configure FTP Settings | Data: | C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse |
| FTP: Configure FTP Settings | Report: | C:\lQ Software\Bin\CMSIQ\10.210.50.107\ Browse |
| | FTP: | Configure FTP Settings |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| OK Cancel Help | | OK Cancel Help |

12.6.6.1 Notification

The **Notification** pane establishes whether errors, events and warnings will be displayed on the front panel. (See Figure 12-93.)

- When the **Errors** checkbox is selected, all error messages are displayed on the front panel, as they occur
- When the **Warnings** checkbox is selected, all error warnings are displayed on the front panel, as they occur

Figure 12-93 Notification pane

| Pressu | re Flows and Temperatures CMS In | formation Data Settings | Parameters Euroctions |
|------------|--------------------------------------------------------------------------------|-------------------------|--------------------------|
| - Event Da | ata | | |
| | ors 🔲 Warnings | | |
| | Items | | |
| Lee De | ns i vanings i vents | | |
| Log Pa | m: JC:\IQ Software\Bin\CMSIQ\10.210.50.10/ Maintain Logs: ● for 30 프 Daus 0 | | |
| Directorie | | | |
| Sensor: | C:\IQ Software\Bin\CMSIQ\10.210.50.107\ | Browse | |
| Data: | C:\IQ Software\Bin\CMSIQ\10.210.50.107\ | Browse | |
| Report: | C:\IQ Software\Bin\CMSIQ\10.210.50.107\ | Browse | |
| FTP: | Configure FTP Settings | | |
| | | | |
| | | | |
| | | | |
| | | | |



12.6.6.2 Logged Items

Select a checkbox in the **Logged Items** pane to add item(s) to the system log. (See Figure 12-94.) To view logged items, refer to section 12.2.3 on page 12-3.

Figure 12-94 Logged items pane

| Pressure Flows and Temperatures CMS Information Parameters Status CMS Time Zone Input/Dutput Data Settings Functions Event Data Notification Functions Functions Functions Image: Comparison of the state | <u>IS5000 1</u> | 10.210.50.107 Properties | 5 | | × |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------|--------------|---------------|------------|
| Status CMS Time Zone Input/Dutput Data Settings Functions Event Data Notification | Pressu | re Flows and Temperatures | CMS Ir | formation | Parameters |
| Event Data Notification ✓ Errors ✓ Warnings Logged Items ✓ Errors ✓ Warnings ✓ Events Log Path: [C:\IQ Software\Bin\CMSIQ\10.210.50.107\Events\ Maintain Logs: ● for 30 🖆 Days ○ Indefinitely Directories Sensor: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse Data: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse Report: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse TP: Configure FTP Settings | Status | CMS Time Zone Inp | ut/Output | Data Settings | Functions |
| Notification Image: Comparison of the second sec | -Event Da | ata | | | |
| ✓ Errors ✓ Warnings Logged Items ✓ Errors ✓ Errors ✓ Warnings ✓ Maintain Logs: ⑥ for 30 < Days | Notifica | ition | | | |
| Logged tems ✓ Errors ✓ Warnings ✓ Events Log Path: C:\IQ Software\Bin\CMSIQ\10.210.50.107\Events\ Maintain Logs: ● for 30 Days Directories Sensor: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse Data: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse Report: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse TP: Configure FTP Settings | Iv Erro | ors Warnings | _ | | |
| Log Path: [C:\IQ Software\Bin\CMSIQ\10.210.50.107\Events\ Maintain Logs: | - Logged | n items | | | |
| Log Path: C:\IQ Software\Bin\CMSIQ\10.210.50.107\Events\ Maintain Logs: Image: The second | | ors in warnings in Ever | าเร | | |
| Maintain Logs: for 30 30 20 | Log Pa | th: C:\IQ Software\Bin\CMSIQ\1 | 0.210.50.107 | "\Events\ | |
| Directories Sensor: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse Data: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse Report: C:\IQ Software\Bin\CMSIQ\10.210.50.107\ Browse TP: Configure FTP Settings From the set of the set o | | Maintain Logs: 💿 for 30 📑 | Days O | Indefinitely | |
| Sensor: C:\\Q Software\Bin\CMSIQ\10.210.50.107\ Browse Data: C:\\Q Software\Bin\CMSIQ\10.210.50.107\ Browse Report: C:\\Q Software\Bin\CMSIQ\10.210.50.107\ Browse TP: Configure FTP Settings Settings | - Directorie | | _ | | |
| Data: C:\lQ Software\Bin\CMSIQ\10.210.50.107\ Browse Report: C:\lQ Software\Bin\CMSIQ\10.210.50.107\ Browse TP: Configure FTP Settings From Settings | Sensor: | C:\IQ Software\Bin\CMSIQ\10. | .210.50.107\ | Browse | |
| Report: C:\\Q Software\Bin\CMSIQ\10.210.50.107\ TP: Configure FTP Settings | Data: | C:\\Q Software\Bin\CMSIQ\10 | 210.50.107\ | Browse | |
| Report: U:\UQ Software\Bin\CMSIQ\10.210.50.10/A Browse FTP: Configure FTP Settings | _ | | | | |
| TP: Configure FTP Settings | Report: | C:\IQ Software\Bin\CMSIQ\10 | .210.50.107\ | Browse | |
| | FTP: | Configure FTP Settings | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| OK Cancel Help | | | OK | Cancel | Help |

12.6.6.3 Log Path and Maintain Logs

Log Path displays the pathway to the folder where logged events are stored.

Maintain Logs defines the period of time that must expire before the logged events are deleted. (See Figure 12-95.)

Figure 12-95 Log Path and Maintain Logs sections

| Pressur | e Flows and Temperatures | CMS Info | rmation | Parameters |
|--------------|----------------------------------|--------------|---------------|------------|
| Status | CMS Time Zone Input/C | Dutput | Data Settings | Functions |
| Event Da | a | | | |
| | rs 🔲 Warnings | | | |
| -Logged | Items | | | |
| 💌 Erro | rs 🔽 Warnings 🔽 Events | | | |
| Log Pat | h: C:\IQ Software\Bin\CMSIQ\10.2 | 210.50.107\8 | Events\ | |
| | Maintain Logs: • for 30 🕂 | Davs O Ir | ndefinitely | |
| - Directorie | 3 | | | |
| Sensor: | C:\IQ Software\Bin\CMSIQ\10.210 | 0.50.107\ | Browse | |
| Data: | C:\IQ Software\Bin\CMSIQ\10.210 | 0.50.107\ | Browse | |
| Beport: | C:\IQ Software\Bin\CMSIQ\10.210 | 0.50.107\ | Browse | |
| | | | | |
| FIP: | Configure FTF Settings | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | _ | 0 |
| | | OK | Cancel | Help |

12.6.6.4 Directories

The **Directories** pane is set during CMS IQ installation. Do not change the pathways. (See Figure 12-96.)



| Pressu | re Flows and Temperatures | CMS In | formation | Parameters |
|-------------------------|----------------------------------|---------------|---------------|------------|
| Status | CMS Time Zone Inp | out/Output | Data Settings | Functions |
| - Notifica - Logged | ion ors F Warnings Items | | | |
| I♥ Enc | ns j∙ wanings j∙ Eve | ants | | |
| Log Pa | th: C:\IQ Software\Bin\CMSIQ\ | 10.210.50.107 | VE vents \ | |
| | Maintain Logs: 💿 for 🛛 30 🚽 | 🗧 Days 🔿 | Indefinitely | |
| - Directorie Sensor: | s C:\IQ Software\Bin\CMSIQ\10 | 0.210.50.107\ | Browse | |
| Data: | C:\IQ Software\Bin\CMSIQ\10 | 0.210.50.107\ | Browse | |
| Report: | C:\IQ Software\Bin\CMSIQ\10 | 0.210.50.107\ | Browse | |
| FTP: | Configure FTP Settings | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

12.6.6.5 Configure FTP Settings

Refer to section 6.2, FTP Connection, on page 6-1.



12.6.7 Functions

The icons on the **Functions** tab behave the same as the icons on the **Sensor** toolbar in the **System Setup** window. (See Figure 12-97.)

Figure 12-97 Functions tab

| CMS5000 10.210.50.108 Properties | |
|-------------------------------------------------------------------------------------------------|--------------------------|
| Pressure Flows and Temperatures CMS Information Status CMS Time Zone Input/Dutput Data Settings | Personators Functions |
| Run Method | |
| Calibrate | |
| Front Panel Display | |
| | |
| | |
| | |
| | |
| OK Cancel | Help |

Run Method icon, see Chapter 14, Run Method

Calibrate icon, see Chapter 17, Calibration

Overlay icon, see Chapter 15, Chromatogram Overlay

Front Panel Display icon, see section 12.7, Front Panel Display Icon, on page 12-70

12.6.8 Parameters

The **Parameters** tab includes setting a startup method, enabling the water adjustment, check standard auto calibration, auto baseline parameters, the run time prompt, and the summary report options. (See Figure 12-98.)

Figure 12-98 Parameters tab

| Status Pressure Startup Me /Method/0 | CMS Time Zone Flows and Temperature hod 🔽 Warmup Onl MS5000 Ck Std.mth | Input/Output s CM y Clear t | Data Se S Information Startup Method | Parameters Browse |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Enable P F Enat Ck CkS F Enat Base Baseli | arameters le Water Adjustment le CkStd Autocal CkStd Multiplier 1.010 Std Multiplier Max 1.300 itd Multiplier Max 1.300 le Auto Baseline eline Scan Count 200 ne Subtracted(%) 99 arameters | Run T 100 100 100 100 100 100 100 10 | ime Prompt En. fethod Ready lethod Finished how Compound how Unadjuste how Cal Water how Unidentifie | ions Is Not Found d Concentration Temp ed Compounds |
| | | (| эк с | Cancel Help |

12.6.8.1 Startup Method

For instructions on defining and clearing the Startup method, refer to section 6.4, Defining Startup Methods, on page 6-12.

12.6.8.2 Enable Water Adjustment

Select the **Enable Water Adjustment** checkbox to calculate the difference in partition coefficient between the sample and calibration due to the difference in water temperature. (See Figure 12-99.)

NOTE: For more information on partition coefficient, see section 17.7, Water Beta, on page 17-36.

Figure 12-99 Enable Water Adjustment checkbox

| CMS5000 C0114 Properties Status CMS Time Zone Inpu Pressure Flows and Temperatures Startup Method ▼ Warmup Only | t/Dutput Data Settings Functions CMS Information Parameters Clear Startup Method |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ✓ Enable Parameters ✓ Enable Water Adjustment ✓ Enable Kist Autocal CkStd Multiplier [1,010587] CkStd Multiplier Min 0.700000 CkStd Multiplier Max 1.300000 VE Enable Auto Baseline Baseline Scan Count 200 Baseline Subtracted(%) System Parameters | Browse Method Ready ✓ Method Finished Summary Report Options ✓ Show Compounds Not Found ✓ Show Unadjusted Concentration ✓ Show Cal Water Temp ✓ Show Unidentified Compounds |

12.6.8.3 Enable CkStd Autocal

Select the **Enable CkStd Autocal** checkbox to adjust calculations of all methods based on shifts in response of toluene from the **Check Standard** method. (See Figure 12-100.)

Once the **Check Standard** method is calibrated, the changes in response when running the method account for detector drift. Refer to section 17.4, Calibrating the Check Standard, on page 17-2 for calibrating the **Check Standard**.

| CkStd Multiplier | The multiple (i.e., factor) that analytes are adjusted by to account for detector drift. This value is automatically updated after each check standard method run |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CkStd Multiplier Min | Defines the minimum allowable multiplier value. If the CkStd Multiplier is close to or equal to the CkStd Multiplier Min, the check standard and analytical method must be recalibrated |

- CkStd Multiplier Max Defines the maximum allowable multiplier value. If the CkStd Multiplier is close to or equal to the CkStd Multiplier Max, the check standard and analytical method must be recalibrated
- **NOTE:** CMS5000 will not warn when **CkStd Multiplier** is at the **Min** or **Max** level. **CkStd Multiplier** must be checked weekly to determine if recalibration is necessary.
- **NOTE:** The Check Standard Mulitplier Min and Max is defined as ±30% of the true value. This is based on the USEPA standard tolerance for acceptance of continuning calibration verification standards. This value can be changed if desired.

Figure 12-100 Enable CkStd Autocal checkbox

| Sustam Parameters |
|-------------------|
|-------------------|
from all scans to normalize chromatogram

12.6.8.4 Auto Baseline Function

Auto Baseline normalizes detector response to make chromatograms easier to evaluate visually. (See Figure 12-101.)

| Baseline Scan Count | Number of scans used at the beginning of a |
|------------------------|---------------------------------------------|
| | chromatogram to determine the baseline |
| | response |
| Baseline Subtracted(%) | Percent of the baseline response subtracted |

Figure 12-101 Enable Auto Baseline Correct checkbox

| Startup Method Varmup Only Clear Startup Method /Method/CMS5000 Ck Std.mth Browse Enable Parameters Method Ready ✓ Enable CkStd Autocal Method Finished CkStd Multiplier 1.010587 CkStd Multiplier Max 1.300000 CkStd Multiplier Max 1.300000 Sommary Report Options ✓ Bnable Auto Baseline Show Cangusted Concentration Ø Show Unidentified Compounds Show Unidentified Compounds |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| |

12.6.8.5 Run Time Prompt Enable

The **Run Time Prompt Enable** pane determines when CMS5000 waits for user input. (See Figure 12-102.)

| Method Ready | System will not start a method until RUN is selected from the front panel or in IQ |
|-----------------|------------------------------------------------------------------------------------|
| Method Finished | System will keep the data file of a method run open until closed by the user |

Figure 12-102 Run Time Prompt Enable

| MS5000 C0114 Properties Status CMS Time Zone Input Pressure Flows and Temperatures Startup Method ✓ Warmup Only /Method/CMS5000 Ck Std mth Enable Parameters ✓ Enable Water Adjustment ✓ Enable CkStd Autocal CkStd Multiplier 1.010587 CkStd Multiplier Max 1.300000 CkStd Multiplier Max 1.300000 | Zurput Data Settings Functions CMS Information Parameters Clear Startup Method Browse Run Time Prompt Enable Method Ready Method Finished Summary Report Options ✓ Show Compounds Not Found ✓ Show Unadjusted Concentration ✓ Show Unadjusted Concounds |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Baseline Scan Count 200 Baseline Scan Count 200 Baseline Subtracted(%) 99 | OK Cancel Help |

12.6.8.6 Summary Report Options

The **Summary Report Options** pane sets options to appear in a quantitative report. (See Figure 12-103.)

| Show Compounds Not Found | . Display compounds that are part of the calibration library but were not detected in the sample |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Show Unadjusted Concentration | . For water manifolds only. Display the concentration of a compound prior to adjustment by the check standard multiplier and water temperature compensation |
| Show Cal Water Temp | . For water methods only. Display the water temperature at the time of calibration |
| Show Unidentified Compounds | . Display the retention times of peaks that were found in the chromatogram but were not included in the calibration library |

Figure 12-103 Summary Report Options pane

| CMS5000 C0114 Properties Status CMS Time Zone Input Pressure Flows and Temperatures Input Statup Method Warmup Only | t/Dutput Data Settings Functions CMS Information Parameters Clear Startup Method |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ✓ Enable Parameters ✓ Enable Water Adjustment ✓ Enable CkStd Autocal ✓ CkStd Multiplier Min 0.700000 CkStd Multiplier Max 1.300000 ✓ Enable Auto Baseline Baseline Scan Count 200 | Run Time Prompt Enable Method Ready Wethod Finished Summary Report Options Show Compounds Not Found Show Unadjusted Concentration Show Cal Water Temp Show Unidentified Compounds |
| Baseline Subtracted[X] <u>99</u> | OK Cancel Help |

Click OK to close the CMS5000 Properties window. (See Figure 12-104.)

Figure 12-104 Closing CMS5000 Properties window

| Status CMS Time Zone Inp Pressure Flows and Temperatures Startup Method Varmup Only /Method/CMS5000 Ck Std.mth Enable Parameters Inf. Enable Varmut Adjustment | ut/Output Data Settings Functions CMS Information Parameters Clear Startup Method Browse Run Time Prompt Enable |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ▼ Enable CkStd Autocal CkStd Multiplier 1.010587 CkStd Multiplier Min 0.700000 CkStd Multiplier Max 1.300000 CkStd Multiplier Max 1.300000 Image: Scan Count 200 Baseline Subtracted(%) 33 | Method Finished Summary Report Options Show Compounds Not Found Show Unadjusted Concentration Show Cal Water Temp Show Unidentified Compounds |
| System Parameters | |

12.7 Front Panel Display Icon

10000

Double-click Front Panel Display emulator.

(See Figure 12-105.) The **Front Panel Display** emulator operates identically to the front panel.

Figure 12-105 Front Panel Display emulation

| Run Stop | CMS5000 Main Menu | |
|----------|------------------------|---------|
| | 1. Run Method | |
| Help | 2. Review Data | - 4 5 6 |
| | 3. System | - 0 0 0 |
| | 4. Exit | |
| Stat | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | Select a method to run | |

12.8 CMS5000 Sensor Status Icon

Right-click **CMS5000 Sensor Status** to display the following menu. (See Figure 12-106.)

Figure 12-106 Sensor Status menu



| Front Panel Display | Refer to section 12.7, Front Panel Display Icon, on page 12-70 |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Overlay | See Chapter 15, Chromatogram Overlay |
| ID Unknowns | Unavailable |
| Calibrate | See Chapter 17, Calibration |
| Run Method | Lists recent methods to run (See Chapter 14, Run Method) |
| Edit Method | Lists recent methods to edit (See Chapter 16, Method Editor) |
| Log | Opens event log (*.evt) files. Information logged are warnings, errors, events and run history. Refer to section 12.6.6.2, Logged ltems, on page 12-61 |
| Tune Reports | Unavailable |
| Data Review | See Chapter 13, Data Review |
| Manage Files | Refer to section 12.5, Manage Files, on page 12-39 |
| Update CMS5000 Software | See section 12.8.1, Update CMS5000 Software, on page 12-72 |

| Bring Online | See section 12.8.2, Bring Online, on page 12-72 |
|--------------|-------------------------------------------------|
| Disconnect | See section 12.8.3, Disconnect, on page 12-72 |

12.8.1 Update CMS5000 Software

For complete installation instructions, refer to the Software Installation Instructions that accompany the update. When a software or method update for CMS5000 is available for download, **Update CMS5000 Software** selects the update (*.upd) file. Once selected, the update will be loaded onto the analytical module and the analytical module will restart.

12.8.2 Bring Online

If the connection has been disabled using CMS IQ **Disconnect**, click **Bring Online** to enable the connection.

12.8.2.1 Communication Messages

If the computer is not communicating with CMS5000, there are three colors of "X"s that may be displayed over the instrument icon. (See Table 12-2.)

| lcon | Description |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Communication OK. |
| X | (1) Communication has yet to be established. (2) Communication has been disabled using the CMS IQ Disconnect, see section 12.8.3, Disconnect, on page 12-72 |
| × | Communication was lost |
| × | Communication cannot be established |

Table 12-2 Colored "x"s indicating communication state

12.8.3 Disconnect

Disconnect will disconnect computer communication from CMS5000. Click **Bring Online** to enable communication.

Chapter 13 Data Review

13.1 Introduction to Data Review

Data Review provides access to previously acquired data for review and analysis.

- Reviewing Data File information
- Viewing Summary and Quantitative reports
- Zooming in/out of chromatogram
- Labeling peaks
- Viewing the method used to acquire data

13.2 Accessing the Data Review Feature

1 Double-click Data Review

Alternately, right-click **CMS5000 Sensor Status** to display the menu displayed in Figure 13-1. Select **Data Review**.

Figure 13-1 Data Review menu

| Front Panel Display |
|-------------------------|
| Overlav |
| ID Unknowns |
| Calibrate |
| <u>R</u> un Method |
| Edit Method |
| Log |
| <u>T</u> une Reports |
| D <u>a</u> ta Review |
| <u>M</u> anage Files |
| Update CMS5000 Software |
| Bring Online |
| Disable Connection |
| Properties |

- **2** The **Recall** window is displayed. Select the desired data file, either from the computer or CMS5000. (See Figure 13-2.)
 - Select PC or CMS5000 to access the appropriate file storage location.
 CMS5000 will be unavailable if CMS5000 is not connected to the computer
 - Methods and data files are saved on CMS5000. Methods will only be available on the computer after they have been manually transferred to the computer
 - Data files will automatically transfer to the computer if CMS IQ was open and connected to CMS5000 when the data file was collected

Figure 13-2 Recall window

| PC Drive: Clocal Disk (C:) Folder: C:\Documents and Settings\ssmith\Desktop\ | C CMS5000 |
|------------------------------------------------------------------------------|--------------------------|
| Name | Size Date |
| Reports | 7/7/2009 2:27:40 PM |
| CMS5000 Water Purge_20090707_01.hps | 156K 7/7/2009 2:27:33 PM |
| CMS5000 Water Purge_20090707_03.hps | 156K 7/7/2009 2:27:31 PM |
| CMS5000 Water Purge_20090707_04.hps | 156K 7/7/2009 2:27:31 PM |
| CM55000 Water Purge_20090707_05.hps | 155K 7/7/2009 2:27:30 PM |
| CMS5000 Water Purge_20090707_06.hps | 155K 7/7/2009 2:27:29 PM |
| | |
| | <u>></u> |
| File Name: | |
| File Type: Data Files (*.hps; *.hpz; *.acq) | • |
| | Manage Files |



3 Double-click the desired data file to display in the **Data Review** window. (See Figure 13-3.)





The Data Review window displays the data file's chromatogram.

The x-axis displays the retention time of peaks.

The y-axis displays the signal intensity as a percent of the largest peak.

| Response_Max | The highest intensity signal on the chromatogram |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Response/Response_Max | The percent difference between the signal intensity at the location of the Scan Cursor and the highest intensity signal on the chromatogram |
| Response | The signal intensity at the location of the Scan Cursor |
| Scan # | The number of data points taken since the beginning of data collection from the location of the Scan Cursor |
| RT | The retention time in minutes and seconds at the location of the Scan Cursor |
| NOTE: See section 13.8, How to Act information on the Scan Cur | cess the Scan Cursor, on page 13-28 for more sor. |

13.3 Menu Bar

When a data file is selected, the menu bar at the top of CMS IQ displays the **Data Review** option. (See Figure 13-4.)

```
Figure 13-4 Data Review option in menu bar
```



13.3.1 Data Review Menu

Selecting Data Review opens the Data Review menu. (See Figure 13-5.)

Figure 13-5 Data Review menu

| Data Review | Tools | View | Window |
|----------------------|------------------|------|-----------|
| Select Meth | nod | | |
| <u>S</u> ave Curre | nt Met | hod | |
| ⊻iew Curre | nt Met | hod | |
| Run Length | 1 | | F11 |
| Data File Ir | fo | | F3 |
| Save <u>D</u> ata | | | |
| View Searc | h <u>R</u> esu | lts | |
| Ne <u>x</u> t Data I | File | | |
| Previous Da | ata <u>F</u> ile | • | |
| Next Scan : | Set | C | trl+Right |
| Previ <u>o</u> us So | an Sel | | Ctrl+Left |
| All Scan Se | t | | Ctrl+F11 |
| Properties. | | | |

| View Current Method | Opens the method used to create the current data file |
|---------------------|------------------------------------------------------------------------------------------------------------------|
| Run Length | Displays full chromatogram |
| Data File Info | Opens the Data File Information window. See section 13.5, Data File Information Window, on page 13-6 |
| Save Data | Saves changes to the data file |
| | NOTE: Changed data files can be saved to the computer, not CMS5000. |
| View Search Results | Opens summary and quantitative reports for the selected data file. See section 13.6, Reports, on page 13-7 |
| Next Data File | Opens the next saved data file in the data folder |
| Previous Data File | Opens the previously saved data file in the data folder |



13.4 Data Review Toolbar

Figure 13-6 Data Review toolbar

| FILE FILE SET SET SETS PEAK PEAK | 🎫 🕹 🛄 | ig 😣 | FILE FILE SET SET SETS PEAK PEAK | → AK |
|----------------------------------|-------|-------------|----------------------------------|----------------|

Table 13-1 Data review toolbar icons

| lcon | Name | Description |
|-----------------|-----------------------|------------------------------------------------------------------------------------|
| E _{SC} | Abort | Aborts a running method |
| - | Start/Stop | Stops a method |
| | Pause | Pauses the chromatogram in CMS IQ. The method will continue to run |
| 11 | Data File Information | Contains method and sample information. Refer to Figure 13-4 on page 13-4 |
| | View Search Results | Accesses data reports for this data file |
| • | Safety Database | Accesses the NIOSH Database. Refer to section 12.4, Safety DB, on page 12-36 |
| FILE | Previous File | Opens the previous data file in the current data folder |
| FILE | Next File | Opens the next data file in the current data folder |

| Table 13-1 | Data review | toolbar icons |
|------------|-------------|---------------|
|------------|-------------|---------------|

| lcon | Name | Description |
|------|---------------|---------------------------------------------------------------------------|
| РЕАК | Previous Peak | Moves to previous peak when Search for Peaks is selected |
| РЕАК | Next Peak | Moves to next peak when Search for Peaks is selected |
| РЕАК | All Peaks | Returns to the full chromatogram view |

NOTE: The Set buttons are unavailable.

13.5 Data File Information Window

The Data File Information window is shown in Figure 13-7. To access, click Data File Information

Figure 13-7 Data File Information window

| Dista | C\Documents and Settings\XPMI Iser\Mu Document Water Purge 19 Cmpd | 201 |
|--------------|--------------------------------------------------------------------|------|
| Dala. | | .201 |
| Sample | | |
| Method: | Haps\MethodWater Purge 19 Cmpd.mth | |
| | Start Time | |
| | - GPS Info Level: 3 | _ |
| | Malial CDC Information Mat Association | _ |
| | Valid GFS Information Not Available Unit: ppb | • |
| - Internal (| L | |
| memar | | |
| | | |
| | No Internal Standard Compound | |
| | | |
| Descripti | on | |
| 3 ppb 19 | Cmpd Water Purge Calibration Standard | ~ |
| | | |
| | | |
| | | |
| | | |
| | | |

| Data: | The file location and filename of the data file |
|------------|-------------------------------------------------|
| Method: | The method associated with the data file |
| Start Time | The date and time when the sample was collected |
| GPS Info | Unavailable |



| Conc | For cor be | r data files with known concentrations, the ncentration and units of concentration can entered into the Level: and Unit: boxes |
|-------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internal Standard | Un | available |
| Description | Sa ent | mpling information or notes can be tered into the Description box |
| | • | If description or concentration information is entered while a run is in progress, the information will be saved with the data file in CMS IQ |
| | | |

 If information is entered after the run has finished, the information is saved as a copy on the computer

13.6 Reports

Two data reports are available at the completion of a sample run:

- Summary report provides a brief description of the compounds identified
- Quantitative report is more detailed and based upon the calibration library

13.6.1 Access Reports

1 To access reports, click View Search Results

Alternately, select **View Search Results** from the **Data Review** menu on the **Data Review** window. (See Figure 13-8.)

Figure 13-8 View Search Results from Data Review menu

| Data Review Tools Vi | ew Window |
|------------------------------------------------------------------------------------------|-------------------------|
| Select Method | |
| Save Current Metho | ł |
| View Current Method | ł |
| Run Length | F11 |
| Data File Info | F3 |
| Save <u>D</u> ata | |
| View Search <u>R</u> esults | |
| Ne <u>x</u> t Data File | |
| | |
| Previous Data <u>F</u> ile | |
| Previous Data <u>Fi</u> le Next S <u>c</u> an Set | Ctrl+Right |
| Previous Data <u>F</u>ile Next S <u>c</u> an Set Previ <u>o</u> us Scan Set | Ctrl+Right Ctrl+Left |
| Previous Data <u>Fi</u> le Next S <u>c</u> an Set Previ <u>o</u> us Scan Set | Ctrl+Righ Ctrl+Lef |

- 2 The **Search Reports** window will open with the **Summary** report tab selected. (See Figure 13-9.)
 - Reports can be saved, printed, or exported to Excel
 - Summary Reports are saved as *.rql_sum files
 - Quantitative Reports are saved as *.rqt files

13.6.2 Summary Reports

The **Summary** report provides the method start date and time, name of the method file, a description of the method, name of the data file and the sample description if entered into the **Data File Information** window (refer to section 13.5, Data File Information Window, on page 13-6). A list of compounds identified, retention times and concentrations are also displayed. The compounds are listed in retention time order. (See Figure 13-9.)

Figure 13-9 Summary Report

| Summary Quantitative | | Close |
|--------------------------------------------------------------------------------------------|---|--------------|
| Unknown Identification Report | ^ | Print |
| Date: 09/30/14 Time: 13:29:27 Dalibration Method: | | |
| /Haps/Method/Water Purge 19 Cmpd.mth | | Save |
| Tune File: | | |
| default.tun Method Description: | = | Export to Ex |
| CMS 5000, Tri-bed Conc | | |
| | | |
| Data File: /Uses /Data At/star Divers 10 Cread At/star Divers 10 Cread 20140020, 02 her | | |
| Data Info: | | |
| | | |
| #1 Methylene Chloride | | |
| RT = 3:37.80 4.048 ppb | | |
| #2 trans-1,2-dichloroethene | | |
| RT=4:17.60 4.676 ppb | | |
| #3 cis-1,2-aichioroethene BT= 5:06 80 _ 4 685 ppb | | |
| #4 Chloroform | | |
| RT= 5:20.90 5.780 ppb | | |
| #5 1,2-dichloroethane | ~ | |
| | | |

13.6.3 Quantitative Reports

A **Quantitative** report is displayed for methods containing a calibration library. The report will show the method start date and time, compounds identified, predicted retention time, actual retention time, peak area, concentration, and limit. (See Chapter 16, Method Editor.)

<=== ALARM ===> is displayed in the flag column if the concentration is above a defined limit. (See Figure 13-10.)

Area too low is displayed in the flag column if the area of the peak was lower than the method limit for the peak area. (See Figure 13-10.)



Not found with current search parameters is displayed in the flag column if the peak width is too small or **larger** than the method **permits**. (See Figure 13-10.)

Figure 13-10 Flag column

| Summary Quar | ntitative | | Close |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|
| Pred. RT | Actual RT Area Conc. (ppb) NoAdjust Limit (ppb) Flag | | Print Save |
| 3:27.80 3:2 4:10.01 4: 5:02.50 - 7.60 5:16.21 3:02.40 1.70 7:48.30 05.50 | 8.00 603 [] 09.60 1338 0.09150 [0.09341] 0 32278 2.944 [3.352] Area too low Area too low Area too low Anot found with current search par | en = | Export to Excel |
| 4.20 2:35.00 3:45.90 4:25.00 4:44.30 5.60 5.60 5:60 16:45.00 16:45.00 16:45.00 | Area too low Area too low 48.00 1618 0.1331 [0.1355] 7.80 1576 0.2204 [0.2224] Area too low Area too low .0 1821 0.2963 [0.2993] 50 1643 0.2004 [0.2027] .47.70 2844 0.2877 [0.2315] | | |
| 18:55.80 18 19:26/30 19 | 3:57.60 12019 0.4030 [9.4070] 3:28.00 8502 0.5153 [0.4153] 0.5000 <=== ALARM ===> | | |

If a calibration library was not present in the method run, the **Quantitative** window will display **No Report**.

To export the Quantitative report to Excel, click **Export to Excel**. (See Figure 13-11.)

Click Close.

Figure 13-11 Quantitative Report

| Summary | Quantitative | | | | | | Close |
|---------|----------------|--------------------------|-------------------------|--------------------|------------|----------|----------------|
| 2009/07 | /07 11:09:12 | | | | | | Print |
| | | | | | | | Save |
| Water T | amp : 22.60 C | | | | | | |
| Water I | 5mp - 22.00 C | | | | | | Export to Exce |
| DEC # | CAS # Target | Nama Pr | ed PT Actu | | rea Cono I | | |
| 1 | Methylene Ch | noride 3:29.3 | 0. A1 A00 0. 3:33.06 | 1551090 | 4 N92 | . | |
| ż | trans-1.2-dick | loroethene 4:12. | 00 4:16.31 | 5238601 | 4.092 | | |
| 3 | cis-1,2-dichlo | roethene 5:03.3 | 0 5:08.83 | 2992998 | 4.092 | | |
| 4 | Chloroform | 5:18.50 | 5:24.19 | 1083007 | 4.092 | | |
| 5 | 1,2-dichloroe | thane 6:03.60 | 0 6:09.83 | 1022729 | 4.092 | | |
| 6 | Benzene | 6:53.70 | 6:59.63 | 5225006 | 4.092 | | |
| 7 | 1,2-dichlorop | ropane 7:50.0 | 0 7:57.11 | 1502544 | 4.092 | | |
| 8 | trichloroether | ne 8:07.60 | 8:14.33 | 3445660 | 4.092 | | |
| 9 | I oluene | 10:49.20 | 10:55.33 | 5321976 | 4.092 | | |
| 11 | tetrachioroet | nene 12:40.5 | 0 12:47.35 | 024280U 0565100 | 4.092 | | |
| 12 | ethulbenzen | ne 13:31.4 s 17:31.00 | 0 13:30.14 | 4569416 | 4.032 | | |
| 13 | m-yulene n-y | ulene 14:51.5 | 0 14:56.79 | 142000410 | 4.032 | | |
| 14 | sturene | 15:32.00 | 15:37.67 | 3558697 | 4 092 | | |
| 15 | o-xylene | 15:45.60 | 15:50.77 | 4080458 | 4.092 | | |
| | | | | | | <u> </u> | |

13.7 Chromatogram Window Options

Right-click anywhere in the chromatogram window to display the menu shown in Figure 13-12.

Figure 13-12 Chromatogram Window menu

| Manual Scale ✔ Common Scale | | |
|----------------------------------------------------------|-----|--|
| Select Scan View All Data View Temperature Profile | F11 | |
| Change Plot Color Label Chromatogram | | |
| Grab Peak for Template Scan Subtract | | |
| Peaks | • | |
| ✓ Control Panel | | |
| Properties | | |

13.7.1 Manual Scale

Manual Scale will rescale the y-axis of the chromatogram to a desired intensity.

NOTE: By default, the graph will scale to the highest peak of the chromatogram.

1 Right-click in the chromatogram window and select **Manual Scale**. (See Figure 13-13.)

Figure 13-13 Manual Scale





2 The Manual Scale window is displayed. (See Figure 13-14.)

Figure 13-14 Manual Scale window

| Manual Scale | |
|------------------------------------|--------|
| Manual Scale Maximum Intensity: | 0 |
| C On 🖲 Off | |
| ОК | Cancel |

3 Select **On** and type a value into the **Maximum Intensity** box. (See Figure 13-15.)

| Figure 13-15 Ente | er the intensity |
|--------------------------------------------------|------------------|
| Manual Scale | X |
| Manual Scale Maximum Intensity: I On C Off | 1000 |
| ОК | Cancel |

4 Click OK to close the window and activate Manual Scale. (See Figure 13-16.)

| Fiaure | 13-16 | Activate | Manual | Scale |
|---------|-------|------------|--------|-------|
| , iguio | 10 10 | / 101/ alo | manaa | 000,0 |

| Manual Scale | X |
|------------------------------------|--------|
| Manual Scale Maximum Intensity: | 1000 |
| €On COff | |
| OK | Cancel |



5 The chromatogram is rescaled. (See Figure 13-17.)

Figure 13-17 Rescaled chromatogram

| 腔 Rie Functions Data Review Tools View Window Help | . 8 × |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | |
| | |
| Response Max # 120 107 - Response Response Max # 06 - Response # 0.007 - Scan 54 (1 | Control Panel: X |
| Image: | Pan Soon Page of Control Page |
| | |

- **NOTE:** The y-axis is labelled in percent of maximum intensity. The intensity selected from **Manual Scale** will not be displayed on the chromatogram.
- **6** To view the original scale, refer to steps 1 and 2. Select **Off** and click **OK**. (See Figure 13-18.)



| Manual Scale | |
|------------------------------------|--------|
| Manual Scale Maximum Intensity: | 1000 |
| C On 💽 Off | |
| ОК | Cancel |



13.7.2 View All Data

View All Data function is used to view the entire chromatogram. See section 13.9, Using the Zoom Function, on page 13-29 for instructions on using Zoom.

 Right-click anywhere in the zoomed chromatogram and select View All Data. (See Figure 13-19.) Alternately, View All Data can be activated by pressing F11 on the computer keyboard.



Figure 13-19 View All Data function

2 The full method run will be displayed. (See Figure 13-20.)

NOTE: View All Data will not adjust the y-axis scale.

Figure 13-20 View All Data screen



13.7.3 View Temperature Profile

View Temperature Profile displays the GC temperature profile of the method. Right-click anywhere in the chromatogram window and select **View Temperature Profile**. To remove the profile, right-click in the chromatogram window and clear the **View Temperature Profile** option. (See Figure 13-21 and Figure 13-22.)

Figure 13-21 View Temperature Profile function









13.7.4 Change Plot Color

Change Plot Color changes the color of the plot utilized in the chromatogram.

1 Right-click anywhere in the chromatogram window and select **Change Plot Color**. The **Color** window is displayed. (See Figure 13-23.)

Figure 13-23 Color window

| Color | ? 🛛 |
|----------------|---------------------|
| Basic colors: | |
| | |
| | |
| | |
| | |
| | |
| | |
| Custom colors: | : |
| | |
| | |
| Defi | ne Custom Colors >> |
| ОК | Cancel |

2 Click the desired color and click **OK**. The chromatogram plot will appear in the selected color. (See Figure 13-24.)



Figure 13-24 Selecting color

13.7.5 Peaks

Right click anywhere in the chromatogram window and select **Peaks** to display the Peaks menu. (See Figure 13-25.)

Figure 13-25 Peaks menu

| Manual Scale Common Scale | |
|--------------------------------------------------------------|--------------------------------------------------|
| Select Scan View All Data F11 View Temperature Profile | |
| Change Plot Color Label Chromatogram | |
| Grab Peak for Template Scan Subtract | |
| Peaks 💦 | Search for Peaks |
| ✓ Control Panel | Show/Update Current Peaks Edit Base Points |
| Properties | Clear the Peaks |
| | Change Search Parameters Previous Search Results |

13.7.5.1 Search for Peaks

Search for Peaks searches the entire chromatogram to locate peaks that meet the default search criteria.

- Right-click in the chromatogram window. (See Figure 13-26.)Select Peaks >> Search for Peaks.
- 2 The Peaks Found window is displayed. (See Figure 13-27.)

The peaks meeting the criteria will be denoted with arrows, and the Peaks Found window will appear. (See Figure 13-26.)

Figure 13-26 Chromatogram after Search for Peaks is selected





| Peaks Found For Water Purge 19 Cmpd_20091215_01.hps | | | | | | | | |
|-----------------------------------------------------|----------------------------------------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|------------------------|--------------------------------------|---------------------------------|
| Ub: Select Ma | 0905:1105:120 ass: Resp | J5:14U | :1605:1705:190 Time | J5:21 U5: | 22 05:24 | 405:2605:2 Add Peal | <s< td=""><td>I Hide Graph</td></s<> | I Hide Graph |
| Number o | of Peaks: 22 | Deals | Daals Davaa | A | 9/ 1 | LD. T. | | |
| net 11 | Scan nange | 2010 | reak nesp0 | Alea 70070 | ^₀ A | HILS FO | | Search |
| 00.05 | 2342 - 3134 | 3010 | 1676 | 73676 | 0.99 | | | |
| 00.06 | 3304 · 3372 | 3401 | 1304 | 2002 | 0.31 | | | |
| 00.06 | 3027 · 4037 | 3333 | 4732 | 1005 | 3.73 | | | |
| 00:07 | 4581 - 4573 | 4490 | 1831 | 1065 | 1.32 | | | |
| 00:08 | 40/6 - 4/82 | 4608 | 3040 | 1847 | 2.23 | | - | |
| 00:10 | 5114 · 5355 | 6232 | 4484 | 3031 | 3.75 | | | Redo Peak Search |
| 00:13 | 7322 - 8157 | 8033 | 3084 | 2341 | 2.91 | | | Peak Search Param |
| 100:14 | 0510 0741 | 0423 | 4100 | 5007 | 3.38 | | | |
| 00.14 | Exercise - MCCUL | IOD / | 17D.57 | 3037 | 7.20 | · · | | |
| 00:14 | 0010-0741 | 0000 | 2202 | 1070 | 2.45 | | | |
| 00:14 | 8918 - 9083 | 9022 | 3292 | 1976 | 2.45 | - | | Report Preview |
| 00:14 00:15 00:15 | 8918 - 9083 9083 - 9276 | 9022 9152 | 3292 3863 | 1976 2621 | 2.45 3.25 | • • | | Report Preview Print |
| 00:14 00:15 00:15 00:16 | 8918 - 9083 9083 - 9276 9718 - 9951 | 9022 9152 9827 | 3292 3863 4210 | 1976 2621 2727 | 2.45 3.25 3.39 | • • | | Report Preview Print Save |
| 00:14 00:15 00:15 00:16 00:18 | 8918 · 9083 9083 · 9276 9718 · 9951 11070 · 112 | 9022 9152 9827 111 | 3292 3863 4210 3460 | 1976 2621 2727 1681 | 2.45 3.25 3.39 2.09 | • • • | | Report Preview Print Save |

Figure 13-27 Peaks found

Data regarding each identified peak is displayed.

- Retention Time
- Scan Range displays the front and end of the peak, defined by the Peak Search Parameters
- **Peaks** shows the scan at the peak apex
- **Peak Response** is the intensity of the peak
- Peak Area
- % Area is a ratio of the individual peak's response to the response of the largest peak
- **Hits Found** will always be blank

13.7.5.1.1 Add Peaks

Add Peaks will add an unidentified peak to the list in the Peaks Found window.

- **1** Use the **Range Tool** to select the location of the base points of the peak of interest. See steps 1-4 in section 13.10, Range Tool, on page 13-34.
- 2 Once the red lines have been positioned, right-click in the chromatogram window. Select **Peaks** >> **Search for Peaks**.
- **3** Click **Add Peaks**. The peak will be added to the end of the peak list. (See Figure 13-28.)



| Peaks Found For Water Purge 19 Cmpd_20091215_01.hps | | | | | | | | |
|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----|------------------------------------------------------------------------------------|
| 100 - | | | \sim | | | | 1 | Mass |
| 75 | | 1 | | | | | | Resp |
| /5- | | 1 | | | | | | 99 |
| % 50- | | / | | | | | | |
| | | | | | | | | |
| 25 | | | | | | - | + | |
| 0- | | | | | | | | |
| Ŭ5: | 51 05:5305:550 | 5:5605 | :5806:0006:020 | 6:0406:0 | 506: 7 | 06:0906:11 | | |
| Select M | ass: Resp | - | Time | | | Add Pea | iks | Hide Graph |
| Number of | of Peaks: 23 | | | | | | | |
| net n | ocari nariye | Feak | Peak Respo | Area | % A | Hits Fo | ~ | |
| | | | | | | | | |
| 00:06 | 3364 - 3572 | 3451 | 1504 | 73426 | 0.91 | - | | Search |
| 00:06 00:06 | 3364 - 3572 3827 - 4057 | 3451 3933 | 1504 4732 | 73426 3002 | 0.91 3.73 | • • | | Search |
| 00:06 00:06 00:07 | 3364 - 3572 3827 - 4057 4381 - 4573 | 3451 3933 4490 | 1504 4732 1831 | 73426 3002 1065 | 0.91 3.73 1.32 | - - - | | Search |
| 00:06 00:06 00:07 00:08 | 3364 · 3572 3827 · 4057 4381 · 4573 4576 · 4782 | 3451 3933 4490 4658 | 1504 4732 1831 3040 | 73426 3002 1065 1847 | 0.91 3.73 1.32 2.29 | • • • | | Search |
| 00:06 00:06 00:07 00:08 00:10 | 3364 - 3572 3827 - 4057 4381 - 4573 4576 - 4782 6114 - 6356 | 3451 3933 4490 4658 6232 | 1504 4732 1831 3040 4484 | 73426 3002 1065 1847 3031 | 0.91 3.73 1.32 2.29 3.76 | • • • | | Search |
| 00:06 00:06 00:07 00:08 00:10 00:13 | 3364 - 3572 3827 - 4057 4381 - 4573 4576 - 4782 6114 - 6356 7922 - 8157 | 3451 3933 4490 4658 6232 8033 | 1504 4732 1831 3040 4484 3584 | 73426 3002 1065 1847 3031 2341 | 0.91 3.73 1.32 2.29 3.76 2.91 | * * * * | | Search Redo Peak Search |
| 00:06 00:06 00:07 00:08 00:10 00:13 00:14 | 3364 - 3572 3827 - 4057 4381 - 4573 4576 - 4782 6114 - 6356 7922 - 8157 8304 - 8514 | 3451 3933 4490 4658 6232 8033 8423 | 1504 4732 1831 3040 4484 3584 4155 | 73426 3002 1065 1847 3031 2341 2721 | 0.91 3.73 1.32 2.29 3.76 2.91 3.38 | * * * * | | Search Redo Peak Search |
| 00:06 00:06 00:07 00:08 00:10 00:13 00:14 | 3364 - 3572 3827 - 4057 4381 - 4573 4576 - 4782 6114 - 6356 7922 - 8157 8304 - 8514 8516 - 8741 | 3451 3933 4490 4658 6232 8033 8423 8423 | 1504 4732 1831 3040 4484 3584 4155 7639 | 73426 3002 1065 1847 3031 2341 2721 5837 | 0.91 3.73 1.32 2.29 3.76 2.91 3.38 7.25 | * * * * * | | Search Redo Peak Search Peak Search Param |
| 00:06 00:06 00:07 00:08 00:10 00:13 00:14 00:15 | 3364 - 3572 3827 - 4057 4381 - 4573 4576 - 4782 6114 - 6356 7922 - 8157 8304 - 8514 8516 - 8741 8918 - 9083 | 3451 3933 4490 4658 6232 8033 8423 8423 8617 9022 | 1504 4732 1831 3040 4484 3584 4155 7639 3292 | 73426 3002 1065 1847 3031 2341 2721 5837 1976 | 0.91 3.73 1.32 2.29 3.76 2.91 3.38 7.25 2.45 | * * * * * | | Search Redo Peak Search Peak Search Param |
| 00:06 00:07 00:08 00:10 00:13 00:14 00:14 00:15 | 3364 - 3572 3827 - 4057 4381 - 4573 4576 - 4782 6114 - 6356 7922 - 8157 8304 - 8514 8516 - 8741 8918 - 9083 9083 - 9276 | 3451 3933 4490 6232 8033 8423 8617 9022 9152 | 1504 4732 1831 3040 4484 3584 4155 7639 3292 3863 | 73426 3002 1065 1847 3031 2341 2721 5837 1976 2621 | 0.91 3.73 1.32 2.29 3.76 2.91 3.38 7.25 2.45 3.25 | * * * * * * * * * | | Search Redo Peak Search Peak Search Param Report Preview |
| 00:06 00:06 00:07 00:08 00:10 00:13 00:14 00:15 00:15 00:15 | 3364 - 3572 3827 - 4057 4381 - 4573 4576 - 4782 6114 - 6356 7922 - 8157 8304 - 8514 8516 - 8741 8918 - 9083 9083 - 9276 9718 - 9951 | 3451 3933 4490 6232 8033 8423 8617 9022 9152 9827 | 1504 4732 1831 3040 4484 3584 4155 7639 3292 3863 4210 | 73426 3002 1065 1847 3031 2341 2721 5837 1976 2621 2727 | 0.91 3.73 1.32 2.29 3.76 2.91 3.38 7.25 2.45 3.25 3.39 | • • • • • • • • • • • • • • • • • • • | | Search Redo Peak Search Peak Search Param Report Preview Print |
| 00:06 00:06 00:07 00:10 00:13 00:14 00:14 00:15 00:15 00:15 00:16 | 3364 - 3572 3827 - 4057 4381 - 4573 4576 - 4782 6114 - 6356 7922 - 8157 8304 - 8514 8516 - 8741 8918 - 9083 9083 - 9276 9718 - 9951 11070 - 112 | 3451 3933 4490 6232 8033 8423 8617 9022 9152 9827 111 | 1504 4732 1831 3040 4484 3584 4155 7639 3292 3863 4210 3460 | 73426 3002 1065 1847 2331 2341 2721 5837 1976 2621 2727 1681 | 0.91 3.73 1.32 2.29 3.76 2.91 3.38 7.25 2.45 3.25 3.39 2.09 | | | Search Redo Peak Search Peak Search Param Report Preview Print |
| 00:06 00:06 00:07 00:10 00:13 00:14 00:14 00:15 00:15 00:15 00:16 00:18 | 3364 - 3572 3827 - 4057 4381 - 4573 4576 - 4782 6114 - 6356 7922 - 8157 8304 - 8514 8516 - 8741 8918 - 9083 9083 - 9276 9718 - 9951 11070 - 112 11284 - 115 | 3451 3933 4490 4658 6232 8033 8423 8617 9022 9152 9827 111 114 | 1504 4732 1831 3040 4484 3584 4155 7639 3292 3863 4210 3460 2347 | 73426 3002 1065 1847 3031 2341 2721 5837 1976 2621 2727 1681 1091. | 0.91 3.73 1.32 2.29 3.76 2.91 3.38 7.25 2.45 3.25 3.39 2.09 1.25 | | | Search Redo Peak Search Peak Search Param Report Preview Print Save |

Figure 13-28 Add peaks

4 Click **Close**. The newly added peak and its base points will be displayed in the chromatogram. (See Figure 13-29.)

Figure 13-29 Added peak



13.7.5.1.2 Redo Peak Search

Redo Peak Search will repeat the peak search using updated Peak Search Parameters.

13.7.5.1.3 Peak Search Parameters

Peak Search Parameters behaves identically to **Change Search Parameters** on the **Peaks** submenu. See section 13.7.5.6, Change Search Parameters, on page 13-24.



13.7.5.1.4 Report Preview

Report Preview will reformat the **Peaks Found** window into an easy to read report. (See Figure 13-30.)

Once the preview is generated, click **Export to Excel** to send the report to Excel.

Figure 13-30 Report preview

| Preview for Peak Found Search Report | X |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| SIM Data: C:\Documents and Settings\ssmith\Desktop\CMS5000 Water Purge\CMS5000 Water Purge_20 Data Info: 4ppb of XQ-4406 @ 22.8C GPS Info: Valid GPS Information Not Rvailable Requisition Date and Time: 7/7/2009 11:58:51 RM Requisition Method: /Method/CMS5000 Water Purge.mth | 090 |
| Peak Search Parameters: Peak Resolution: 5 Minimum Response Area: 50000 Minimum Response Area: 0 Minimum Width: 7 Maximum Width: 70 Noise Level Multiplier: 2.0 | ~ |
| Export to Excel Print Save C | ose |

13.7.5.2 Show/Update Current Peaks

When the base points have been edited (see section 13.7.5.3, Edit Base Points, on page 13-21), **Show/Update Current Peaks** will recalculate the scan range, peak response, area and percent area utilizing the new base points.

- Right-click in the chromatogram window. Select Peaks >> Show/Update Current Peaks. (Refer to Figure 13-25.)
- 2 The **Peaks Found** window with updated peak parameters is displayed. (See Figure 13-31.)



Figure 13-31 Show/update current peaks



13.7.5.3 Edit Base Points

Edit Base Points will change the area of integration. Each purple dot on the chromatogram signifies a base point.

- **1** Peform the instructions in section 13.7.5.1, Search for Peaks, on page 13-16.
- 2 Right-click in the chromatogram window. Select **Peaks** >> **Edit Base Points**. Refer to Figure 13-25 on page 13-16.
- **3** The cursor appearance will change to a plus sign. (See Figure 13-32.) *Figure 13-32 Edit base peaks cursor*



NOTE: For more accurate placement of the base point, zoom in on the desired peak. Refer to section 13.9, Using the Zoom Function, on page 13-29 for zoom instructions. (See Figure 13-33.)

 Fire Functions: Data Review Tede Were Window Help
 Image: Control Review Tede Were Window Help

 Image: Ima

Figure 13-33 Zooming in to edit points



4 Double-click the desired location for each base point. Each base point will relocate to the new position. (See Figure 13-34.)





- 5 Verify the updated base points by opening Show/Update Current Peaks. Refer to section 13.7.5.2, Show/Update Current Peaks, on page 13-20. Alternately, select Label the Peaks, see section 13.7.5.5, Label the Peaks, on page 13-23 to view the updated peak area.
- **NOTE:** To undo all manual changes to base points, click **Redo Peak Search** in the **Peaks Found** window. (Refer to Figure 13-31.)



13.7.5.4 Clear the Peaks

Clear the Peaks removes the peak identification arrows and base points from the graph. (See Figure 13-35.)





13.7.5.5 Label the Peaks

Label the Peaks displays the retention time and area of each peak. (See Figure 13-36.)



Figure 13-36 Label the peaks

13.7.5.6 Change Search Parameters

Change Search Parameters displays the **Peak Search Parameters** window and allows for modification of the peak resolution, noise level multiplier, minimum peak width for identification, maximum peak width for identification, minimum TIC and RIC (area). (See Figure 13-37.)

Figure 13-37 Peak Search Parameters window

| - Peak Search- Search Window | 00:20 | Min RIC Area | a 50000 | Min TIC Area | 250000 |
|---------------------------------------|--------------|--------------|----------------|--------------|--------|
| Window Expand | Factor 0.02 | Min Width | 20 | | |
| Peak Resolution | (dx) 30 | Max Width | 1000 | | |
| Noise Level Mul | t 2 | Precedence | Level 0 | | Reset |
| - Elimination Rule | es | | | | |
| 🔽 Keep no r | nore than 10 | 🛛 peaks 🕅 K | (eep peaks abo | /e 10 % | Reset |
| | | | | | |
| · · · · · · · · · · · · · · · · · · · | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

13.7.5.7 Previous Search Results

Previous Search Results accesses results from a previously saved search.

Right-click the in chromatogram window and select Peaks >> Previous
 Search Results. A new submenu will be displayed. (See Figure 13-38.)

| Figure 13-38 F | Previous Search Results |
|----------------|-------------------------|
|----------------|-------------------------|

| Common Scale | | | |
|----------------------------------------------------------|------------------------------------|-----------------------|------------------------------------|
| Select Scan View All Data View Temperature Profile | F11 | | |
| Change Plot Color Label Chromatogram | | | |
| Grab Peak for Template Scan Subtract | | | |
| Peaks | Search for Peaks | ; | |
| Control Panel | Show/Update Cu | irrent Peaks | |
| Properties | Clear the Peaks | | |
| | Change Search I Previous Search | Parameters Results | CM55000 Water Purge_20090707_03.ap |



- 2 Recently saved searches are displayed. The last selection is **Open**.
- **3** From the submenu, select **Open** to display the **Open** window. (See Figure 13-39.)

Figure 13-39 Open window

| Open | | ? 🛛 |
|----------------|-------------------------------------|-----------|
| Look in: 隘 | CMS5000 Water Purge 💌 🗲 🔁 | 📸 🎟 - |
| Reports | | |
| CMS5000 | Water Purge_20090707_03.apr | |
| | | |
| | | |
| | | |
| File name: | CMS5000 Water Purge_20090707_03.apr | Open |
| Files of type: | Peak Search Besults(* apr) | Cancel |
| | Open as read-only | |
| | | Help |
| | | ✓ Preview |
| I | | <u> </u> |
| | | |
| | | |
| | | |
| J | | L // |

4 Select the desired file in the **Open** window and click **Open** to display the saved report. (See Figure 13-40.)

Figure 13-40 Saved report

| MS5000 Water Purge_20090707_03.apr |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Peak Found Search Report C:\Documents and Settings\ssmith\Desktop\CMS5000 Water Purge\CMS5000 Water Purge_20090 Reporting Date and Time - 9/4/2009 11:57:50 RM |
| SIM Data: |
| Data Info: 4ppb of XQ-4406 @ 22.8C |
| GPS Info: |
| Valid GPS Information Not Available |
| Acquisition Date and Time: |
| 7/7/2009 11:58:51 AM |
| Acquisition Method: |
| Indestmethous Store water Furge.mth Tune/Cal File: default.tun |
| Peak Search Parameters: Peak Resolution: 5 |
| Minimum Response Area: 50000 Minimum Response Area: 0 Minimum Vidth: 7 |
| <pre></pre> |
| Export to Excel Print Save Close |

13.7.6 Control Panel

Select **Control Panel** to display the Control Panel on the **Data Review** window. (See Figure 13-41.) The Control Panel display is the default setting.





Clear **Control Panel** to remove the Control Panel from the **Data Review** window. (See Figure 13-42.)

Figure 13-42 Window without control panel



The **Control Panel** sidebar contains the name of the method used to create the data file. Click **Pause Screen** to temporarily cease data plotting on the computer. When the **Pause Screen** is clicked again, all collected data will be plotted and CMS IQ will continue to plot data in near real time. **Pause Screen** does not interrupt actual data collection. (Refer to Figure 13-41.)



13.7.7 Properties

Properties displays data review settings. On the top left hand side, the current width of the data file, in terms of time, is displayed. The **Show Control Panel** option is identical in function to the **Control Panel** option in the chromatogram window context menu. (See Figure 13-43.) Click **OK** to close **Properties** and save changes.



| Properties | |
|---------------------------------------------------------|--------------------|
| ⊤Trend Display Days Hrs Min Current Width 10 19 ÷ | └ View Options |
| | Show Control Panel |
| | |
| 01 | Cancel Help |

13.8 How to Access the Scan Cursor

CMS5000 takes a data point every tenth of a second. The individual data points are referred to as scans. A specific scan is accessed using the **Scan Cursor** in the chromatogram window. The **Scan Cursor** is the green triangle with the vertical line located at the bottom right hand side of the window. (See Figure 13-44.) Moving the **Scan Cursor** to a specific scan will display the overall maximum Response, Response/Response Max (displayed as a percentage), scan Response, Scan #, and retention time of the scan.



Figure 13-44 Location of the Scan Cursor

The Scan Cursor can be moved to the desired location by:

- Clicking the Scan Cursor icon and dragging the icon to the scan of interest
- Double-clicking the left mouse button over the scan of interest
- Hovering the mouse over the vertical green line then clicking the left mouse button and dragging the Scan Cursor to the scan of interest
- Using the left and right arrow keys on the computer

NOTE: To use the arrow keys first click in the chromatogram window to highlight it. A black outline will appear around the chromatogram.

13.9 Using the Zoom Function

The **Zoom** function expands the view of a particular section of the chromatogram. There are two ways to zoom in on a Chromatogram:

- 1 Click Zoom In
- **2** Two vertical black lines will appear on the chromatogram. (See Figure 13-45.) *Figure 13-45 Zoom*



3 Hover the mouse over a vertical line and a double sided horizontal arrow will appear. Press and hold the left mouse button, drag the black vertical line to the desired position, and release. Repeat this process with the other vertical line. (See Figure 13-46.)







4 Move the cursor in between the two black vertical lines and a magnifying glass will be displayed. (See Figure 13-47.)

Figure 13-47 Magnifying glass



5 Click when the magnifying glass is displayed to zoom in on the selected area. (See Figure 13-48.)

Figure 13-48 Area zoom




6 Alternately, press and hold the left mouse button at the desired starting point. (See Figure 13-49.)





7 As the cursor is dragged, a vertical line will be displayed. (See Figure 13-50.) *Figure 13-50 Vertical line*



8 Drag the cursor to the desired zoom ending point and release the mouse button. (See Figure 13-51.)

Figure 13-51 Zoom end



9 Move the cursor in between the two black vertical lines and a magnifying glass will be displayed. (See Figure 13-52.)

Figure 13-52 Magnifying glass





10 Click when the magnifying glass is displayed to zoom in on the selected area. (See Figure 13-53.)

Figure 13-53 Area Zoom

| | | e Functions Data Review Tools View Window Help |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | ĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨĨ |
| | | |
| | | DC_Max + 26(),077 : TC20C_Max + 95(% : TC + 258())05 : Som 64 #1 : Som 4 2159 ; IT + 10:55 0 |
| | n Preduktion to Chonent and Integration (States to | |
| All realized to the sequence of the sequence o | rt Backetink file (Decent in al Section file (De | n. |
| Add http://www.iti.inter.com/inter. | n 1 Jacksfrachts (Stowents of Amplyonet) (Jacksfrachts (Jacksfrachts)) 2 Jacksfrachts (Stowents of Amplyonet) (Jacksfrachts) 2 Jacksfrachts (Jacksfrachts) | |
| Paralel Dea Ma (Sponsers ed Setting) (2000) Weir Paral (2000) Weir Parad (2000) Weir Parad (2000) Wei | rt Technick für C (bouwerk ned Setting-Uned Setting-Une | ATT THE REPORT OF THE REPORT O |
| | | do orea F1 Bacaba Deba Tis C (Socienze to and Settionalized Deba Tis C (Socienze to and Settionali to and Settionali to and Settionalized Deba Tis C (Socien |
| | | |

11 To return to the full chromatogram, click **Zoom Out (See Figure 13-54.)** Alternately, press **F11** on the computer keyboard.

Figure 13-54 Zoom out



13.10 Range Tool

The **Range Tool** III is used to reintegrate peaks and adjust the scan range.

- **1** Use the **Range Tool** to determine the scan range. The **Range Tool** is a triangle with two red vertical lines which is located at the bottom left hand side of the window.
- **2** Click and drag the range tool underneath the x-axis until it is aligned with the desired peak apex. (See Figure 13-55.)

Figure 13-55 Positioning range tool



3 Position the cursor on the gray line that appears above the **Range Tool**. A double-sided horizontal arrow will appear. (See Figure 13-56.)

Figure 13-56 Range arrow



- 4 To set the scan range, press and hold the left mouse button, then drag up. Two red triangles at the bottom of the window with red vertical lines will be displayed. The red lines set the scan range limits. Release the left mouse button when the red lines cover the desired scan range. (See Figure 13-57)
 - Adjust the red lines by hovering the cursor over either red triangle and a double-sided horizontal arrow will appear. Press and hold the left mouse button to drag the red vertical line to the desired location.



Figure 13-57 Positioning the red lines

5 Right-click on the range tool to provide the following menu options. (See Figure 13-58.)

Figure 13-58 Range tool menu



| Remove | Removes the range cursor |
|------------------|------------------------------------------------------------|
| Remove All | Removes the range cursor, retention time, and area labels |
| Show Integration | Displays the integration on the x-axis (See Figure 13-59.) |







Show Signal/Noise Shows the signal to noise ratio

NOTE: A background must be selected before selecting Show Signal/Noise. See section 13.10.1, Background Tools, on page 13-37. (See Figure 13-60.)

Figure 13-60 Show signal to noise



Show Retention Time Displays the retention time on the x-axis (See Figure 13-61.)







13.10.1 Background Tools

Background Tools are used to calculate signal to noise parameters. Two separate background ranges can be selected from the chromatogram. To select a background, follow the instructions below.

- **1** Use **Background Tools** to determine the background range. **Background Tools** are located in the bottom left hand side of the window.
- **2** Press and hold the left mouse button, then drag one of the blue triangles to a baseline region proceeding a peak. (See Figure 13-62.)



Figure 13-62 Positioning Background Tool

3 Position the cursor on the gray line that appears above the **Background Tool** and a double-sided horizontal arrow will appear.

To set the background range, press and hold the left mouse button, then drag up. Two blue triangles at the bottom of the window with blue vertical lines will be displayed. Release the left mouse button when the blue lines cover the desired background range. These blue lines set the background range limits.

Adjust the blue lines by hovering the cursor over either blue triangle and a double-sided horizontal arrow will appear. Press and hold the left mouse button to drag the blue triangle and blue vertical line to the desired location. (See Figure 13-63.)



Figure 13-63 Positioning blue lines



4 To display signal to noise values, click **Show Signal/Noise** in the **Range Tool** menu. (See Figure 13-64.)

Figure 13-64 Show signal/noise



5 Right-click **Background Tool** to display the following menu. (See Figure 13-65.)

Figure 13-65 Background Tool Menu



| Remove | Removes the background cursor |
|---------------------|--------------------------------------------------------------------------------------------------------|
| Show Integration | Same as Show Integration on the Range Tool. Refer to section 13.10, Range Tool, on page 13-34 |
| Show Retention Time | Same as Show Retention Time on the Range Tool. Refer to section 13.10, Range Tool, on page 13-34 |

Chapter 14 Run Method

14.1 Run Method Procedure

CMS5000 can be operated from a computer using CMS IQ. To run a method, use the following procedure.

- **1** Double-click the **CMS IQ** icon to open CMS IQ software.
- 2 Double-click the Run Method icon Run Method
- **3** Select the desired method file (e.g., **Water Purge 19 Cmpd**) and click **OK**. (See Figure 14-1.)

\$

Figure 14-1 Select method to run

| | | • |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------------------|
| C PC | | © CMS5000 |
| older /Method/Test | | |
| | | |
| Name | Size | Date |
| Sequences | | 11/19/2009 9:35:08 AM |
| CM55000 Ck Std.mth | 9K | 11/19/2009 2:05:52 PM |
| water Purge Timed Calib.mth | 46K | 11/12/2009 12:24:06 PM |
| CMSS000 Column Conditioning.mth | 5K | 11/0/2009 1:04:14 PM |
| CMSEDDO Black with | 4UK | 0/14/2009 1:04:15 PM |
| Crossee banking | 7C | 72072009 2139104 PM |
| | | |
| ie Name: CMS5000 Ck Std.mth | | |
| ile Type: Method Files (*.mth; *.xmth) | | · |
| tAPSITE Method File ile timestamp = 05/20/09 16:48:53 ile modified = 11/19/09 14:05:52 IMS 5000, Check Standard Method, Tri-bed Co Line file defailt tun | nc | Manage Files |



3a The heated components of CMS5000 must reach their initial set points before the method will begin. The **Warmup Heaters** window will appear if the components are not within range. (See Figure 14-2.)



Figure 14-2 Heater status grid

NOTE: Click the **Legend** button to explain what the colors under each component represent. (See Figure 14-3.)



3b When CMS5000 setpoints have been reached, the method will start running automatically.



4 Data will be displayed on the computer as the method is running. An example of a finished chromatogram is shown in Figure 14-4.



Figure 14-4 Example of finished sample run

Chapter 15 Chromatogram Overlay

15.1 Introduction

Chromatogram Overlay allows multiple data files to be displayed in the same data review window.

15.2 Chromatogram Overlay

- 1 Click Chromatogram Overlay
- 2 Select one or more of the desired data files and click Open. (See Figure 15-1.)
 - **HINT:** Multiple data files can be selected by holding down the **Ctrl** key while clicking on additional data files. A range of data files can be selected by holding down the **Shift** key and selecting the first and last data file in the desired range.

Figure 15-1 Selecting data files

| Open | | × |
|-------------------------------------------------------|-------------------|-----------------------|
| C PC | CMS500 | 00 |
| | | |
| Folder: //Data/CMS5000.W/ater Purge01 | | |
| | | |
| Name | Size | Date |
| Reports | | 9/26/2012 3:49:37 PM |
| CM55000 Water Purge01_20120926_02.hps | 164K | 9/26/2012 3:49:38 PM |
| CM55000 Water Purge01_20120926_01.hps | 291K | 9/26/2012 3:19:30 PM |
| CM55000 Water Purge01_20120925_02.hps | 290K | 9/25/2012 2:37:12 PM |
| CM55000 Water Purge01_20120925_01.hps | 129K | 9/25/2012 11:36:56 Af |
| CM55000 Water Purge01_20100909_03.hps | 290K | 9/9/2010 10:32:22 AM |
| CMS5000 Water Purge01_20100908_01.hps | 289K | 9/8/2010 4:20:17 PM |
| CMS5000 Water Purge01_20100719_02.hps | 179K | 7/19/2010 12:29:38 PM |
| CMS5000 Water Purge01_20100719_01.hps | 129K | 7/19/2010 12:12:36 PM |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| File Name: "CMS5000 Water Purge01_20120926_0 | 02.hps" "CMS5000" | Water Purge01_201209 |
| File Type: Data Files (*.hps;*.hpz;*.hoz;*.hss;*.acq) | | • |
| HAPSITE Data File | | Manage Files |
| File timestamp = 09/26/12 16:35:36 | | |
| File modified = U9/26/12 15:49:38 | | OK |
| | | |
| | | Lancei |
| | | |



3 The selected data file(s) are displayed in the **Data Review** window. The filename(s) will also be displayed under the **Filename** pane in the Control Panel. (See Figure 15-2.)



Figure 15-2 Data file in control panel

4 Click Browse (...) in the row below the data file. (See Figure 15-3.)

Figure 15-3 Selecting another data file

| Control Panel: | | | | × |
|-----------------------------------|---|-----|-----------|---|
| 🔽 File Name | | | RT Offset | |
| 🔽 CMS5000 Water Purge_ | | + 🔻 | 00:00 000 | |
| | | - | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Pause Screen | | | | |
| | | | | |
| Method | | | | |
| Method | | | | |
| Method CMS5000 Water Purge.mth | 1 | | | |
| Method CMS5000 Water Purge.mth | 1 | | | |
| Method CMS5000 Water Purge.mth |) | | | |
| Method CMS5000 Water Purge.mth | 1 | | | |

5 Select one or more of the desired data files and click **Open**. The additional data file(s) will appear below. (See Figure 15-4.)

Figure 15-4 Second data file

| Co | nt | tı | r | 0 | 11 | Pa | ne | : | | | | | | | | _ | | | | | | × |
|----|-----------|----|---|----------|----------|-----------|-----|------------|-----|-----|------|-----|---|---|---|---|---|----|----|-----|----|---|
| • | | F | 1 | le | el | Na | m | е | | | | | | | | | R | Т | | | • | 1 |
| 2 | | C | 2 | M | 19 | 5 | 00 | D١ | ٧a | ter | Ρ | | + | | Ŧ | 1 | 0 | 0: | 00 |) (| 00 | 0 |
| ☑ | | C | 2 | M | 19 | 5 | 00 | D١ | ٧a | ter | Ρ | | + | l | Ŧ | 1 | 0 | 0: | 00 |) (| 00 | 0 |
| Г | 1 | | | | | | | | | | | | | | Ŧ | 1 | | | | | | |
| | | | - | | | | | | | | | | | Î | | | | _ | | | _ | _ |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | F | 2 | 31 | 156 | s S | CI | eer | n | | | | | | | | | | | | |
| N | v1e | e | F | h | 3L | 136 d- | • S | CIE | eer | n | | | | | | | | | | | | |
| | ۰ Me | e | F | 2.2 h 15 | au 10 | 156 d- | • S | cre /al | eer | Pu | | e.m | h | | | | | | | | | |
| | vl e M | e | F | h 15 | au 10 | 136 d- | • S | cre /al | eer | Pu | Irgi | e.m | h | | | | | | | | | |

6 All selected chromatograms will appear in the **Data Review** window. Each data file displayed in the **Control Panel** will be plotted in the corresponding color of the checkbox located to the left of the file name. (See Figure 15-5.)

Figure 15-5 Chromatograms overlaid



7 To select or deselect data files to be plotted, select or clear the checkbox next to the file name in the **Control Panel**. (See Figure 15-6.)

Figure 15-6 Chromatogram selection





15.3 Retention Time Shift

The retention time of a specific compound may vary between data files. Shifting the retention times of one data file will align the peaks to allow for further comparison.

- **1** Follow steps 1-6 in section 15.2, Chromatogram Overlay, on page 15-1 to select the desired data files.
- 2 Shift the chromatogram by selecting + to shift the chromatogram forward, or to shift the chromatogram backwards. Enter the desired amount of time under RT Offset for the chromatogram to shift. (See Figure 15-7.)

| | RT Offset | - |
|----------------------|-----------------|---|
| CMS5000 Water Purge_ | . 👥 🖛 00:00 000 | |
| | . + 5 | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Pause Screen | | |
| Pause Screen | | |
| Pause Screen | | |

Figure 15-7 Shifting retention time

- 3 When the desired retention time shift has been entered, press Enter.
- **4** The shifted chromatogram will be displayed. (See Figure 15-8.)



Figure 15-8 Shifted chromatogram

15.4 Chromatogram Subtract

Chromatogram Subtract subtracts the peak area of one data file from the peak area of a second data file.

- **1** Follow steps 1-6 in section 15.2, Chromatogram Overlay, on page 15-1.
- **2** Right-click in the chromatogram and select **Select Chro To Subtract**. (See Figure 15-9.)

Figure 15-9 Select Chro To Subtract



3 The Select File To Subtract window is displayed. (See Figure 15-10.)

Figure 15-10 Select File To Subtract window

| CMS5000 Wate | r Purge 200 | 90707 02.1 | ips |
|--------------|-------------|------------|-----|
| CMS5000 Wate | r Purge_200 | 90707_03.H | ips |
| | | | |
| | | | |
| | | | |

4 Select the desired file to subtract in the shortcut menu. Click **OK**. (See Figure 15-11.)

Figure 15-11 Chromatogram selection





5 Right-click in the chromatogram and select **Chro Subtract**. (See Figure 15-12.)

Figure 15-12 Chro Subtract

| Manual Scale | |
|-----------------------------------|-----|
| Common Scale | |
| Select Scan | |
| View All Data | F11 |
| View Temperature Profile | |
| Show Data Filename | |
| Change Plot Color | |
| Label Chromatogram | |
| Grab Peak for Template | |
| Chro Subtract | |
| Select Chro To Subtract | |
| Peaks | • |
| Control Panel | |
| Properties | |

6 The selected data file is subtracted from the first data file. (See Figure 15-13.) *Figure 15-13 Subtracted chromatogram from Figure 15-5*



Chapter 16 Method Editor

16.1 The Method Editor

| Only trained personnel Changing parameters n data. | should edit or create methods. nay adversely affect analytical |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NOTE: Creating or editing method section 12.2.6.4.1, Changi | is is an Advanced user function. Refer to ng Access Levels, on page 12-29. |
| Method Editor creates methods to compounds. Method Editor is com | o identify and quantify volatile organic nposed of the following screens: |
| Description | A description of the method |
| Startup | Selects the type of method to be created: Air, Water, or Ck Std Select Temperature settings |
| Inlet | Defines the temperatures, timing, inlet, an valve states |
| Scan Properties | Unavailable |
| Search | Designates the calibration library for the method. Also sets the Library Search Parameters |
| Data | Sets the Data File (.hps) component and specifies where the data will be stored. B default, the data file pathway uses the pathway of CMS5000IQ\data\method name\file name.file extension, e.g., C:\CMS5000IQ\data\Method01\filename. |
| Summary | Review and print the method parameters |



At the bottom of each screen of the **Method Editor**, the **Inlet States** and **Temperature** profile sequences are displayed. (See Figure 16-1.)





Newly created methods start with a default set of **Inlet States** and a default **Temperature Profile**, which can be modified as required by the application.

16.2 Wizard Mode

Method Editor can be run in **Wizard Mode**, which moves through the method creation windows in a logical sequence and is recommended for new users. Adjustments can be made using the **<Back** and **Next >** buttons. Figure 16-2 shows the **Wizard Mode** navigation buttons.

Figure 16-2 Wizard mode method editor navigation buttons

| << Begin | < Back | Next > | End >> | Save | Cancel |
|----------|--------|--------|--------|------|--------|

All screens are available when **Wizard Mode** is not selected. Refer to section 12.2.5.3, Miscellaneous, on page 12-20 for instructions on selecting **Wizard Mode**.

NOTE: The **Method Editor** must be reopened to initiate the selected mode. (See Figure 16-3.)

Figure 16-3 System properties miscellaneous tab wizard setting

Method Editor in Wizard Mode



All method parameters on each screen of the **Method Editor** are checked for synchronization and correctness. When a discrepancy occurs, **Method Editor** will highlight all questionable parameters and the **Display Error Information** button in yellow. (See Figure 16-4.)

NOTE: The **Method Editor** permits movement from screen to screen, even when errors are present.

Figure 16-4 Error information button



16.3 Accessing Method Editor



- 1 On the System Setup window, double-click Method Editor Method Editor .
- **2** Select the CMS5000 name (CXXXX) or IP address associated with CMS5000 to which the method will be applied. (See Figure 16-5.)

NOTE: If only one CMS5000 is being used, it will be selected by default.

Figure 16-5 CMS5000 Selection

| Edit Method | |
|-------------------------------|-----------------|
| <unknown sensor=""></unknown> | Open |
| 10.210.50.107 | |
| 10.210.60.105 | |
| | Method |
| | Method Sequence |
| | Default Method |
| | Cancel |

There are five options in Method Editor:

| Open | Opens an existing CMS5000 method for modification |
|-----------------|------------------------------------------------------|
| Method | Opens a blank method template to modify as necessary |
| Method Sequence | Allows methods to be sequenced and run automatically |
| Default Method | Selects a default method |
| Cancel | Closes the Edit Method window |



16.4 Description Screen

A description of the method and the method name are entered into the **Description** window. (See Figure 16-6.) To continue to the next section, click **Next** >.

NOTE: A method file ends with a file extension of *.mth.

Figure 16-6 Method Editor - Description window

| Met | hod Editor - D | escription | | | | | |
|-------|-------------------|--------------|--------|----------------|-----------------|------------------------|---------|
| | Method File Name | Method01.mth | | | | Display Error Informal | tion |
| | - Mode of Analysi | 8 | | | | | |
| | | | | | | | |
| | | | | | | | |
| | Description | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | 1 | | | | | | |
| | | | | | | | |
| | | | | | | 10.0 C.In Is | 180.0 C |
| | | | | | 20.0 C.fm | | |
| | | | | | | | |
| | | | 60.0 C | | | | |
| | 82 | 8 | | | 8 | R | 88 |
| | | v 05:1 | | | × 15: | | 8155 |
| Loopf | Begin | nFlo | | | 1 End Standb | | |
| | Set 1 | Colur | | | ° et | | |
| | | | | << Begin < Bac | k Next> End: | > Save Cancel | 1 |
| | | | | | | | |

16.5 Startup

The **Startup** screen, shown in Figure 16-7, displays the initial settings for CMS5000 heaters. The initial temperature settings for the components described in section 16.5.1, CMS5000 Temperatures (°C), on page 16-6 are modified on this screen. The **Method Type** (Air, Water, or Ck Std) are selected on this screen.

Figure 16-7 Method Editor - Startup window

| Method Editor - Startup | | | × |
|-----------------------------------------------------|----------------|----------------------------|---------------------------|
| Method File Name: Metho | d01.mth | | Display Error Information |
| CMS Temperatures (C) | | Method Type | |
| Component | Target Setting | Water | |
| Column | 50.0 | Water | |
| Valve Oven Htr | 50.0 | Air h | |
| Ck Std Heater | 80.0 | | |
| Detector Oven | 105.0 | | |
| Regulator | 50.0 | | |
| _ | | | |
| 30/ | 0c | 20.0 c.hnh | C/mh 180.0.C |
| 299 | 8 | g | 8 8 |
| 88 | 05:(| 100 | 13:0 |
| ConcFill ConcFlow Filament On Set 1 Begins | ColumnFlow | | Set 1 Ends Standby |
| | | << Begin < Back Next > End | >> Save Cancel |



16.5.1 CMS5000 Temperatures (°C)

The following heated components must reach their set points before data acquisition can begin:

| Column | Initial target Column temperature for the method |
|----------------|-----------------------------------------------------------------------|
| Valve Oven Htr | Target Valve Oven Heater temperature |
| Ck Std Heater | Target Check Standard Heater temperature |
| Detector Oven | Target Micro Argon Ionization Detector (MAID) temperature |
| Regulator | Target Regulator temperature, which controls the column head pressure |

16.5.2 Method Type Selection

| Water | Sets method parameters for water sampling |
|----------------------------------|-----------------------------------------------------------------|
| Air | Sets method parameters for air sampling |
| Ck Std | Sets method parameters for a Check Standard (toluene) method |
| NOTE: In the following sections, | the Method Type is set to Water. |

16.6 Inlet

The Inlet screen displays the default settings for the Inlet States, GC Temperature Profiles, and Valve States.

NOTE: Adjusting settings on the **Inlet** screen may affect other method parameters and/or retention time.



The **Start** time of each **Inlet State** event is displayed in combination with the temperature profile at the bottom of the **Inlet** screen. (See Figure 16-8.)

| Figure 16-8 | Method Editor - | Inlet window |
|-------------|-----------------|--------------|
|-------------|-----------------|--------------|

| | le Name: Metho | d01.mth | | | | Display Error Information |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|------------|--------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inlet State | s | | | | | |
| | Start | | Duration | Inlet State | Valve States for Event 3 | |
| 1 | 00:00 | | 01:00 | ConcFill 💌 | | Scan Events |
| 2 Inject | 00:00 | | 05:00 | ConcFlow 💌 | | Scan Delay: |
| 3 | 05:00 | | 18:30 | ColumnFlow 💌 | | 15 |
| 4 | 23:30 | | | Standby 👱 | | |
| | | | | - | | Set Begin Time End T |
| | | | | | ConcHeater | 0 00:15 23:30 |
| | | | | | | |
| | | | | | | |
| GC Tempe | erature Profiles | | | | | |
| Start | Ramp Rate | Ramp Tin | ne Temp | Hold Time | | Concentrator |
| 00:00 | | | 50.0 | 15:00 | | |
| 15:00 | 20.0 | 05:00 | 150.0 | 00:00 | | |
| 20:00 | 10.0 | 03:00 | 180.0 | 00:30 | | Carbon |
| | | | | | | |
| | | | | | | |
| Temp in C | , Ramp Rate in C | /min, Time | in min:sec | | | |
| | | | | | | |
| | | | | | | |
| | | 1.1 | | | | |
| | | | | | | 10.0 C.tn h 190.0 |
| | | | | | 20.0 C # | 10.0 C.Im 1 190.0 |
| | | | | | 20.0 C # | 10.0 C/min 190.0 |
| | | | | | 20.0 C # | 10.0 C.Inik 1900 |
| | | | | | 20.0 C 4 | 10.0 C/mb 190.0 |
| | | | 50.0 C | | 20004 | 10.0 C mh 1900 |
| | | 8 | 50.0 C | | 2000 | 10.0 Cinh 1800 |
| 56.88 | | 00:50 | 50.0 C | | 200CJ | 000 000 33,000 33,000 33,000 33,000 33,000 33,000 33,000 33,000 33,000 33,000 33,000 33,000 33,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,000 30,00000000 |
| Street and | | 00:00 | 80.0 C | | 300C1 8 9 9 9 | nh 1000 min 10000 min 1000 min |
| Ref OK BB-92 | | nnFlow 05:00 | 80.0 C | | 300C1 | 000 mm |



16.6.1 Inlet States

Inlet States control CMS5000 valve settings for sampling, analysis, and purging. Figure 16-9 shows the grid used to program the inlet states.

| Figure 16-9 |) Inlet States |
|-------------|----------------|

| | 9 | Start | | Dural | tion | Inlet State | | | |
|----------------------------------------------|-----------------------------------------|-------------|----------------------------|-------|--------------------------------|--------------------------------------|---|----------|---|
| 1 | 0 | 00:00 | | 00:00 | | 01:00 | | ConcFill | • |
| 2 Inject | 0 | 00:00 | | 00:00 | | 05:00 | | ConcFlow | • |
| 3 | 0 | 05:00 | | 18:30 |) | ColumnFlow | • | | |
| 4 | 2 | 23:30 | | | | Standby | • | | |
| 23.00 | | | | | | - | | | |
| 3C Temps | erature Profi | iles | | | | | _ | | |
| GC Tempe Start | erature Profi | iles ate | Bamp Tir | me | Temp | Hold Time | | | |
| GC Tempe Start 00:00 | erature Profi Ramp R- | iles ate | Ramp Tir | ne | Temp 50.0 | Hold Time | | | |
| GC Tempe Start 00:00 15:00 | erature Profi Ramp R | iles ate | Ramp Tir 05:00 | ne | Temp 50.0 150.0 | Hold Time 15:00 00:00 | | | |
| GC Tempe Start 00:00 15:00 20:00 | erature Profi Ramp R 20.0 10.0 | iles ate | Ramp Tir 05:00 03:00 | ne | Temp 50.0 150.0 180.0 | Hold Time 15:00 00:00 00:30 | | | |
| GC Tempe Start 00:00 15:00 20:00 | erature Profi Ramp R 20.0 10.0 | iles ate | Ramp Tir 05:00 03:00 | ne | Temp 50.0 150.0 180.0 | Hold Time 15:00 00:00 00:30 | | | |

To edit the **Inlet State** grid, select an inlet state from the shortcut menu. (See Figure 16-10.)

Figure 16-10 Inlet State menu

| | Water Method | | | | Air Method | | | | Ck Std Method | | | |
|--------------|--------------|----------|-------------------------|--------------|------------|----------|--------------------------|--------------|---------------|----------|----------------------------|--|
| Inlet States | | | | Inlet States | | | | Inlet States | | | | |
| | Start | Duration | Inlet State | | Start | Duration | Inlet State | Ĩ | Start | Duration | Inlet State | |
| 1 | 00:00 | 01:00 | ConcFill | 1 | 00:00 | 00:05 | HSCreate | 1 | 00:00 | 01:00 | ConcFill | |
| 2 Inject | 00:00 | 05:00 | LinePurge | 2 | 00:00 | 00:30 | AirLinePurge | 2 Inject | 00:00 | 05:00 | CkStdLinePurge | |
| 3 | 05:00 | 10:00 | ConcFill 7 PreDesorb | 3 | 00:00 | 01:00 | AirConcFill PreDesorb | 3 | 05:00 | 10:00 | LkStdLoncFill PreDesorb | |
| 4 | 15:00 | | Desorb | 4 | 00:00 | 02:00 | Desorb | 4 | 15:00 | | Desorb | |
| | | | ConcFlow | 5 | 00:00 | 00:08 | ConcFlow | | | | ConcFlow | |
| | | | DryPurge | 6 Inject | 00:00 | 00:30 | DryPurge | | | | DryPurge | |
| | | | HSCreate | 7 | 00:30 | 02:00 | HSCreate | | | | HSCreate | |
| | | | Standby | 8 | 02:30 | 17:30 | Standby | | | | Standby | |

AirLinePurge..... Directs the sample through the air sample pathway and out the exhaust vent. The sample does not travel through the concentrator

NOTE: The sample cannot be the check standard.

| LinePurge | . Directs the water headspace sample through the air sample pathway and out the exhaust vent; the water purge is on in this state. The sample does not travel through the concentrator |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | NOTE: The sample cannot be the check standard. |
| CkStdLinePurge | . Directs the check standard out the exhaust vent, bypassing the GC column |
| AirConcFill | . Directs air sample onto the concentrator |
| ConcFill | . Directs water headspace sample onto the concentrator |
| CkStdConcFill | . Directs the check standard onto the concentrator, when the water purge is on |
| PreDesorb | . Begins the process of heat desorption of the analytes adsorbed on the concentrator prior to introduction onto the GC column |
| Desorb | . Completes the heat desorption of analytes off the concentrator and onto the GC column |
| ConcFlow | . Directs the desorbed sample from the concentrator onto the GC column |
| ColumnFlow | . Directs the carrier gas flow directly through the GC column and is selected after ConcFlow to carry the sample completely through the GC column |
| DryPurge | . Directs carrier gas through the concentrator to remove excess moisture and is used after ConcFill or CkStdConcFill |
| HSCreate | . Bubbles carrier gas into the water sample to create the headspace. For water methods only |
| Other | . Activates the Valve States menu to create a custom GC inlet state and is often used for GC troubleshooting. These options are described below (See Figure 16-11.) |
| GCFlow | . Directs carrier gas through the GC |
| HSFlow | . Directs carrier gas into the headspace. For water methods only |
| Sample | . Directs carrier gas across the concentrator |



 Purge
 Directs carrier gas through the purge tube.

 For water methods only

Sample Pump Turns on the sample pump

Figure 16-11 GC Valve states

| | Start | Duration | Inlet State | |
|---|-------|----------|--------------|------------|
| 1 | 00:00 | 01:00 | ConcFill 📃 | |
| 2 | 01:00 | 05:00 | Other 🗾 💌 | I HSFlow |
| 3 | 06:00 | 10:00 | ColumnElow 🔻 | J Sample |
| - | 16:00 | | Standbu 💌 | Purge |
| 4 | 10.00 | | Standby | CkStd |
| | | | | SamplePump |
| | | | | ConcHeater |
| | | | | |
| | | | | |

Standby Must be included in every method as the last state

After selecting the inlet state, enter the desired time period for the event in the **Duration** column. (See Figure 16-12.)

NOTE: The duration for PreDesorb and Desorb events cannot be changed.

Figure 16-12 Duration column



Upon entering the **Duration** settings, the **Start** time will be automatically calculated for the next **Inlet State(s)**. (See Figure 16-13.)

Figure 16-13 Start time recalculating



Inlet States can be deleted from the method. Highlight a cell in the desired row of the **Inlet States** table, and press **Delete** on the computer keyboard to remove the row.

Inlet States can be added to the method. Highlight a cell in the row below where the new **Inlet State** will be placed, and press **Insert** on the computer keyboard to insert a blank row. Add an Inlet State by selecting an inlet state from the shortcut menu. Refer to Figure 16-10 on page 16-8.

- **NOTE:** If a row is selected while a blank row is present, pressing **Insert** will move the blank row to the selected row's position.
- NOTE: Rows should not be inserted after the Standby event.



16.6.2 GC Temperature Profiles

GC Temperature Profiles specify the column temperature, ramp rate, and hold settings for the method. (See Figure 16-14.)

Figure 16-14 GC Temperature Profiles

| 00:00 0:00 50.0 05:00 05:00 20.0 05:00 150.0 00:00 10:00 10.0 13:00 180.0 02:00 | | ampriate | Hamp Lime | lemp | Hold Time |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|-----------|-------|-----------|
| 05:00 20.0 05:00 150.0 00:00 10:00 10:0 03:00 180.0 02:00 | 00:00 | | | 50.0 | 05:00 |
| 10:00 10.0 03:00 180.0 02:00 | 05:00 20 | 0.0 | 05:00 | 150.0 | 00:00 |
| 10.00 10.00 100.00 02.00 | 0:00 10 | 0.0 | 03:00 | 180.0 | 02:00 |
| | | | | | |

Adjustments to **Ramp Rate, Temp** (Temperature), and **Hold Time** columns will automatically update dependent parameters. For example, increasing the **Temp** will increase the **Ramp Time; increasing the Hold Time** will adjust the **Start** time of the next parameter. (See Figure 16-15.)

NOTE: A maximum of four rows is allowed in the profile.

Figure 16-15 Adjusting temperature profile

| Start | Ramp Rate | Ramp Time | Temp | Hold Time |
|-------|-----------|-----------|-------|-----------|
| 00:00 | | | 50.0 | 05:00 |
| 05:00 | 20.0 | 06:30 | 180.0 | 01:00 |
| 12:30 | 10.0 | 00:00 | 180.0 | 02:00 |
| | | | | |

16.6.3 Scan Events

| Scan Delay | . Sets the baseline response. Data is not collected during this event |
|--------------|-----------------------------------------------------------------------|
| Begin Time | . Specifies the beginning of data collection |
| End Time | . Specifies the end of data collection |
| Concentrator | . Specifies the type of concentrator |

Figure 16-16 Scan Events



16.7 Search

The **Search** window allows parameters to be set to qualify and quantify data. (See Figure 16-17.) To quantify data, a calibration library must be created. See Chapter 17, Calibration for instructions on creating a calibration library.

Figure 16-17 Method Editor - Search window

| ethod tallor - Sea | arch | | | | | | × |
|----------------------|--------------------------------------------------------------------------------|-----------------------------|----------------------|--------------|------------------|----------------|-----------------|
| Method File Name: | Method01.m:h | | | | Display Error Ir | nformation | |
| Search Mode Qua | antitative | • | | | Library Search | h Paramete | rs |
| Name No | Search Intitative | | Create Time | Modified Tim | e | Creator | |
| 1 XQ-440E | Internal Q | uadratic (3 or more points) | 5/12/2009 8:40 43 AM | 7/27/2009 | 12:20:42 PM | | Edi: |
| | | | | | | | |
| | | | | | | | |
| | | | | | TDC | in h 300. | |
| | | 40Cmh | 6.0 C m | h | zoc | inh 200 | 20 |
| | | 40 Cmh | 60 Cm | h | 100 2002 | 1915. 1915. | 20:00 |
| Cond'ill DryPurge | Fredereeth Fredereeth Set Predereeth 00:00 01:00 01:00 01:00 | dm384 | 6.0 Cm | n | 000 2000 | mn 000 | Set 1 Ends 2000 |

There are two choices in the **Search Mode** shortcut menu:

| No Search | A library search will not be conducted and a report will not be displayed on the front panel at the end of a run. If there is no library present, this is the only option available |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Quantitative | Generates a Quantitative (Quant) report at the end of a run by referencing the designated library |

16.7.1 Setting Up a Quantitative Search

Once a calibration library has been created (see Chapter 17, Calibration), **Library Search Parameters** will be activated. (See Figure 16-18.)

Library Search Parameters sets the peak identification criteria of the library compounds as well as the unknown analytes.

Figure 16-18 Library Search Parameters button



Click **Library Search Parameters** to display the peak identification criteria of the library. (See Figure 16-19.)

Figure 16-19 Library Search Parameters window



The **Peak Search** pane contains the parameters used in distinguishing a peak from the baseline. The five options most useful for adjusting the **Peak Search** are: **Search Window**..... Defines the acceptable retention time range for a peak. The default value is 10 seconds. When using the default value, a given analyte will identify a peak within five seconds on either side of the expected retention time of the analyte . This number indicates the minimum number of scans between two peaks. It is used to determine whether a peak should be split into two or considered as one Window Expand Factor Increases the Search Window throughout a run based on retention time. The default value is 0.01. If using the default value, an analyte with a retention time of ten minutes (600 seconds) would add 6 seconds to either side of the Search Window (600 seconds times 0.01), resulting in a total addition of 12 seconds to the Search Window value above. When using the default 10 second Search Window, the Window Expand Factor would increase this value to 22 seconds total at a 10 minute retention time. Min Width . Minimum number of scans per peak. The default value is 20 scans, equivalent to a peak width of 2 seconds. Any peak with fewer scans than this value will be disregarded. Decreasing this number will instruct the software to accept peaks that are less broad than the default parameters allow **NOTE:** In some cases, Min Width may be set too low. Setting a higher Min Width may be more effective at distinguishing peaks. Maximum number of scans per peak. The default value is 250 scans, equivalent to a peak width of 25 seconds. Any peaks that have more scans than this value will be disregarded by the software. Increasing this number will instruct the software to accept peaks that are more broad than the default parameters allow

| Min Resp Area | The Min Resp Area is the minimum area under a peak. The default value is 2500. Any peaks that have a smaller area will be disregarded by the software. Decreasing this number will instruct the software to accept peaks that are smaller than the default parameters allow |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precedence Level | When compared to the compound-specific precedence level, it determines which search parameters to use - the global parameters specified in Figure 16-19 or the compound-specific parameters. As a general rule, leaving this set to 0 allows one to use specific search parameters for individual compounds |
| Developmentaria Mila DIO Avena Maina I. | wel Mult and Elimination Dulas are |

Parameters **Min RIC Area**, **Noise Level Mult** and **Elimination Rules** are unavailable.



16.7.2 Compound Specific Search Parameters

The **Library Search Parameters** function is used to set the global search parameters for the library. Individual **Search Parameters** for specific compounds can also be set. To view the compounds in the library select **Edit**. (See Figure 16-20.)



Highlight the desired compound (in this example, Chloroform) and select the **Search Parameters** tab. (See Figure 16-21.)

| | CAS# | RT Time | T Time Standard 33 000 Analyte | | | Conc. | | | | 1 |
|------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------|-----------------------------------|----------|---------------------------------------------|---------------------------|-------------------|--------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ethylene Chloride | | 03:33 000 | | | • | | | | | |
| ans-1,2-dichloroethene | 0 | 04:14 199 | Anal | yte | - | | | | | Ĩ |
| s-1,2-dichloroethene | | 05:05 700 Analyt | | nalyte 🗾 | | | | | | |
| nloroform | | 05:20 600 | Analyte | | - | | | | | |
| 1,2-dichloroethane 06 | | 06:05 600 | :05 600 Analyte | | - | | | | | |
| Window Expand Factor: 0.05 Peak Resolution (dx): 5 Minimum Area: 50000 Noise Level Mult: 2 | | File Name /Water P /Water P | urge 6 se urge 36 s | Temp | File Saved Ti 9/12/2011 1 9/12/2011 1 | ime 0:46: 1:15: | Conc. 0.5 3 | Unit ppb ppb | * * | a state of the second s |
| | | /Water P | urge 6 se | | 9/12/2011 1 | 0:46: | 0.5 | ppb | - | 1 |
| Minimum Width: 7 | | /Water P | urae 72 s | Г | 9/12/2011 1 | 1:44: | 6 | ppb | + | |
| Maximum Width: 70 Pi | recedence Level: | 1 Calibration O | riginal | | | | I | View F | Repo | |

Figure 16-21 Search Parameter tab

Adjust the **Search Parameters**. In order for the compound specific **Search Parameters** to override the **Library Search Parameters** the **Precedence Level** must be set at a higher number. For example, if the **Library Search Parameters** are set at the default **Precedence Level** of 0, the compound specific **Search Parameters** must have the **Precedence Level** set at 1. (See Figure 16-21.)


16.8 Data

The **Data** screen allows for customization of the file name and storage location of the data files for the method. (See Figure 16-22.)



Figure 16-22 Method Editor - Data window

16.8.1 Data File Information

Use Default Filename When selected, the method will use a default format for the data file name. The default file name is a combination of the method file name, the date, and the sample run number (See Figure 16-23.)

Figure 16-23 Data File Information pane

| Data File Information | |
|----------------------------------|------------------|
| 🔽 Use Default Filename | |
| Enter Filename Format: File Ir | norement Digits: |
| Method01 3 | |
| Method01 _000 |).hps |
| Date and Time Appendix | 6 1 0 10 |
| None C Date Only C Date and Time | C As Suthix |
| 🔽 Auto increment filenames | C As Prefix |

File Increment Digits Used to set the number of digits appended to the data file name. By default, File Increment Digits are set to three

16.8.2 Date and Time Appendix

The Date and Time Appendix can be used to add the date and time to the data file.

NOTE: The date and time will correspond to the start of the method.

added to the file name (See Figure 16-24.)

Figure 16-24 Date and Time Appendix - None Selected



Date Only..... When selected the date will be added to the file name (See Figure 16-25.)

Figure 16-25 Date and Time Appendix - Date Selected

| | Method01_yyyymmdd _000.hps | |
|--------------------------|----------------------------|------------------------------------------------|
| Date and Time Appendix | | G & C # |
| 🔿 None 🛛 📀 Date Only | O Date and Time | As Sumx As Desfer |
| Auto increment filenames | | As Frenx |



Date and Time..... When selected, both the date and time will be added to the data file name (See Figure 16-26.)

Figure 16-26 Date and Time Appendix - Date and Time Selected

| Method01_yyyymmdd_hhmmss _ | 000.hps |
|----------------------------------------------------------------|-------------------------------|
| -Date and Time Appendix C None C Date Only IF Date and Time | As Suffix |
| ✓ Auto increment filenames | C As Prefix |

Figure 16-27 As Suffix

| 🔽 Use Default Filename | |
|-------------------------------|------------------------|
| Enter Filename Format: | File Increment Digits: |
| 1 | 1ethod01 3 🛨 |
| Method01_yyyymmdd | _hhmmss _000.hps |
| Date and Time Appendix | |
| 🔿 None 🔿 Date Only 💿 Date and | Time As Suthix |
| 🔽 Auto increment filenames | C As Prefix |
| | |

As Prefix

. When Date Only or Date and Time is

selected, the date and time are added to the beginning of the filename (See Figure 16-28.)

Figure 16-28 As Prefix

| ✓ Use Default Filename | |
|--------------------------------------|------------------------------|
| Enter Filename Format: File | Increment Digits: |
| Method01 3 | - |
| yyyymmdd_hhmmss_Method01 _00 | 00.hps |
| - Date and Time Appendix | |
| ◯ None ◯ Date Only . O Date and Time | C As Suffix |
| Auto increment filenames | As Prefix |
| Auto increment filenames | As Prens |

Auto increment filenames Determines whether data files will have numbers appended to the end of the file name. By default a number is appended to ensure data files have unique file names. When **Date and Time** is selected, data files will always have unique files names and appending numbers to the data file becomes optional (See Figure 16-29.)

Figure 16-29 Auto increment filenames deselected

| 🔽 Use Default Filename | |
|------------------------------------|-------------------------------|
| Enter Filename Format: | File Increment Digits: |
| Method01 | 3 🐳 |
| Method01_yyyymmdd_hhmmss | .hps |
| Date and Time Appendix | |
| 🔿 None 🔿 Date Only 💿 Date and Time | As Suffix |
| Auto increment filenames | C As Prefix |

16.8.2.1 Date and Time Format

| уууу | • • | • • | • | • | • | • | • | • | • | • | • | • | • | • | · | • | • | • | • | • | • | • | • | . year |
|-------------|-----|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------|
| mm . | | | | | | | | | | | | | | | | | | | | | | | | . month |
| dd | | | | | | | | | | | | | | | | | | | | | | | | . day |
| hh | | | | | | | | | | | | | | | | | | | | | | | | . hour |
| mm . | | | | | | | | | | | | | | | | | | | | | | | | . minute |
| SS | | | | | | • | | | • | | | • | • | • | • | | | • | • | | | • | | . second |



16.8.3 Use Default Directory

When **Use Default Directory** is selected, all data files will be saved in the default directory. To specify a different path, clear the **Use Default Directory** checkbox and type the desired file pathway. (See Figure 16-30.)

If **Save Data to Removable Drive** is selected, data will be saved to a removable drive (such as a USB drive). If the checkbox is cleared, data will be saved directly to the CMS5000 hard drive.



| CACHE 10/10/210 50/11C | | |
|--------------------------------|-----------|-------|
| C: \CM5 TQ \T0.210.50.116\Data | Method011 | Brows |
| Save Data | | |

16.8.4 Data Display

Manual Response Y is used to enter a count number, which will scale the Y-axis or intensity of the chromatogram.

NOTE: If 0 is entered in the **Counts** box, the response will automatically scale to the peak with the largest count. (See Figure 16-31.)



| Data Display |
|-----------------------------------------------------|
| Manual Response Y |
| e.g. 5000000 Counts |
| Note: A value of 0 disables default manual scale |
| |
| |

16.9 Summary Screen

The **Summary** screen provides options to select desired components to display in the method text report. Method settings can be reviewed on the screen before the method is saved. (See Figure 16-32.)

Figure 16-32 Method Editor - Summary window

| Method File Nam | e: Method01.mth | | | | Display Error Information |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------|---------------------|--------------------|----------------------------------------------------------------------|
| 🔲 Startup | 🔽 Data | 🔲 Inlet | Temperature Pro | file 🔲 All | |
| 🗖 Search | 🗌 Library | | | | |
| Method Data Sensor Name Analysis Mo Collection ### Data St Save data | for MethodOl.m : CMS501 de: GC/MS Mode: SIM orage Settings to file: Metho | st## dol_yyyymmdd | ###.hps with 3 inc: | rement digits | |
| Data will | not be saved t | o the removab |)le drive | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | 200.00 | 10.0 C Anta 190.0 |
| | | | | 20.0 Cm h | 10.0 C Anta 190.0 |
| | | | | 20.0 Cmh | 10.0 C.min 190.0 |
| | | 500C | | 20.0 C.hin | 10.0 C min 1900 |
| | 88.98 | 500C | | 2000mm | 0081 mm 2 001 3300 3300 |
| | Flow 05:00 | | | 200Cmin 200Cmin | 000 imt 2001 3000 3000 3000 3000 3000 3000 3000 |

16.10 Saving a Method

1 To save a newly created method, click **Save**. (See Figure 16-33.)

Figure 16-33 Method Editor - Summary window

| Method File Nan | ne: Method01.mth | | | | Display Error Information |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------|---------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 🔲 Startup | 🔽 Data | 🔲 Inlet | 🔲 Temperature Pro | ofile 🗌 🗌 All | |
| 🔲 Search | 🔲 Library | | | | |
| Method Dat: Sensor Name Analysis Me Collection ### Data St | a for Method01.; 2: CMS501 ode: GC/MS Mode: SIM corage Settings | ### | | | |
| Save data | a to file: Metho not be saved 1 | od01_yyyymmdd to the removal | _###.hps with 3 inc | rement digits | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | 30.0 C Mile | 10.0 C.mh 190.0 |
| | | | | 20.0 Cm h | 100 C mil 1000 |
| | | | | 30.0 Cm II | 10.0 Canh 1500 |
| | | 90.0 C | | 300 C Mili | 10.0 C.m.h 1900 |
| | 0003 | 50.0 C | | 20.0 C mm | 10.0 C mili 10.0 C |
| | 00:00 | 80.0 C | | 300 C An IN | 000 canh 100 |
| Mart Univ 1992 | mirFlow 05:00 | 50.0 C | | 200 Cimin 00 93 | 10.0 Canin 1900 00 Canin 1900 |



- **2** The **Save Method File** window will display. (See Figure 16-34.) The method can be saved either to the computer or CMS5000. Select **PC** or **CMS5000** to determine where the method should be saved.
 - **NOTE:** When the computer is communicating with CMS5000, CMS5000 is the default location to save a method file.
 - **NOTE:** Method files can be saved on CMS5000 only if CMS5000 is communicating with the computer. Refer to Chapter 4, Setting Up Computer Communication for information on connecting the computer and CMS5000.

| igure 16-34 | Save Method | File window | X |
|----------------|-------------------|-------------|--------------------|
| | C PC | CMS5000 | |
| Folder: /Metho | d/Water Blank | | |
| Name | Size Date | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | 5000 Blank mth | | |
| File Type: Met | hod Files (*.mth) | | • |
| | | | lanage Files ПК |
| | | | Cancel |

3 In the **File Name** box, enter the new method file name. (See Figure 16-35.) *Figure 16-35 Entering a new method file name*

| File Type: Method Files (*.mth) | _ |
|---------------------------------|-------|
| Manage | - |
| | Files |
| ОК | |
| Cance | 1 |



- **4** The method file may be saved in the CMS5000 method directory.
- **5** To create a new folder, click **Create Folder** and enter the name of the new folder. Click **OK**. (See Figure 16-36.)

Figure 16-36 Create new folder

| Create Folder | |
|------------------------------|--------|
| Create Folder: CMS5000 Blank | |
| | Cancel |
| | |

6 Double-click the new folder to save the data file to this location. (See Figure 16-37.)

Figure 16-37 Double-click folder

| Save Method File | |
|---------------------------------|----------------------------------|
| C PC | € CMS5000 |
| Folder: //Method/Water Blank | <u>e</u> <u>é</u> |
| Name CM55000 Blank | Size Date 7/7/2009 2:27:40 PM |
| | |
| | |
| | |
| | |
| | |
| | |
| DMC5000 Plank with | |
| File Type: Method Files (*.mth) | • |
| | Manage Files |
| | OK Cancel |
| J | |

NOTE: Saving the new method file with the original name will overwrite (replace) the method that was used as the template.

Chapter 17 Calibration

17.1 Introduction To Calibration

CMS5000 identifies compounds based on the retention time of peaks in a chromatogram and determines concentration based on the area of the peak. Chemical standards with different known concentrations are analyzed to create an equation used to calculate the concentration of unknown samples based on peak area. Creating this equation is known as *calibration* and the equation is known as the *calibration curve*.

Calibration data is stored in the method *library*. The library contains the compound name, calibration curve, and retention time for every compound in the method. In water methods, the water beta factor (coefficient) and water temperature are also present to adjust for the partition coefficient of each compound. See section 17.7, Water Beta for more information.

Methods must be calibrated prior to analyzing unknown samples. Since the detector response will drift over time, the method will require periodic recalibration. CMS5000 contains preloaded, default factory methods, including a check standard method.

17.2 Method Development



Only trained personnel should create methods.

Creating a new method requires experimentally determining the retention time of every compound of interest. This requires running known standards of individual compounds. Once the retention time of every compound is known, a method library can be created. See section 17.6, Using the Calibrate Function, on page 17-20.

HINT: Multiple compounds can be run at once if the elution order is known. Elution order can be determined using the retention index of compounds, found in reference literature.

Method parameters may need to be changed during development. Refer to Chapter 16, Method Editor.



17.3 Check Standard

CMS5000 contains an internal permeation tube which releases toluene at a consistent rate. A check standard method uses the toluene as an internal standard to monitor detector drift.

When the **CkStd Autocal** is active, the results of an analytical method will be adjusted based on detector drift.

The check standard and analytical method must be recalibrated when the **CkStd Multiplier** reaches its **Min** or **Max** value. Refer to section 12.6.8.3, Enable CkStd Autocal, on page 12-65.

NOTE: The **Check Standard** should always be recalibrated before calibrating an analytical method.

17.4 Calibrating the Check Standard

- 1 Run the check standard method *Ck Std.mth* until a stable toluene response has been observed on at least three consecutive runs. Refer to Chapter 8, Basic Operation for information on running a method. The check standard draws a sample from the internal toluene permeation tube.
 - **NOTE:** A stable response is defined as three consecutive runs where the **Relative Standard Deviation Percentage** or **RSD%** (*Standard Deviation* divided by *Average* times *100*) of the toluene peak area is less than 2%. Multiple runs of the check standard method may be required to obtain a stable toluene response.
 - **NOTE:** When CMS5000 is initially set up, or after prolonged periods of time when CMS5000 is powered off or is not being purged with argon, the MAID detector must be equilibrated by leaving CMS5000 powered on with sufficient argon flow for a period of at least 24 up to 48 hours.



2 The check standard run will look similar to the chromatogram shown in Figure 17-1.

| | < Std_20160802_14 | ESC |
|--------|------------------------|------|
| STOP | | UP |
| | 0:00 2:00 4:00 6:00 | DOWN |
| STAT _ | SEL for results or ESC | SEL |
| | | |

Figure 17-1 Complete check standard method run



4 Click Calibrate

5 Double-click on the desired method to open. (See Figure 17-2.)

Figure 17-2 Selecting method for calibration

| | | | Ľ |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------|------------------------------|
| C PC | | CMS5000 | |
| older /Method | | | |
| older. Junioarioa | | | |
| Name | Size | Date | |
| Production Test | | 4/28/2010 10:37:08 A | м |
| Demo | | 2/25/2010 6:06:17 AM | |
| 🚞 Test | | 11/19/2009 9:35:42 A | м |
| Dynamic Range | | 9/25/2009 7:49:45 AM | |
| 🛄 Seq | | 9/21/2009 1:16:44 PM | |
| Stability.xmth | 1K | 5/11/2010 10:45:36 A | м |
| CMS5000 Water Purge01.mth | 40K | 5/11/2010 10:38:59 A | м |
| LOOP Water runs.xmth | 2K | 2/12/2010 1:14:19 PM | |
| LOOP Chk Std.xmth | 1K | 2/12/2010 7:37:24 AM | |
| CM55000 Ck Std.mth | 10K | 12/11/2009 5:15:34 A | м |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| Ze Manuel CMS5000 CK Std mth | | | |
| ile Name: CMS5000 Ck Std.mth | | | |
| ile Name: CMS5000 Ck Std.mth | | | |
| ile Name: CMS5000 Ck Std.mth ile Type: Method Files (*.mth; *.mth) | | | <u>.</u> |
| ile Name: CMS5000 Ck Std mth ile Type: Method Files (".mth." | | ~ | Manage Files |
| ie Name: CMS5000 Ck Std mth ie Type: Method Files (* mth; * xmth) 14PS1F Method File 16 intestanp = 05/20109 (6,48,53 | | | ▼ Manage Files |
| ile Name, CMS5000 Ck Std mih ile Type, Method Files (*mih; *xmih) 4APSITE Method File 1e innetano – (5/2010/93 16.48.65) Me Storn The X Store Kieldon The Store The X Store Kieldon The Me Store The X Store Kieldon The | ided Conc | | Manage Files |
| ie Name: CMS5000 Ck. Std.mh ie Type: Method Files (*.mh; *.mmh) 4APSITE Method File (*.mh; *.mmh) 4APSITE Method File (*.msh) 4APSITE Method File (*.msh) 4A | -bed Conc | | Manage Files |
| ile Name: CM55000 Ck Std mh ile Type: Method Files ("mh; "smh) AFSTET Method File Tie timetame = 05/2019 16:48:53 ile mondient = 1211/08 01:18:34 MS 5000, Check Standard Method, Tr ture file default ture file default ture file default ture | -bed Conc | × | Manage Files OK Cancel |



6 The Calibrate window is displayed. The current calibration data is shown in the Calibration tab. (See Figure 17-3.)

Figure 17-3 Calibrate window



7 Click **Browse** in the **Data Files** pane to select the desired data files. (See Figure 17-4.)

| Method | |
|------------------------------------|---------------------|
| Browse CMS5000 Ck Std.mth | View/Edit Save |
| Libraries Ck Std | Save Library |
| Search Settings Method Type: CkStd | Conc. Unit ppm 💌 |
| Data Files | |
| Browse Display | 🔲 Reset Library |
| D Data File Name | Co. Cono/Eo. Col |
| | CO CONC/Fa Sel |
| | CO CONC/Fa Sel |
| | CU CUNCTTA Sel |
| | CU CUNCYFA Sei |
| | co concra se |
| | CU CUTOPA Sel |
| - Paak Search | CU., CUTUTA., Sel., |

Figure 17-4 Data file Browse button

8 The **Select Data Files** window will be displayed. Double click on the Check Standard method folder. (See Figure 17-5.)

Figure 17-5 Selecting method data folder

| | C PC | 6 | CMS5000 | |
|---------------------------------|------------------------|--------------|----------|-------------|
| | | | | |
| older: //Data | | | | |
| Ivanie | | Jize Date | | |
| Ck Std | | 6/30/2010 2: | 05:07 PM | |
| Chibboo wate | a Fuige | 0/0/2010 3.4 | 0.07 PM | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| ile Name: | | | | |
| ile Name: | es (* bos: * bos: * a | | | |
| ile Name: ile Type: Data Fil | es (".hps; ".hpz; ".ac | | | |
| ile Name: ile Type: Data Fil | es (".hps; ".hpz; ".ac | ca) | | Manage Fil |
| ile Name: ile Type: Data Fil | es (".hps; ".hpz; *.ac | :a) | | Manage File |
| ile Name: ile Type: Data Fil | es (".hps; ".hpz; ".ac | 5a) | | Manage Fill |

9 Select the most recent data file. (See Figure 17-6.)

Figure 17-6 Selecting a data file

| older: //Data/CMS5000 Ck Std | |
|---------------------------------------------|---------------------------|
| Name | Size Date |
| CM55000 Ck Std_20100707_04.hps | 105K 7/7/2010 4:49:49 AM |
| | |
| CMS5000 Ck Std_20100707_02.nps | 104K 7/7/2010 2:25:13 AM |
| CMS5000 CK Std_20100706_11 boc | 104K 7/6/2010 11/64/2E DM |
| CMS5000 Ck Std 20100706_11 hps | 105K 7/6/2010 10:40:15 PM |
| CM55000 Ck Std 20100706 09 bps | 105K 7/6/2010 9:25:52 PM |
| CM55000 Ck Std 20100706 08.hps | 105K 7/6/2010 8:13:35 PM |
| CM55000 Ck Std 20100706 07.hps | 104K 7/6/2010 7:01:30 PM |
| CMS5000 Ck Std 20100706 06.hps | 105K 7/6/2010 5:48:57 PM |
| CM55000 Ck Std_20100706_05.hps | 104K 7/6/2010 4:36:27 PM |
| CM55000 Ck Std_20100706_04.hps | 104K 7/6/2010 3:23:24 PM |
| CM55000 Ck Std_20100706_03.hps | 104K 7/6/2010 2:07:45 PM |
| CMS5000 Ck Std_20100706_02.hps | 104K 7/6/2010 12:52:01 PM |
| CM55000 Ck Std_20100706_01.hps | 104K 7/6/2010 11:35:35 AM |
| CM55000 Ck Std_20100625_06.hps | 104K 6/25/2010 7:03:12 AM |
| CMS5000 Ck Std. 20100625.05 bos | 105K 6/25/2010 5-49-57 AM |
| ile Name: | |
| file Type: Data Files (*.hps; *.hpz; *.acq) | - |
| | Mapage Files |



- **10** Hold down the **Shift** key on the computer and select the third data file to select the three most recent data files. (See Figure 17-7.)
- **NOTE:** To load data files one at a time, skip Step 10.

Figure 17-7 Selecting multiple data files

| C PC | | | |
|------------------------------------------|--------------|------------------------|---------------|
| Folder: /Data/Ck Std | | | Ē 💣 |
| l | _ | | |
| Beports | | 10/3/2013 12:58:30 PM | |
| Ck Std 20131003 06.hps | 104K | 10/3/2013 12:54:08 PM | |
| Ck Std 20131003 05.hps | 104K | 10/3/2013 12:40:12 PM | |
| Ck Std 20131003 04.hps | 104K | 10/3/2013 12:26:16 PM | |
| Tel est estates estat | 1044 | 10/0/0010 10 10 10 001 | |
| Ck 5td_20131003_02.hps | 104K | 10/3/2013 11:58:23 AM | |
| Ck Std_20131003_01.hps | 104K | 10/3/2013 11:44:27 AM | |
| Ck Std_20131002_05.hps | 104K | 10/2/2013 11:14:21 AM | |
| Ck Std_20131002_04.hps | 104K | 10/2/2013 10:42:20 AM | |
| Ck Std_20131002_03.hps | 104K | 10/2/2013 10:19:01 AM | |
| Ck Std_20131002_02.hps | 104K | 10/2/2013 10:06:07 AM | |
| Ck Std_20131002_01.hps | 35K | 10/2/2013 9:57:04 AM | |
| Ck Std_20131001_63.hps | 104K | 10/1/2013 4:35:49 PM | |
| Ck Std_20131001_62.hps | 104K | 10/1/2013 4:18:54 PM | |
| Ck Std_20131001_61.hps | 104K | 10/1/2013 4:05:56 PM | |
| Ck Std_20131001_60.hps | 104K | 10/1/2013 3:52:58 PM | |
| Ck Std_20131001_59.hps | 104K | 10/1/2013 1:47:04 PM | |
| Ck Std_20131001_58.hps | 105K | 10/1/2013 1:33:08 PM | |
| Crk Std 20131001 57 hos | 1058 | 10/1/2013 1-19-12 PM | <u> </u> |
| File Name: "Ck Std_20131003_06.hps | ""Ck Std_201 | 31003_05.hps""Ck Std_2 | 0131003_04.hp |
| | | | |
| File Type: Data Files (*.hps; *.hpz; *.a | cd) | | • |
| HAPSITE Data File | | ~ | Manage Files |
| File timestamp = 10/03/13 12:45:14 | | | |
| File modified = 10/03/13 12:54:08 | | | OK |
| | | | |
| | | × | Cancel |

11 Click OK to load the selected data files. (See Figure 17-8.)

| C PC Folder: //Oxta/Ck Std Report: Cl Std_20131000_06 hps Cl Std_20131000_06 hps Cl Std_20131000_06 hps Cl Std_20131000_06 hps Cl Std_20131000_06 hps Cl Std_20131000_07 hps Cl Std_20131000_07 hps | Size 104K 104K 104K 104K 104K 104K | CMS5000 Date Date Date Date DotS2013 12:58:30 PM 10/3/2013 12:58:16 PM 10/3/2013 12:25:16 PM 10/3/2013 12:25:23 AM |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Folder //Dela/Ck Std Papeots Papeots Cl: Std. 20131000_06 hps Cl: Std. 20131000_06 hps Cl: Std. 20131000_06 hps Cl: Std. 20131000_06 hps Cl: Std. 20131000_06 hps Cl: Std. 20131000_06 hps Cl: Std. 20131000_07 hps Cl: Std. 20131000_07 hps | Size 104K 104K 104K 104K 104K 104K | Date Date Date Date Date Date Date Date |
| Fedder: //Data/Ck.Std //Reports //Cl.Std_20131003_06.hps //Cl.Std_20131003_06.hps //Cl.Std_20131003_06.hps //Cl.Std_20131003_06.hps //Cl.Std_20131003_06.hps //Cl.Std_20131003_06.hps //Cl.Std_20131002_07.hps //Cl.Std_201.hps //Cl.Std_ | Size 104K 104K 104K 104K 104K 104K | Date Date D0/2013 12:55:30 PM 10/3/2013 12:54:08 PM 10/3/2013 12:44:08 PM 10/3/2013 12:45:16 PM 10/3/2013 12:26:16 PM 10/3/2013 12:26:16 PM 10/3/2013 12:26:16 PM |
| Name Reports G 542 (0131003, 06 hps G 542 (0131002, | Size 104K 104K 104K 104K 104K 104K | Date 10/3/2013 12:56:30 PM 10/3/2013 12:54:05 PM 10/3/2013 12:54:05 PM 10/3/2013 12:26:16 PM 10/3/2013 12:26:16 PM 10/3/2013 12:26:16 PM 10/3/2013 12:26:16 PM |
| Name Preports GF 344 (20131000 06 hes GF 344 (20131000 06 hes GF 344 (20131000 04 hps GF 344 (20131000 04 hps GF 344 (20131000 06 hps GF 344 (20131000 06 hps GF 344 (20131000 06 hps GF 344 (20131000 06 hps GF 344 (20131000 06 hps GF 344 (2013100 06 hps GF 344 (2013100 06 hps GF 344 (201300 06 hps GF 344 (2013100 06 hps GF 344 (201300 06 hps GF 344 (201300 06 hps GF 344 (201300 06 hps GF 344 (201300 06 hps GF 344 (201300 06 hps GF 344 (201300 06 hps GF 344 (201300 06 hps GF 344 (201300 06 hps GF 344 (201300 00 hps GF 344 (201300 00 hps GF 344 (201300 00 hps | Size 104K 104K 104K 104K 104K 104K | Date Di/3/2013 12:58:30 PM 10/3/2013 12:54:08 PM 10/3/2013 12:40:12 PM 10/3/2013 12:26:16 PM 10/3/2013 12:26:16 PM 10/3/2013 12:12:19 PM 10/3/2013 12:12:19 PM |
| Reports GL 92d (20131003) 06 hps GL 92d (20131003) 02 hps GL 92d (20131003) 02 hps GL 92d (20131003) 02 hps GL 92d (20131002) 05 hps GL 92d (2013002) 05 hps | 104K 104K 104K 104K 104K 104K | 10/3/2013 12:58:30 PM 10/3/2013 12:54:08 PM 10/3/2013 12:40:12 PM 10/3/2013 12:26:16 PM 10/3/2013 12:12:19 PM 10/3/2013 11:58:23 AM |
| C 34 (2013) 000 (6 hpc C 34 (2013) 000 (6 hpc C 34 (2013) 000 (2 hpc C 34 (2013) 000 (2 hpc C 34 (2 013) 000 (2 hpc | 104K 104K 104K 104K 104K 104K | 10/3/2013 12:54:08 PM 10/3/2013 12:40:12 PM 10/3/2013 12:26:16 PM 10/3/2013 12:12:19 PM 10/3/2013 11:58:23 AM |
| Cl 342 (2013)003 (36 hpc Cl 352 (2013)003 (36 hpc Cl 352 (2013)003 (26 hpc Cl 352 (2013)003 (26 hpc Cl 352 (2013)003 (26 hpc Cl 352 (2013)002 (26 hpc | 104K 104K 104K 104K 104K | 10/3/2013 12:40:12 PM 10/3/2013 12:26:16 PM 10/3/2013 12:12:19 PM 10/3/2013 11:58:23 AM |
| C4:842_0131003_04.hps C4:842_0131003_02.hps C4:842_0131003_02.hps C4:842_0131003_01.hps C4:842_0131002_05.hps | 104K 104K 104K 104K | 10/3/2013 12:26:16 PM 10/3/2013 12:12:19 PM 10/3/2013 11:58:23 AM |
| Ck Std 20131003 (20 Aps Ck Std 20131003 (2) Aps Ck Std 20131003 (2) Aps Ck Std 20131003 (1) Aps Ck Std 20131002 (2) Aps Ck Std 20131002 (2) Aps Ck Std 20131002 (2) Aps Ck Std 20131002 (2) Aps | 104K 104K 104K | 10/3/2013 12:12:19 PM 10/3/2013 11:58:23 AM |
| Ck Std_20131003_02.hps Ck Std_20131003_01.hps Ck Std_20131002_05.hps Ck Std_20131002_04.hps Ck Std_20131002_03.hps Ck Std_20131002_02.hps Ck Std_20131002_02.hps | 104K 104K | 10/3/2013 11:58:23 AM |
| Ck Std_20131003_01.hps Ck Std_20131002_05.hps Ck Std_20131002_04.hps Ck Std_20131002_03.hps Ck Std_20131002_03.hps Ck Std_20131002_02.hps | 104K | |
| Ck Std_20131002_05.hps Ck Std_20131002_04.hps Ck Std_20131002_03.hps Ck Std_20131002_02.hps Ck Std_20131002_02.hps | | 10/3/2013 11:44:27 AM |
| Ck Std_20131002_04.hps Ck Std_20131002_03.hps Ck Std_20131002_02.hps Ck Std_20131002_02.hps Ck Std_20131002_01.hps | 104K | 10/2/2013 11:14:21 AM |
| Ck Std_20131002_03.hps Ck Std_20131002_02.hps Ck Std_20131002_02.hps | 104K | 10/2/2013 10:42:20 AM |
| Ck Std_20131002_02.hps Ck Std_20131002_01.hps | 104K | 10/2/2013 10:19:01 AM |
| Ck Std 20131002 01.hps | 104K | 10/2/2013 10:06:07 AM |
| | 35K | 10/2/2013 9:57:04 AM |
| Ck Std_20131001_63.hps | 104K | 10/1/2013 4:35:49 PM |
| Ck Std_20131001_62.hps | 104K | 10/1/2013 4:18:54 PM |
| Ck Std_20131001_61.hps | 104K | 10/1/2013 4:05:56 PM |
| Ck Std_20131001_60.hps | 104K | 10/1/2013 3:52:58 PM |
| Ck Std_20131001_59.hps | 104K | 10/1/2013 1:47:04 PM |
| Ck Std_20131001_58.hps | 105K | 10/1/2013 1:33:08 PM |
| Ck Std 20131001 57 box | 105K | 10/1/2013 1-19-12 PM |
| File Name: "Ck Std_20131003_06.hps" "Ck S | td_201 | 31003_05.hps" "Ck Std_20131003_04.hp |
| | | |
| File Type: Data Files (*.hps; *.hpz; *.acq) | | • |
| HAPSITE Data File | | Manage Files |
| File timestamp = 10/03/13 12:45:14 | | |
| rite mouneu = 10/03/13 12:54:08 | | OK |
| | | Canad |

Figure 17-8 Load selected data files

- 12 The Methods Differ message is displayed. This window is normal and does not indicate an error. A separate message will display for each selected data file. Click Yes to verify that the data file should be used for calibration. (See Figure 17-9.)
- NOTE: If No is clicked, the selected data files will load into a blank library.

Figure 17-9 Methods Differ message



13 A message is displayed stating that the units between the data files are inconsistent. (See Figure 17-10.) This message will be displayed unless a concentration was pre-designated in the **Data File Information** window, and it uses the same units as the method. Click **OK**. Refer to section 13.5, Data File Information Window, on page 13-6 for more information.

Figure 17-10 Inconsistent data files message

| CMS IQ |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inconsistent concentration units among data files used for Calibration/ID Unknown. Please make sure that all concentrations are correctly converted to ppm. |
| ОК |
| |

14 The selected data file(s) will be displayed in the **Data Files** list. (See Figure 17-11.)

Figure 17-11 Data Files list

| Method | C Build/Edit Template Calibrate Library |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Browse Lk Std.mth View/Edit Save | Analytes in Library - <unnamed> Analytes in File</unnamed> |
| Libraries Ck Std 💽 Save Library | View Reports Calibration |
| Search Settings Method Type: CkStd Conc. Unit ppm 🔽 Data Files Browse Display Reset Library | # Dat. Compound CAS #I Flet. Time Area Standard C. A I Conce. 100e-000 100e-000 100e-000 1.00e-000 1.00e-000 |
| 4. //Data//Ck Std_20131003_06.hps G ▼ 0 Γ 4. //Data//Ck Std_20131003_05.hps G ▼ 0 Γ 4. //Data//Ck Std_20131003_04.hps G ▼ 0 Γ | |
| | Concentration Hestore Ir Average RF [258413.047 [RSD 61R] |



- **15** If necessary, repeat Step 7 through Step 14 until the three most recent data files are displayed in the **Data Files** list.
- **16** Select **Reset Library** to remove the current data in the **Calibration** tab. (See Figure 17-12.)

Figure 17-12 Reset Library checkbox

| E | Browse Ck Std.mth | View | v/Edit 9 | ave | |
|---------------------------|-----------------------------------|------|-------------|-----|--|
| Lib | oraries Ck Std 💌 | | Save Librar | у | |
| Se | earch Settings Method Type: CkStd | Cond | : Unit ppm | - | |
| Data Files Browse Display | | | | | |
| D Data File Name C | | Co | Conc/Fa | Sel | |
| 4 | 4. /Data//Ck Std_20131003_06.hps | G 💌 | 0 | | |
| 4 | 4. /Data//Ck Std_20131003_05.hps | G 💌 | 0 | | |
| 4 | 4. /Data//Ck Std_20131003_04.hps | G 💌 | 0 | | |
| Pe | sak Search | | | | |

17 In each Conc/Factor box, type the value of 1. (See Figure 17-13.)

Figure 17-13 Conc/Factor column

| Method | |
|------------------------------------|-------------------|
| Browse Ck Std.mth | View/Edit Save |
| Libraries Ck Std | Save Library |
| Search Settings Method Type: CkStd | Conc. Unit ppm 💌 |
| Data Files Browse Display | 🔽 Reset Library |
| D Data File Name | Co. Conc/Fa Sel . |
| 4. /Data//Ck Std_20131003_06.hps | G 1 [|
| 4. /Data//Ck Std_20131003_05.hps | G 1 🔽 |
| 4. /Data//Ck Std_20131003_04.hps | G 1 🔽 |
| Peak Search | |



18 Select the **Select** checkbox for each data file to be included in the calibration. (See Figure 17-14.)

Figure 17-14 Select checkbox

| | 1 | _ | | |
|---------------------------------------------------|---------------------------------|------|--|--|
| Browse Ck Std.mth | View/Edit | Save | | |
| Libraries Ck Std | Save Libr | ary | | |
| Search Settings Method Type: CkStd Conc. Unit ppm | | | | |
| Data Files | | | | |
| Browse Display | | | | |
| D Data File Name | Co Conc/Fa <mark>.</mark> . Sel | | | |
| 4. /Data//Ck Std_20131003_06.hps | G <u>▼</u> 1 | | | |
| 4. /Data//Ck Std_20131003_05.hps | G ▼ 1 | | | |
| 4. /Data//Ck Std_20131003_04.hps | G ▼ 1 | | | |
| | | | | |
| | | | | |
| Peak Search | | | | |
| | | | | |

- 19 In the Peak Search pane, verify Search is selected. (See Figure 17-15.)
- 20 Click Start to initiate the calibration.

Figure 17-15 Selecting Search option and starting calibration

| Method | | | | |
|----------------------|-----------------------|--------------|-------|--|
| Browse Ck | View/Edit | Save | | |
| Libraries Ck Str | Save I | Save Library | | |
| Search Setting | Conc. Unit | ppm 💌 | | |
| Data Files Browse | Reset Library | | | |
| D Data File N | Co Conc/ | Fa Sel | | |
| 4. /Data//0 | k Std_20131003_06.hps | G 💌 1 | | |
| 4. /Data//0 | k Std_20131003_05.hps | G 🔽 1 | | |
| 4. /Data//0 | k Std_20131003_04.hps | G 💌 1 | | |
| Peak Search- | C Recalculate | | itart | |



21 Ensure the **Relative Standard Deviation Percent (%RSD)** of the calibration is less than 2%. Click **Save** to save the method. (See Figure 17-16.)

Figure 17-16 Analytes in File tab

| thed | 🕆 Build/Edit Template 🛛 🔍 Calibrate L | bray | | | | | |
|---------------------------------------------------|-------------------------------------------|----------------------------|----------------|-------------|-------|----------|---------------------------------------------------------------------------------------------------------|
| Irowse Di Sidmith View/Ed Save | Analytes in Library - kunnamed> Analytes | in File - Ck Std_20140122_ | 71.hpo | | | | |
| eorieo Ck Std 💌 Sav Library | View Reports | | | | | | Calibration |
| arch Settings Nethod Type: CkStd Conc. Unit ppm 💌 | # Data Ref | Compound | DAS # Ret Time | Area Standa | ed | Conc | A Fore Area |
| to Files | 1 1 | Toluene 👤 | 06:17 669 | 0 Analyte | - | 1 | 1.00e+000 5.84e+0 |
| Browne Display Preset Library | | | | | | | 1.00e+000 5.84e+0 |
| Data File Name Co., Conc/Fa., Sel. | | | | | | | 1.00e+000 5.87e+0 |
| /Data//Ck.Std_20131003_06.hps G 💌 1 🛛 😿 | | | | | | | |
| /Data//Ck Std_20131003_05.hps G • 1 | | | | | | | |
| /D ata//Ck Std_20131003_04.hps 6 💌 1 🛛 🔛 | | | | | | | / |
| | | | | | | | Longenhation Hestore Initial Hestore Initial Hestore Initial Hestore DE ID24012 100 [DED of DE V 0.22 |
| | | | | | | | proveseje na pordza 100 [hob of hr 4] 0.2 |
| ak Search | | | | | | | Lines bread brouch External Calibration |
| Search C Recalculate Start | | | | | | | Relative Standard Deviation % 0.275 |
| ata Review : Ck Std_20131003_04.hps | | | | | | | |
| Remove Nev - 14 EU : Remove Remove May - 26 | - Remove - 200 - Soan Set #1 - Soan 4, 40 | 9 PT = 00 59 9 | | | | | Control Panel: |
| 100 | | | | | Ŧ | Response | |
| - | | | | | Â. | | |
| | | | | | 4 | | |
| ~ - | | | | | 1 | | |
| 1 | | | | | | | Plaute Screen |
| w | | | | | | | Method |
| - | | | | | | | Ck Std.mh |
| | | | | | | | |
| •0 | | | | | 11 | | |
| 1 | | | | | 11 | | |
| | | | | | | 100 | |
| ~ | | | | | [] { | <u> </u> | |
| - | ~ | | | | 11.1 | Q | |
| 1 | ~ | | | | | | |
| 0 | 02:00 | 30 | 04:00 | 85.00 | 05 20 | | |
| 0 | | | | | | | |
| 0 0120 | | | | | | | |

22 The check standard calibration is now complete.

NOTE: If the %RSD is greater than 2%, repeat the process starting with Step 1 in section 17.4, Calibrating the Check Standard.

17.5 Calibrating the Analytical Method

CMS5000 Water and Air methods require calibration at initial startup. Perform subsequent calibrations as necessary.

Standards of a known concentration must be analyzed on CMS5000 to create a calibration curve for analysis of unknown samples. Recommended methods for preparing chemical standards are described below.

NOTE: The method for creating standards will differ for water or air methods.

17.5.1 Multiple Standards vs Multiple Calibration Methods

A calibration curve requires at least four standards to be run. Two approaches can be used:

- Prepare four or more standards of varying concentration. Using multiple standards can reduce the risk of systematic error, but is more time consuming
- Prepare one standard and create four or more methods that vary the sample collection time. Using multiple calibration methods allows for simpler calibration, but it will mask errors in standard preparation

Use appropriate Personal Protection Equipment (PPE) when handling chemicals. Refer to the MSDS of the standard(s) being used.

17.5.2 Water Standards

Standards for water analysis must be prepared in water to account for the partition coefficient of each compound. Purchased chemical standards are often prepared in methanol and will typically require dilution.



Figure 17-17 Optional calibration vessel

1 Using high purity water, fill the calibration vessel to the level of the etched mark or fill with 2 L of high purity water. When filled to the mark, the vessel will contain 2L of water. (Refer to Figure 17-17.)

NOTE: For best results, the water temperature of the calibration standards needs to be uniform and stable.

2 Calculate the volume of chemical standard to dilute into the water. The volume of standard needed is equal to the desired final concentration times the final volume, divided by the concentration of the chemical standard. (See equation [1].)

 $Volume of Chemical Standard = \frac{Final Concentration \times Final Volume}{Concentration of Chemical Standard}$ [1]



2a Most calibration standards require less than 500 uL of chemical standard. In these situations, the volume of the chemical standard can be ignored and the equation is simplified. (See equation [2].)

Volume of Chemical Standard =
$$\frac{\text{Final Concentration} \times \text{Volume of Water}}{\text{Concentration of Chemical Standard}}$$
 [2]

NOTE: Ensure all units used in the calculation are consistent.

2b For example, if a 2,000 ppm (2,000,000 ppb) chemical standard is being used to create a 10 ppb calibration standard, then 10 uL of the chemical standard will be added to 2L (2,000,000 uL) of water. (See equation [3].)

Volume of Chemical Standard in uL = $\frac{10 \text{ ppb} \times 2,000,000 \text{ uL}}{2,000,000 \text{ ppb}}$ [3]

- **3** Using an appropriately sized syringe, draw up the required volume of chemical standard.
- **4** Using a stirring rod, gently stir the water in the calibration vessel until a vortex has formed. Do not allow the water to spill out of the vessel. (See Figure 17-18.)

Figure 17-18 Stirring vessel to form vortex





5 Remove the stirring rod. Immediately immerse the syringe needle at least one inch below the surface of the water and inject the chemical standard. (See Figure 17-19.)

Figure 17-19 Injecting chemical standard



- **6** Remove the syringe and place the stirring rod back into the vessel. Continue to stir gently for another ten seconds, remove the stirring rod.
- 7 Attach the calibration vessel to the instrument. Refer to section 3.6, Attaching the Water Sampling Vessel, on page 3-7.
- 8 Proceed to section 17.5.4, Running Standards, on page 17-19.



17.5.3 Air Standards

Air chemical standards are typically supplied in compressed gas cylinders. Air standards must be sampled at atmospheric pressure on CMS5000. The chemical standard can be brought to atmospheric pressure in two ways:

- Fill a Tedlar[®] bag with the compressed standard and attach it to the CMS5000 air port using the air sample adapter (PN 935-752-G1) (See Figure 17-20.)
- Connect the standard or a gas dilution system onto an in-line sampling system installed on the CMS5000 ports. Refer to section 3.8.2, In-line Air Sampling, on page 3-12

Figure 17-20 Tedlar bag calibration

17.5.3.1 Directly Filling Tedlar Bag

If diluting standards is unnecessary, a Tedlar bag can be filled directly from a compressed gas cylinder standard.

- **NOTE:** Alternatively, a gas cylinder can be connected to an in-line sampling system.
- **1** Attach the appropriate regulator to the gas cylinder.
- 2 Attach a clean, empty 1L Tedlar bag (PN 070-1686) to the gas cylinder.
- **3** Fill the Tedlar bag with the standard gas. Avoid filling the bag more than 80% of its maximum volume. (See Figure 17-21.)



Figure 17-21 Inflated Tedlar bag



4 Connect the Tedlar bag to the air sample adapter and finger-tighten the nut until the Tedlar bag is firmly in place. (See Figure 17-22.)

Figure 17-22 Air sample adapter



5 Connect the air sample adapter to the instrument and open the Tedlar bag. Refer to section 3.8.2, In-line Air Sampling, on page 3-12.

17.5.3.2 Diluting Gas Samples

If multiple calibration standards with different concentrations are required, or the concentration of the gas standard cylinder is not within the desired calibration range, gas samples will require dilution. A source of VOC free gas (zero air, nitrogen, argon, etc.) and the appropriate volume gas syringe are necessary for diluting gas standards. A 25 mL, 50 mL, or 1 L gas syringe may be required depending on the dilution. (See Figure 17-23.)

NOTE: Alternatively, an automatic gas dilution system may be used.

Figure 17-23 One L gas syringe



 Calculate the volume of chemical standard to dilute into VOC free gas. The volume of standard needed is equal to the desired final concentration times the final volume, divided by the concentration of the chemical standard. (See equation [4].)

Volume of Chemical Standard = $\frac{\text{Final Concentration} \times \text{Final Volume}}{\text{Concentration of Chemical Standard}}$ [4]

1a The final volume is typically 1 L, so the equation can be simplified. (See equation [5].)

Volume of Chemical Standard = $\frac{\text{Final Concentration} \times 1000 \text{ mL}}{\text{Concentration of Chemical Standard}}$ [5]

NOTE: Ensure all units in the calculation are consistent.

1b For example, if a 10 ppm (10,000 ppb) chemical standard is being used to create a 50 ppb calibration standard, then 5 mL of the chemical standard will need to be added to the final volume of 1 L (1000 mL) of air. (See equation [6].)

Volume of Chemical Standard =
$$\frac{50 \text{ ppb} \times 1000 \text{ mL}}{10,000 \text{ ppb}}$$
 [6]



[8]

Calculate the volume of VOC free gas needed for the dilution. The volume is equal to 1000 mL minus the volume of the chemical standard. (See equation [7].)

Volume of VOC Free Gas = 1000 mL - Volume of Chemical Standard [7]

2a For example, if 5 mL of chemical standard needs to be added to the final volume of 1L, 995 mL of VOC free gas will be needed. (See equation [8].)

Volume of VOC Free Gas = 1000 mL - 5 mL

- **3** Use appropriately sized gas syringe(s) to draw up the calculated volume of VOC free gas.
 - **3a** The 1 L syringe is graduated to measure gas in multiples of 50 mL. If the required volume of VOC free gas is not a multiple of 50 mL, use the 1 L syringe to draw up the closest multiple of 50 mL, rounded down.
 - **3b** Use a smaller syringe with smaller graduation to obtain the remaining volume.
 - **3c** For example, if 995 mL of VOC free gas is needed, draw up 950 mL of gas in the 1 L syringe and 45 mL in a 50 mL syringe.
- **4** Connect the 1 L syringe to the Tedlar bag.
- **5** Follow the instructions on the Tedlar bag to open the valve and inject the VOC free gas.
- **6** Follow the instructions on the Tedlar bag to close the valve and remove the 1 L syringe.
 - **6a** If more than one syringe is needed for VOC free gas, repeat Step 4 through Step 6 with the additional syringe(s).
- 7 Connect the appropriate gas syringe to the chemical standard cylinder.
- 8 Fill the syringe with the calculated volume of chemical standard.
- **9** Connect the syringe to the Tedlar bag.
- **10** Follow the instructions on the Tedlar bag to open the valve and inject the chemical standard.
- **11** Follow the instructions on the Tedlar bag to close the valve and remove the syringe.
- **12** Allow two minutes for the gas mixture to fully equilibrate.
- **13** Connect the Tedlar bag to the air sample adapter and finger-tighten the nut until Tedlar bag is firmly in place. Refer to Figure 17-22 on page 17-16.
- **14** Connect the air sample adapter to the instrument and open the Tedlar bag. (Refer to Step 13.)
- **15** Proceed to section 17.5.4, Running Standards, on page 17-19.

17.5.4 Running Standards

Once a calibration standard is prepared and connected to CMS5000, it must be analyzed. It is recommended to analyze calibration standards immediately after they are prepared.

- **NOTE:** Calibration standards must be run within six hours of preparation to ensure sample integrity.
- **1** Select the desired method and run the calibration standard. Refer to 14.1, Run Method.

If desired, click **Data File Info** while the standard is running to enter the concentration and description of the standard. Refer to section 13.4, Data Review Toolbar, on page 13-5. See Figure 17-24.

NOTE: Once an analysis has completed, changes to **Data File Information** will only be saved to the computer.

Figure 17-24 Data File Information window

| - File Nam | |
|-----------------------|---------------------------------------------------------------------------------|
| Data: | C:\Documents and Settings\XPMUser\My Document Water Purge 19 Cmpd_201 |
| - Sample | |
| Method: | \Haps\MethodWater Purge 19 Cmpd.mth |
| | Start Time Conc. - GPS Info Level: 3 |
| | Valid GPS Information Not Available Unit: ppb 💌 |
| - Internal | Standard |
| | |
| | |
| | No Internal Standard Compound |
| - Descript | No Internal Standard Compound |
| - Descript 3 ppb 1 | No Internal Standard Compound ion 9 Cmpd Water Purge Calibration Standard |
| - Descript 3 ppb 1 | No Internal Standard Compound ion 9 Cmpd Water Purge Calibration Standard |
| - Descript 3 ppb 1 | No Internal Standard Compound ion 9 Cmpd Water Purge Calibration Standard |
| -Descript 3 ppb 1 | No Internal Standard Compound ion 9 Cmpd Water Purge Calibration Standard |
| - Descript 3 ppb 1 | No Internal Standard Compound ion 9 Cmpd Water Purge Calibration Standard |

17.6 Using the Calibrate Function

The **Calibrate** function is used to build and calibrate chemical libraries.

1 When all standards have been analyzed, click the **Calibrate** icon, located on the **Sensor** toolbar on the **System Setup** window.

Alternately, right-click the **CMS5000** icon located on the **System Setup** window and click **Calibrate**. (See Figure 17-25.)

Figure 17-25 Alternate way of accessing Calibrate function

| Γ | Front Panel Display | |
|---|-------------------------|--|
| | Tune | |
| | <u>O</u> verlay | |
| | ID Unknowns | |
| | <u>⊂</u> alibrate ⊾ | |
| | Run Method | |
| - | Edit Method | |
| | Log | |
| | Tune Reports | |
| | D <u>a</u> ta Review | |
| | <u>M</u> anage Files | |
| | Update CMS5000 Software | |
| | Bring Online | |
| | Disable Connection | |
| | <u>P</u> roperties | |
| Ľ | | |

2 The following windows are displayed. Select the method used to run the standards. Click **OK**. (See Figure 17-26.)

Figure 17-26 Method file window in calibrate

| Calibrate : C0164 | | _ 🗆 🛛 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Method | Build/Edit Template Calibrate Library C Search for Analytes | |
| District Carter Carter | Analytes in Library - <unnamed: analytes="" file<="" in="" td=""><td></td></unnamed:> | |
| Search Settings Method Type: Conc Link | View Hepots Calibration | |
| Seach-Serie John fige: Core Unit Dona File: Bowne Crystey / Reset Library D. Das Fain Name Co. Conc/Fa. Set. Paid: Catadh P Seach / Recalculate | Image: Detailed Select Marked File Image: Detailed Select Marked File Image: Detailed Select Marked File Image: Detailed Select Marked File Image: Detailed Select Marked File Image: Detailed Select Marked File Image: Detailed Select Marked File Image: Select Marked File Image: Select Marked File Image: Detailed Select File Image: Select Marked File Image: Select Marked File Image: Detailed File Image: Select Marked File Image: Select Marked File Image: Detailed File Image: Select Marked File Image: Select Marked File Image: File Name Image: Select Marked File Image: Select Marked File Image: File Name Image: Select Marked File Image: Select Marked File Image: File Name Image: Select Marked File Image: Select Marked File Image: File Name Image: Select Marked File Image: Select Marked File Image: File Name Image: Select Marked File Image: Select Marked File Image: File Name Image: Select Marked File Image: Select Marked File Image: File Name Image: Select Marked File Image: Select Marked File Image: File Name Image: Select Marked File Image: Select Marked File Image: File Name Image: Selec | |

- **3** The method and library check boxes will populate. If the chemical library has already been created, skip to Step 16.
 - If a library has been previously created for the desired method, the method name will be displayed in the library box
 - If a library has not been created, the library box will display <unnamed> (See Figure 17-27.)

NOTE: If building a library, it can be named at the time it is saved. (See Step 14.)

| F | Method | | | |
|----|------------------------------------|------------|---------------|--|
| Ι. | Browse Water Purge 19 cmpd.mth | View/Edit | Save | |
| | Libraries <unnamed></unnamed> | Save L | ibrary | |
| l | Search Settings Method Type: Water | Conc. Unit | • | |
| - | Data Files Browse Display | ☐ Rese | Reset Library | |
| | | Lo Lonc/F | a 5 el | |
| | Peak Search C Recalculate | S | art | |



4 Click Browse in the Data Files pane. (See Figure 17-28.)

Figure 17-28 Browse data files

| Calibrate : C0164 | | |
|------------------------------------|------------|-----------|
| Browse Water Purge 19 cmpd.mth | View/Edit | Save |
| Libraries <unnamed></unnamed> | Save L | ibrary |
| Search Settings Method Type: Water | Conc. Unit | • |
| Browse Display | ∏ Rese | t Library |
| D Data File Name | Co Conc/F | a Sel |
| | | |
| | | |
| | | |
| Peak Search | | |
| Search C Recalculate | S | tart |
| | | |
| | | |

- **5** Select the data file of the standard with the highest concentration. Click **OK**. (See Figure 17-29.)
 - **NOTE:** The highest concentration standard is the best data file to use for creating a new library.

Figure 17-29 Selecting data file

| Select Data Files | | |
|----------------------------------------------------------|-------------|-------------|
| C PC C C C C | 5000 | |
| te PL C LMS: | | |
| Drive: Clocks (C:) | • | |
| Folder: CCCMS IQ/C0213/Data/Water Purge 120 sec ConcHill | | |
| Name | Size Date | |
| Water Purge 120 sec Concell_20140930_01.nps | 292K 10/3/2 | 014 2:49:16 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | > |
| File Name: | | |
| File Type: Data Files (*.hps; *.hpz; *.acq) | | • |
| | <u> </u> | anage Files |
| | | 0K. |
| | | Cancel |
| | | |



6 Type or select the concentration units from the **Conc. Unit** shortcut menu. (See Figure 17-30.)

| -N L | Browse Wa | ter Purge 19 cmpd.mth med> | · · | iew/Edit Save I | Save |
|---------|-----------------------------------------|-------------------------------|--------|--------------------|---------------------|
| D | Search Settings)ata Files Browse | Method Type: Water | Co | inc. Unit | ppm Z ppb ppt |
| | 1Water P | urge 120 sec ConcFill_2 | 0' G _ | 0 | |
| F | Peak Search © Search | C Recalculate | | S | itart |

Figure 17-30 Selecting concentration units

7 Click **Display** to display the chromatogram of the selected data file. (See Figure 17-31.)

Figure 17-31 Clicking display

| 📅 Calibrate : C0164 |
|----------------------------------------------------------------------------|
| Method |
| Browse Water Purge 19 cmpd.mth View/Edit Save |
| Libraries <unnamed> Save Library</unnamed> |
| Search Settings Method Type: Water Conc. Unit ppb 🔍 |
| Data Files Browse Display Reset Library |
| D Data File Name Co Conc/Fa Sel 1Water Purge 120 sec ConcFil_20 G ▼ 0 Γ |
| Peak Search C Recalculate Start |
| |



8 If the chemical library has not been created, each analyte must be selected from the chromatogram and manually added to the library template. To select a peak, refer to section 13.8, How to Access the Scan Cursor, on page 13-28. (See Figure 17-32.)





9 Once a peak is selected, right-click and click **Grab Peak for Template** to add an analyte to the library template. (See Figure 17-33.)

Figure 17-33 Grab Peak for Template option



- **10** The peak is added to the **Analytes in Library** table. Type the name of the analyte in the **Compound** box. (See Figure 17-34.) The compound which corresponds to a peak must be determined experimentally as part of the method development. Refer to section 17.2, Method Development, on page 17-1.
- **NOTE:** If desired, type the Chemical Abstract Service (CAS) number in the **CAS #** box. (See Figure 17-34.)

Figure 17-34 Entering analyte name

| | 6.0.0 | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------|------------------|------------------------|----------|------|
| Build/Edit Template | C Lalibrate Lit | orary | | | | |
| Analytes in Library - <ur< td=""><td>nnamed> Analytes i</td><td>n File • Water F</td><td>Purge 36 sec Cor</td><td>ncFill_20140930_01.hps</td><td></td><td></td></ur<> | nnamed> Analytes i | n File • Water F | Purge 36 sec Cor | ncFill_20140930_01.hps | | |
| View Reports | | | | | | |
| # Data Ref | Compound | CAS # F | et. Time | Area | Standard | Conc |
| | | | ×51 299 | 1.00393e+006 | Analute | - 1 |



11 The Conc box will be filled in with a value of 1 after the library is built in Step 18. (See Figure 17-35.) The Conc box is used when data files are in Analyte mode. See Step 18 through Step 21a.

Figure 17-35 Entering analyte concentration

| | | | | | | | × |
|-----|--------------------|-----------------------|----------|------|------------|------------|---|
| ate | r Purge 36 sec Con | cFill_20140930_01.hps | | | | | |
| # | Ret. Time | Area | Standard | Conc | Water Beta | Water Temp | ſ |
| | 06:51 299 | 1.00393e+006 | Analyte | 1 | 4000 | 21.4 | |
| | | | | | | | |

- 12 If the method is for water, a Water Beta and Water Temp box will display.
 - Water Beta default value is 4000. See section 17.7, Water Beta, on page 17-36
 - **Water Temp** will be automatically set based on the temperature detected from the CMS5000 RTD thermometer (See Figure 17-36.)
- **NOTE:** Water Beta values are determined experimentally or derived from reference literature.

Figure 17-36 Water Beta value

| ate | r Purge 36 sec ConcFill_2 | 0140930_01.hps | | | | |
|-----|---------------------------|----------------|----------|------|------------|------------|
| # | Ret. Time | Area | Standard | Conc | Water Beta | Water Temp |
| | 06:51 299 | 1.00393e+006 | Analyte | · 1 | 4000 | 21.4 |
| | | | | | | |

- **13** Repeat Step 8 through Step 12 for water methods or Step 8 through Step 11 for air methods to identify all remaining analytes.
- **14** To save the new library, click **Save Library** in the **Method** pane. (See Figure 17-37.)

Figure 17-37 Save Library button

| View/Edit Save |
|------------------|
| Save Library |
| Conc. Unit ppb 💌 |
| |



- **15** The Save Library window is displayed. (See Figure 17-38.)
 - **15a** Type a name in the Enter Library Name box.
 - 15b Type a name in the Enter Creator Name box.
 - 15c Click OK .

Figure 17-38 Save library

| Enter Library Name | Water Purge 19 | Cmpd | |
|--------------------|---------------------|------------------------|---------|
| Enter Creator Name | INFICON | | |
| | To select a library | doubleclick on the row | |
| Name C | ireate Time | Modified Time | Creator |
| | | | |
| | | | |
| | | | _ |
| | | | Cancel |

16 To calibrate the library, click **Browse** in the **Data Files** pane. (See Figure 17-39.)

Figure 17-39 Browse

| 💳 Calibrate : C0164 | |
|------------------------------------|------------------|
| Method | |
| Browse Water Purge 19 cmpd.mth | View/Edit Save |
| Libraries Water Purge 19 Cmpd | Save Library |
| Search Settings Method Type: Water | Conc. Unit ppb 💌 |
| Data Files | |
| Browse Display | Reset Library |
| D Data File Name | Co Conc/Fa Sel |
| 6\Water Purge 120 sec ConcFill_201 | G - O |
| | |
| Peak Search C. Development | |
| · search · Hecalculate | Start |
| | |

- **17** Select all the appropriate calibration data files. Data files are organized by method. Click **OK** to add them to the library. (See Figure 17-40.)
- **HINT:** Multiple data files can be selected by holding down the *Ctrl* key while clicking on additional data files. Alternatively, a range of data files can be selected by holding down the *Shift* key and selecting the first and last data file in the desired range.

Figure 17-40 Select data files

| | PC | C CMS | |
|---------------------------------------------------------------------------------------|-------------------------------------|--------------|---------------------|
| Drive: Soc | al Disk (C:) | | - |
| Folder: C:\Doci | uments and Settings\ssmith\Desktop\ | CMS5000 Wate | er Purge 💼 |
| Name | | Size | Date |
| Reports | | | 7/7/2009 2:27:40 PM |
| CMS5000 W | /ater Purge_20090707_01.hps | 156K | 7/7/2009 2:27:33 PM |
| CMS5000 W | /ater Purge_20090707_03.hps | 156K | 7/7/2009 2:27:31 PM |
| CMS5000 W | /ater Purge_20090707_04.hps | 156K | 7/7/2009 2:27:31 PM |
| CMS5000 W | /ater Purge_20090707_05.hps | 155K | 7/7/2009 2:27:30 PM |
| CMS5000 W | /ater Purge_20090707_06.hps | 155K | 7/7/2009 2:27:29 PM |
| | | | |
| | | | |
| < | H | | |
| < | | | |
| <tile name:<="" td=""><td>s Files (".hps; ".hpz; ".acq)</td><td></td><td></td></tile> | s Files (".hps; ".hpz; ".acq) | | |
| < Tile Name: Tile Type: Data | a Files (".hps; ".hpz; ".acq) | | Manage Fil |
- 18 The selected files will be displayed in the Calibrate window. The Concentration Reference (Conc Ref) box determines how the concentration of analytes is calculated. There are two options, Global and Analyte. (See Figure 17-41.)
 - Select Global when the concentration of every compound in a data file is the same
 - Select Analyte when the concentration of compounds in a data file differ

Figure 17-41 Selecting Concentration Reference

| - 1 | vlet⊁ Bro | nod owse | Water | Purge | 19 cmpd. | mth | View | /Edit | Sa | ave |
|-----|--------------|-------------|---------|--------------|------------|------------------------|---------|-----------------------|---------|-----|
| L | .ibra | aries Wa | iter Pu | rge 19 | Cmpd | - | | Save L | ibrary | |
| | Sea | rch Setti | ngs N | - rlethoo | i Type: W | 'ater | Conc. | Unit | ppb | • |
| - C | Data | Files | | | | | _ | | | |
| | В | rowse | Dis | play | | _ | | Rese | t Libra | згу |
| | D | Data File | e Nam | e | | | Co | Con <mark>i</mark> /F | a | Sel |
| | 6. | \Wate | r Purg | e 120 : | sec Conc | Fill_2 <mark>01</mark> | ē 🛨 | 0 | | |
| | 6. | \Wate | r Purg | e 72 se | ec ConcF | il_20 <mark>1</mark> ≀ | Analyte | • | | |
| | 6. | \Wate | r Purg | e 36 se | ec ConcF | il_20 <mark>1</mark> 4 | Global | . | | Γ |
| | 6. | \Wate | r Purg | e 6 sec | c ConcFill | 2014(| G 💌 | 0 | | Γ |
| | | | | | | | | | | |
| F | Peal | < Search | | | | - | | | | |
| | œ | Search | | C B | ecalculate | • | | SI | tart | |

- **19** Type the concentration of the standard in the **Conc/Factor** column. (See Figure 17-42.)
- **NOTE:** If compounds within a data file have varying concentrations, choose one compound to use as a reference.

| Meti Br | nod owse | Vater Purge 1 | 19 cmpd.mth | Vie | w/Edit | Sa | ave |
|------------|------------------|---------------|-----------------|-----|---------|---------|-----|
| Libra | aries Wa | ter Purge 19 | Cmpd 💌 | | Save L | ibrary | |
| Sea | arch Settir | ngs Method | Type: Water | Con | c. Unit | ppb | - |
| Data B | a Files rowse | Display | | ſ | Rese | t Libra | ry |
| D | Data File | Name | | Co | Conc/F | a | el |
| 6. | Wate | r Purge 120 s | ec ConcFill_20 | G 💌 | 10 | | - |
| 6. | Wate | r Purge 72 se | c ConcFill_2014 | G 💌 | 5 | | - |
| 6. | Wate | r Purge 36 se | c ConcFill_2014 | G 💌 | 0 | | - |
| 6. | Wate | r Purge 6 sec | ConcFill_2014 | G 💌 | 0 | | - |
| Pea | k Search | ~ ~ | | | | | - |

Figure 17-42 Adding concentrations using the Global setting

20 When **Global** is selected, the method will ignore the number in the **Conc** column in the library. This column does not require further modification in order to calibrate the library. (See Figure 17-43.)

Figure 17-43 Concentration column using the Global setting

| Method | Build/Edit Temp | late Calibrate Library | | | | | | | |
|-----------------------------------------------------|----------------------|----------------------------------|------------------|-------------------|--------------|------|-------------|------------|---|
| Browse Water Purge 19 cmpd.mth View/Edit Save | Analytics in Library | | | | 100000 01 1 | | | | |
| Librarian Water Purge 19 Crond | Analytes in Librar | y · Curindineuz Analytes in Fi | e - water Purger | 5 sec LoncHIL_201 | 40930_01.nps | | | | |
| Ebiales (waar age to capa | View Repor | ts | | | | _ | | | _ |
| Search Settings Method Type: Water Conc. Unit ppb 💌 | # Data Ref | Compound CAS | # Ret. Time | Area | Standard | Conc | V ater Beta | Water Temp | |
| Data Files | 1 3 | Methylene ChL 💌 | 03:33 000 | 0 | Analyte | 1 | 4 00 | 0 | |
| Browse Display Reset Library | 2 7 | trans-1,2-dichl 💌 | 04:14 199 | 0 | Analyte | 1 | 4 00 | 0 | |
| | 3 7 | cis-1,2-dichlor 💌 | 05:05 700 | 0 | Analyte | 1 | 4 00 | 0 | |
| D Data File Name Lo Conc/Fa Sel | 4 7 | Chloroform 💌 | 05:20 600 | 0 | Analyte | 1 | 4 00 | 0 | |
| 6Water Purge 120 sec ConcFil_201 G - 10 | 5 7 | 1,2-dichloroet 💌 | 06:05 600 | 0 | Analyte | 1 | 4 00 | 0 | |
| 6Water Purge 72 sec ConcFil_201+ G - 6 | 6 7 | Benzene 🔻 | 06:54 799 | 0 | Analyte | 1 | 4 00 | 0 | |
| 6Water Purge 36 sec ConcFil_2014 G 💌 3 | 7 7 | 1.2-dichloropr | 07:51 299 | 0 | Analyte | 1 | 4 00 | 0 | |
| 6Water Purge 6 sec ConcFil_2014(G 💌 0.5 | 8 7 | trichlorgethene | 08:08:200 | 0 | Analyte | 1 | 4 00 | 0 | |
| | 9 7 | Toluene | 10:31 700 | 0 | Analyte | 1 | 4 00 | 0 | |
|] | 10.7 | tetrachlaraeth T | 12.10.000 | 0 | Analyto | | 100 | 0 | |
| Peak Search | 11 7 | aklashanana - | 12.13 300 | 0 | Analyte | 1 | 100 | 0 | |
| * Search Kecalculate Start | 11 7 | chlorobenzehe • | 13.27 233 | 0 | Analyte | 1 | | 0 | |

21 If Analyte is selected, enter the ratio of each compound concentration, compared to the concentration of the reference compound selected in Step 19. For example, if benzene was chosen as a reference compound, leave 1 in the Conc column for benzene and type in the relative concentration of every other compound compared to benzene. (See Figure 17-44.)

| | Figure 17-44 | Entering | concentrations | using the | Analyte setting |
|--|--------------|----------|----------------|-----------|-----------------|
|--|--------------|----------|----------------|-----------|-----------------|

| | ulytes in Library - < | <unnamed> Analyt</unnamed> | es in File | Water Purge 12 | 0 sec ConcFill_20 | J140930_01.hps | | | | | | |
|----|-----------------------|----------------------------|------------|----------------|-------------------|----------------|---|---------|----|-----------|------------|--|
| | View Reports | | | | | | - | | _ | | | |
| # | Data Ref | Compound | CAS # | Ret. Time | Area | Standard | | Conc | W | ater Beta | Water Temp | |
| 1 | 3 | Methylene Chl 💌 | · | 03:33 000 | 0 | Analyte | - | 1.5 | 40 | 00 | 0 | |
| 2 | 7 | trans-1,2-dichl 👱 | | 04:14 199 | 0 | Analyte | - | 3 | 40 | 00 | 0 | |
| 3 | 7 | cis-1,2-dichlor 🗾 | , | 05:05 700 | 0 | Analyte | - | 1.33333 | 40 | 00 | 0 | |
| 4 | 7 | Chloroform | · | 05:20 600 | 0 | Analyte | - | 2 | 40 | 00 | 0 | |
| 5 | 7 | 1,2-dichloroet 🗾 | | 06:05 600 | 0 | Analyte | - | 0.25 | 40 | 00 | 0 | |
| 6 | 7 | Benzene 🔄 | · | 06:54 799 | 0 | Analyte | - | 1 | 40 | 00 | 0 | |
| 7 | 7 | 1,2-dichloropr 🗾 | | 07:51 299 | 0 | Analyte | - | 0.5 | 40 | 00 | 0 | |
| 8 | 7 | trichloroethene 🔄 | · [| 08:08 200 | 0 | Analyte | - | 1.2 | 40 | 00 | 0 | |
| 9 | 7 | Toluene 🔄 | | 10:31 700 | 0 | Analyte | - | 1 | 40 | 00 | 0 | |
| 10 | 7 | tetrachloroeth 🗾 | • | 12:18 900 | 0 | Analyte | - | 2 | 40 | 00 | 0 | |
| 11 | 7 | chlorobenzene 🔄 | | 13:27 299 | 0 | Analyte | - | 1 | 40 | 00 | 0 | |
| 12 | 7 | ethylbenzene | · | 14:03 000 | 0 | Analyte | - | 1 | 4(| 00 | 0 | |

- **21a** The number in the **Conc/Factor** column will be multiplied by the number in the **Conc** column to determine the concentration of every compound. (See Figure 17-45.)
 - **NOTE:** For more details about Concentration Reference or Conc/Factor, see section 17.8, Glossary of Terms in the Calibrate Window, on page 17-37.



Figure 17-45 Conc/Factor

| 🗮 Calibrate : CO164 | | | | | | | | | |
|-----------------------------------------------------|---------------------|-----------------------|--------------------|-------------------|-------------------|---------|------------|------------|---|
| Method | Build/Edit Templa | te 🔹 Calibrate Librar | у | | | | | | |
| Browse Water Purge 19 cmpd.mth View/Edit Save | Analutas in Libraru | | | 20 | 1 40000 01 have 1 | | | | |
| Librarian Water Purce 19 Crond Save Library | Analytes in Library | (Analytes in F | ie - water Purge I | 20 sec Concrit_20 | 140930_01.nps | | | | |
| Eblailes Word Huge to clipta | View Reports | | | | | | 1 | | |
| Search Settings Method Type: Water Conc. Unit ppb 💌 | # Data Ref | Compound CAS | # Ret. Time | Area | Standard | Conc | Water Beta | Water Temp | 1 |
| Data Files | 1 3 | Methylene Chl | 03:33 000 | 0 | Analyte | 1.5 | 4000 | 0 | |
| Browse Display Reset Library | 2 7 | trans-1,2-dichl 💌 | 04:14 199 | 0 | Analyte | 3 | 4000 | 0 | |
| | 3 7 | cis-1,2-dichlor 💌 | 05:05 700 | 0 | Analyte | 1.33333 | 4000 | 0 | |
| D Data File Name Co Conc/Fa Sel | 4 7 | Chloroform - | 05:20 600 | 0 | Analyte | 2 | 4000 | 0 | |
| 6Water Purge 120 sec ConcFil_21 A 💌 10 | 5 7 | 1.2-dichloroet | 06:05 600 | 0 | Analyte | 0.25 | 4000 | 0 | |
| 6\Water Purge 72 sec ConcFil_20 A ▼ 6 | 6 7 | Benzene 🔻 | 06:54 799 | 0 | Anakte | li i | 4000 | 0 | |
| 6Water Purge 36 sec ConcFil_20 A 💌 3 | 7 7 | 1,2-dichloropr | 07:51 299 | 0 | Analyte | 0.5 | 4000 | 0 | |
| 6Water Purge 6 sec ConcFil_201 [A 💌 0.5 | 8 7 | trichloroethene | 08:08 200 | 0 | Analyte | 1.2 | 4000 | 0 | |
| | 9 7 | Toluene | 10:31 700 | 0 | Analyte | 1 | 4000 | 0 | |
| Peak Search | 10 7 | tetrachloroeth 💌 | 12:18 900 | 0 | Analyte | 2 | 4000 | 0 | |
| Search C Recalculate Start | 11 7 | chlorobenzene 💌 | 13:27 299 | 0 | Analyte | 1 | 4000 | 0 | |
| Juli | 12 7 | ethylbenzene 💌 | 14:03 000 | 0 | Analyte | 1 | 4000 | 0 | , |

22 Select the Calibrate Library option. (See Figure 17-46.)

Figure 17-46 Calibrate Library option

| Method | G Build/Edit Templ | ate 📀 Calibrate | Library | | | | | | | | |
|-----------------------------------------------------|--------------------|-------------------|------------|---------------|-------------------|----------------|---|---------|------------|------------|--|
| Browse Water Purge 19 cmpd.mth View/Edit Save | Analytes in Librar | (impared) () | 1.00 | | | 1 400000 01 1 | | | | | |
| Libraries Water Purge 19 Cmpd Save Library | View Report | s | IS IN FILE | water Purge 1 | 20 SEC LONCHIL_20 | 1140330_01.nps | | | | | |
| Search Settings Method Type: Water Conc. Unit ppb 👻 | # Data Ref | Compound | CAS # | Ret. Time | Area | Standard | | Conc | Water Beta | Water Temp | |
| Data Files | 1 3 | Methylene Chl 💌 | 1 | 03:33 000 | 0 | Analyte | - | 1.5 | 4000 | 0 | |
| Browse Display Reset Library | 2 7 | trans-1,2-dichl 💌 | l | 04:14 199 | 0 | Analyte | - | 3 | 4000 | 0 | |
| | 3 7 | cis-1,2-dichlor 💌 | | 05:05 700 | 0 | Analyte | - | 1.33333 | 4000 | 0 | |
| D Data He Name Lo Lonc/Fa Sel | 4 7 | Chloroform 💌 | | 05:20 600 | 0 | Analyte | - | 2 | 4000 | 0 | |
| bWater Purge 120 sec Lonchil_20 A ▼ 10 1 | 5 7 | 1,2-dichloroet 💌 | 1 | 06:05 600 | 0 | Analyte | - | 0.25 | 4000 | 0 | |
| 6Water Purge 72 sec Lonchil_2014 A V 6 | 6 7 | Benzene 💌 | l | 06:54 799 | 0 | Analyte | - | 1 | 4000 | 0 | |
| 6Water Purge 36 sec Lonchil 2014 A V 3 | 7 7 | 1,2-dichloropr | L | 07:51 299 | 0 | Analyte | - | 0.5 | 4000 | 0 | |
| 6Water Purge 6 sec Conchil_2014L A V 0.5 | 8 7 | trichloroethene | | 08:08 200 | 0 | Analyte | - | 1.2 | 4000 | 0 | |
| | 9 7 | Toluene 💌 | | 10:31 700 | 0 | Analyte | - | 1 | 4000 | 0 | |
| Pask Sawdh | 10 7 | tetrachioroeth 💌 | | 12:18 900 | 0 | Analyte | - | 2 | 4000 | 0 | |
| C Search C Becalculate Street | 11 7 | chlorobenzene 💌 | | 13:27 299 | 0 | Analyte | - | 1 | 4000 | 0 | |
| Stat | 12 7 | ethulbenzene 🔻 | 1 | 14/03/000 | 0 | ánakte | - | 1 | 4000 | 0 | |

- 23 In the Peak Search pane, select Search. (See Figure 17-47.)
- 24 In the Data Files pane, select the Select checkbox for all data files.

Figure 17-47 Selected data files

| Browse Water Purge 19 cmpd.mth | View/Edit Save |
|-----------------------------------|--------------------|
| Libraries Water Purge 19 Cmpd | ✓ Save Library |
| Search Settings Method Type: Wate | r Conc. Unit ppb 💌 |
| Data Files | |
| Browse Display | 🗌 Reset Library |
| D Data File Name | Co Conc/Fa Sel |
| 6Water Purge 120 sec ConcFill_ | 20° A 💌 10 🛛 🔽 |
| 6\Water Purge 72 sec ConcFill_2 | 01: A 🕶 6 🛛 🔽 |
| 6\Water Purge 36 sec ConcFill_2 | 014 A 💌 3 🛛 🔽 |
| 6Water Purge 6 sec ConcFill_20 | 14(A 🔽 0.5 |
| | |
| Deals Consult | |
| Search C Becalculate | Chart |



25 In the Data Files pane, select the Reset Library checkbox. (See Figure 17-48.)

Figure 17-48 Reset Library

| Bro | wse Water Purge 19 cmpd.mth | Vie | w/Edit | Save |
|--------|----------------------------------|-------|-------------|-------|
| Libra | aries Water Purge 19 Cmpd 🗸 | | Save Libra | rv |
| Sea | rch Settings Method Type: Water | Con | c. Unit ppb | |
| Data | a Files | _ | j | |
| B | rowse Display | F | 🗸 Reset Lib | orary |
| D | Data File Name | Co | Conc/Fa | Sel |
| 6. | \Water Purge 120 sec ConcFill_20 | A 🔻 | 10 | • |
| 6. | Water Purge 72 sec ConcFill_201 | A 🕶 | 6 | ~ |
| 6. | Water Purge 36 sec ConcFill_201 | A 🕶 | 3 | ~ |
| 6. | Water Purge 6 sec ConcFill_2014 | (A 💌 | 0.5 | |
| - Pool | < Search | | | |
| Pool | < Search | | | |

26 Click Start to calibrate the library. (See Figure 17-49.)

Figure 17-49 Start button

| В | rowse Water Purge 19 cmpd.mth | View | v/Edit | Save |
|------|-----------------------------------|---------|------------------------------------------------|---------------|
| Libr | aries Water Purge 19 Cmpd 🛛 💌 | | Save Libra | ry - |
| Se | arch Settings Method Type: Water | Cond | . Unit ppb | |
| E | Browse Display | N Co | Heset Lib Conc/Fa | rary Sel |
| | Data File Name | Co. | Conc/Ea | |
| 6. | Water Purge 120 sec ConcFill_20* | A | 10 | |
| 6. | Water Purge 72 sec ConcFill_2014 | A | 6 | |
| 6. | Water Purge 36 sec ConcFill_2014 | A | 3 | $\overline{}$ |
| 6. | \Water Purge 6 sec ConcFill_2014(| A 💌 | 0.5 | |
| Pea | ak Search | Г | Charl | |



27 The method recalibrates using the new data files, displaying new curves in the Calibration tab, and shows a chromatogram from one of the data files. (See Figure 17-50.)



| od • Calculate loss • Calculate loss explore frances • Calculate loss • Calculate loss explore frances • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss • Calculate loss <th>alibrate : C0164</th> <th></th> | alibrate : C0164 | | | | | | | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------|------------------------------------|---------------|----------------|------|----------|---------|------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Margine Information Margine Information Address Labor Margine Information MargineInformation Margine Information | hod C Bui | d/Edit Template | alibrate Library | | | | | | | | |
| en: (whe how is to be if whether Chicks in a | owse Water Purge 19 cmpd.mm View/Edit Save Ana | ytes in Library - <urnamed></urnamed> | Analytes in File - Water Purge 120 | sec ConcFil_2 | 0140930_01.hps | | | | | | |
| Bit Status Conc Usk Does Field Concord Concord Concord Concord Concord Concord | anics (Water Purge 19 Cmpd 🔹 Save Library | View Reports | | | | | | | | | Calibration |
| The | arch Settings Method Type: Water Conc. Unit ppb 💌 🗰 | Data Ref | Compound | CAS | S# Ret. Time | Area | Standard | Conc | Water Beta | Water Temp | A Conc. Area |
| See: Total Free Klaw T | a Files | 3 | Methylene Chloride | - | 03:33 000 | 0 | Analyte | ▼ 1.5 | 4000 | 0 | 1.50e+001 2.68e+ |
| Definition 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | rowse Display Reset Library 2 | 7 | trans-1,2-dichloroethene | - | 04:14 199 | 0 | Analyte | • 3 | 4000 | 0 | 9.00e+000 1.66e- |
| All of the second ways and config (All A = 0) Image: Config (All A = 0) </td <td>Data File Name Co. Conc/Ea. Sa</td> <td>7</td> <td>cis-1,2-dichloroethene</td> <td><u> </u></td> <td>05:05 700</td> <td>0</td> <td>Analyte</td> <td>1.33333</td> <td>4000</td> <td>0</td> <td>4.50e+000_9.10e</td> | Data File Name Co. Conc/Ea. Sa | 7 | cis-1,2-dichloroethene | <u> </u> | 05:05 700 | 0 | Analyte | 1.33333 | 4000 | 0 | 4.50e+000_9.10e |
| State Page 2 as Cooff (201 A 2 0) P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P | Water Purge 120 sec ConcEil 21 & 10 | 7 | Chloroform | - | 05:20 600 | 0 | Analyte | 2 | 4000 | 0 | 7.50e-001 1.62e |
| Note Reg 3 as: CorF, 301A 1 1 4000 0 Vide Rog 3 as: CorF, 301A 1 1 4000 0 0 Vide Rog 3 as: CorF, 301A 1 1 4000 0 0 0 Vide Rog 3 as: CorF, 301A 1 1 4000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <th0< th=""> 0 0 <</th0<> | Water Durge 72 sec CoopEil 201 A V B | 7 | 1,2-dichloroethane | - | 06:05 600 | 0 | Analyte | • 0.25 | 4000 | 0 | |
| Number And Used Registration T 7 1 2-deblograph T 000000000000000000000000000000000000 | Wilder Base 26 and Contractor A | 7 | Benzene | <u> </u> | 06:54 799 | 0 | Analyte | • 1 | 4000 | 0 | |
| Image: Difference of the control of | Wilder Purge Street Contral_2014 A = 0.6 | 7 | 1.2-dichloropropane | - | 07:51 299 | 0 | Analyte | .5 | 4000 | 0 | Constanting Basters Initial Ba |
| Sech Technike Sat 1 2 Technike 1 400 0 0 Description Description <td>s investi rage o sec conce e_cone A _ 0.0 1 8</td> <td>7</td> <td>trichloroethene</td> <td>-</td> <td>08:08 200</td> <td>0</td> <td>Analyte</td> <td>• 1.2</td> <td>4000</td> <td>0</td> <td>Loncentration Hestore Initial Ho</td> | s investi rage o sec conce e_cone A _ 0.0 1 8 | 7 | trichloroethene | - | 08:08 200 | 0 | Analyte | • 1.2 | 4000 | 0 | Loncentration Hestore Initial Ho |
| State/ State/< | 9 | 7 | Toluene | - | 10:31 700 | 0 | Analyte | 1 | 4000 | 0 | Average nr 13520.436 [HSD of HF %] 8 |
| Therewise Same Same Same Same Therewise Same Same< | Sawdy 10 | 7 | tetrachloroethene | - | 12:18 900 | 0 | Analyte | 2 | 4000 | 0 | Quadratic (3 or More P - External Calibration |
| 12 7 whytercore 1 1400 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Search C Recalculate Start 11 | 7 | chlotobenzene | - | 13:27 299 | 0 | Analyte | - 1 | 4000 | 0 | Relative Standard Deviation 3 16 |
| | siat 12 | 7 | ethylbenzene | - | 14:03 000 | 0 | Analyse | • 1 | 4000 | 0 | Consisting Coefficient 0.9 |
| | "" - I + + + | ++ + | ŧ ŧŧ | | Ŧ | Ŧ | Ŧ | ++ + | F Ŧ | | F T Response |
| | response_wax = 2,210 : responservesponse_wax = 20% : respo | use = see : scen set #1 : sc | BILE 2020 RT = 03.37.0 | | | | | | | | |
| | "_ † † | ŦŦ Ŧ | ŧ ŧŧ | | Ŧ | ŧ | Ŧ | +++ | F Ŧ | | F F Response |
| Part Scale Part S | " <u>-</u> † † | ++ + | ŧ ŧŧ | | Ŧ | Ŧ | Ŧ | ++ + | + + | | F F Response |
| | | tt t | * ** | | Ŧ | Ŧ | Ŧ | ** * | F Ŧ | | Response |
| | | ŧŧ ŧ | * ** | | Ŧ | Ŧ | Ŧ | ** * | F Ŧ | 1 | F F Pesponse |
| | | ŧŧ ŧ | * ** | | ŧ | Ŧ | Ŧ | ** * | • • | | Perposa Pause Screen |
| | | ++ + | ŧ ŧŧ | | + | Ŧ | Ŧ | ** * | F Ŧ | | Paulo Screen Method |
| | | ** * | ¥ ¥¥ | | + | Ŧ | Ŧ | ** * | F F | | Paulo Scient |
| | | ** * | * ** | | Ŧ | Ŧ | Ŧ | ** * | F F | | Pagesee Place Schen Method Water Purge E sec Co |
| | | ŦŦ Ŧ | * ** | | Ŧ | Ŧ | Ŧ | * * * | F | | Pagener Paulo Screen Method Water Page 6 sec Co |
| | | ŦŦ Ŧ | * ** | | Ŧ | + | Ŧ | | F F | | Paulo Scienti Method Water Paulo Science Water Paulo Science Co |
| | | ** * | * ** | | Ŧ | + | Ŧ | | | | Paue Schen Metod Widte Page 6 soc Cc |
| | | ** * | * ** | | Ŧ | ŧ | Ŧ | | | | Pagere Paure Scener Method Water Page 6 sec Co |
| | | ** * | * ** | | Ŧ | , | Ŧ | | | | Paue Science Wetled Wither Page 6 sec Co |
| | | ** * | * ** | | + | • | Ŧ | | | | Pargene Diver Scene Worke Parge See: Co |
| | | ** * | * ** | | + | Ŧ | Ŧ | | | | Page Scene |
| | | ·· · | * ** | | + | Ŧ | Ŧ | | | | Paus Series Mandad Water Paus Sec Co |
| | | ** * | | | | Ŧ | Ŧ | | | | Paus Scene Meded Ware Paus Scene |
| | | ** * | | | + | + | Ŧ | | | | Paus Score |
| | | ** * | | - | | Ŧ | Ŧ | | | | Pare Sono |
| | | | | | | + | + | | | | Paus Science Medical Water Puge Science Water Puge Science Sci Science Science Science Science Science Science Science Scienco |
| | | ** * | * * * | . 1000 | ¥ | ¥ | | | | | Page Score Nated Water Page Size Co |
| | | * ** | * * * | 10 20 | ¥ | ¥ | | | | 900 | Paus Scene Mended Water Pause Scene Water Pause Scene Scene |

28 Select the appropriate curve fit for each analyte in the **Calibration** tab by selecting the desired fit in the shortcut menu. (See Figure 17-51.)



Figure 17-51 Curve fit

NOTE: Curve fit selection is based on the best fit of the data points.

- **29** In the **Calibration** window, click each analyte to verify the accuracy of each curve fit. Verify the calibration graph for each analyte is populated and does not contain outlying points. The Relative Standard Deviation Percent (%RSD) of each point should be less than 10%. (See Figure 17-52.) See Step 30 for information on outlying points.
 - **NOTE:** A minimum of four points are necessary to verify the accuracy of the curve.

Figure 17-52 Calibration curve

| buldec i | n Library companied | | 6 F1 | | | | | | | | | | |
|----------|---------------------|------------------------------------|--------------|-----------------|------|----------|---|---------|------------|------------|---|--------------------------|--------------------|
| View | Reports | Analytes in File - Water Purge 120 | sec ConcFil_ | 20140330_01.nps | | | | | | | - | lon c l | |
| # | Data Ref | Compound | CA | 5 # Ret Time | Area | Standard | | Conc | Water Beta | Water Temp | ^ | Calibration | C |
| | 3 | Methylene Chloride | - | 03:33 000 | 0 | Analyte | - | 1.5 | 4000 | 0 | | 1 | Lonc. Area |
| | 7 | trans-1,2-dichloroethene | - | 04:14 199 | 0 | Analyte | - | 3 | 4000 | 0 | | e | 2.000+001 9.396 |
| | 7 | cis-1,2-dichloroethene | - | 05:05 700 | 0 | Analyte | - | 1.33333 | 4000 | 0 | | ° / | 1.20e+001 6.63e |
| | 7 | Chloroform | - | 05:20 600 | 0 | Analyte | - | 2 | 4000 | 0 | | | 5.00e+000 3.53e |
| | 7 | 1,2-dichloroethane | - | 06:05 600 | 0 | Analyte | - | 0.25 | 4000 | 0 | | | 1.00e+000 6.01e |
| | 7 | Benzene | - | 06:54 799 | 0 | Analyte | - | 1 | 4000 | 0 | | | |
| | 7 | 1.2-dichloropropane | - | 07:51 299 | 0 | Analyte | - | 0.5 | 4000 | 0 | | • | |
| | 7 | trichloraethene | - | 08:08 200 | 0 | Analyte | - | 1.2 | 4000 | 0 | | Concentration | Restore Initial Re |
| | 7 | Toluene | - | 10:31 700 | 0 | Analyte | - | 1 | 4000 | 0 | | Average RF 56453.141 | RSD of RF % 8. |
| 0 | 7 | tetrachloroethene | | 10.10.000 | 0 | Analda | | • | 4000 | 0 | | Quadratic (3 or More P 💌 | External Calibra |
| 1 | 7 | chlorobenzene | - | 13:27 299 | 0 | Analyte | - | 1 | 4000 | 0 | | Relative Standard Devi | ation % 0.10 |
| 2 | 7 | ethybenzene | - | 14:03 000 | 0 | Analyte | - | 1 | 4000 | 0 | | Canalatian Castini | 0.00 |

30 If an outlying point is found on a curve, the point may be deleted before being replaced. Click the corresponding concentration in the **Calibration** pane. This will highlight the row in pink. Press the **Delete** key on the computer to remove the point. (See Figure 17-53.)

NOTE: Outlying points should be discarded and the standard should be rerun.

NOTE: Click **Restore Initial Record** to restore the data points from the last time the library was saved.

Figure 17-53 Deleting an outlying point

| Calibration | | | | |
|-----------------------------------------------|---------------|--------------|--|--|
| A | Conc. | Area | | |
| 1 | 2.00e+00 | 01 9.99e+005 | | |
| a . / | 1.20e+00 | 11 6.63e+005 | | |
| | 1.40e+00 | 3.63e+005 | | |
| × | 1.00e+00 | 00 6.010+004 | | |
| ./ | - | | | |
| Concentration Restore Initial Record | | | | |
| Average RF 47818.773 RSD of RF % 31.759 | | | | |
| Quadratic (3 or More P 💌 External Calibration | | | | |
| Relative Standar | d Deviation % | 27.208 | | |
| Correlation C | oefficient | 0.895 | | |

- **31** Calibration points from additional data files can be added to the curve(s) using the **Browse** button under **Data Files**. The method must be recalibrated to add additional points. Return to Step 16 if additional data files are necessary.
- **32** When the library calibration is complete, save the library. (Refer to Step 14 and Step 15.)



33 To save the method, click Save in the Method pane. (See Figure 17-54.)

Figure 17-54 Save method

| Browse Water Purge 19 cmpd.mth | View | i/Edit S | iave |
|---------------------------------------|------|-------------|-------------------------|
| Libraries Water Purge 19 Cmpd | | Save Librar | y |
| Search Settings Method Type: Water | Conc | Unit ppb | - |
| Browse Display | V | Reset Lib | rary |
| D Data File Name | Co | Conc/Fa | Se |
| 60\Water Purge 120 sec ConcFill_20 | A. 💌 | 10 | |
| 61Water Purge 72 sec ConcFill_201 | A. 💌 | 6 | $\overline{\mathbf{v}}$ |
| 62\Water Purge 36 sec ConcFill_201 | A. 💌 | 3 | $\mathbf{\nabla}$ |
| 63Water Purge 6 sec ConcFil_2014 | A. 💌 | 0.5 | \mathbf{V} |
| Peak Search © Search C Recalculate | | Start | |

34 Type a file name for the method. Click **OK**. (See Figure 17-55.) The library will now be incorporated into the method.

Figure 17-55 Save library to method

| Save M | ethod File | | |
|----------|---------------------------------|-----------|--------------------|
| | PC | C CMS5000 | |
| Drive: | 🗇 Local Disk (C:) | | • |
| Folder: | C:\CMS IQ\C0213\Method | | 1 |
| Name | | Size Date | |
| | | | |
| File Nar | me: Water Purge 19 cmpd.mtn | | |
| File Typ | e: Method Files (*.mth; *.xmth) | | • |
| | | <u>~</u> | Manage Files OK |
| | | <u>~</u> | Cancel |

- **35** Once the method is saved, a verification standard must be run to confirm the calibration is accurate. Create a new chemical standard with a concentration somewhere between the highest and lowest concentration standards. Refer to section 17.5.2, Water Standards, on page 17-11 for preparing a water standard or section 17.5.3, Air Standards, on page 17-14 for preparing an air standard.
- **36** Run the verification standard with the newly calibrated method. Refer to section 17.5.4, Running Standards, on page 17-19.
- **37** Open the **Search Report** of the verification standard once the data file is created. Refer to section 13.6.1, Access Reports, on page 13-7 to open the **Search Report**.
- **38** Verify the concentration of every compound in the **Search Report** is within 30% of the verification standard's known concentration. If all compounds are within 30%, the verification standard has passed and the calibration is complete. (See Figure 17-56.)

If the verification standard does not pass, prepare a new verification standard and run again.

If the second verification standard does not pass, recalibrate the method. (Refer to section 17.5, Calibrating the Analytical Method, on page 17-10.)

| earch Reports | 2 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Summary Quantitative | Close |
| Unknown Identification Report Date: 09/30/14 Time: 13:29:27 Calibration Method: /Haps/Method/Water Purge 19 Cmpd.mth Tune File: default.tun Method Description: CMS 5000, Tri-bed Conc Data File: /Haps/Data/Water Purge 19 Cmpd/Water Purge 19 Data Info: | Cmpd_20140930_02.hps |
| #1 Methylene Chloride RT = 3:37.80 4.048 ppb #2 trans-1,2-dichloroethene RT = 4:17.60 4.676 ppb #3 cis-1,2-dichloroethene RT = 5:06.80 4.685 ppb #4 Chloroform RT = 5:20.90 5.780 ppb #5 1,2-dichloroethane | |

Figure 17-56 Verification Standard Search Report



17.7 Water Beta

In water sampling, VOC's are separated from the water by *partitioning*, during the argon bubbling phase. Refer to section 1.1, Introduction, on page 1-1 for details on partitioning.

The partition coefficient of a compound is affected by water temperature. The warmer the water, the lower the partition coefficient, and the more VOC's are extracted by CMS5000 during the purge and trap process.

If a sample is at a different temperature than the standards used during calibration, the change in the partition coefficient will reduce the accuracy of results. CMS5000 records the water temperature during sample collection. When **Water Adjustment** is enabled in CMS IQ, CMS5000 adjusts results to account for the difference in temperature. Refer to section 12.6.8.2, Enable Water Adjustment, on page 12-65 for enabling the **Water Adjustment**.

The adjusted concentration of a compound is calculated based on the difference between the calibration temperature and reading temperature. (See equation [9].)

$$Ctc_{i} = C_{i} \times e^{\beta_{i} \left(\frac{1}{T_{m}} - \frac{1}{T_{c}}\right)}$$
[9]

- Ctc_i is the adjusted compound concentration
- C_i is the initial compound concentration
- T_m is the temperature in kelvin during sample collection
- T_c is the temperature in kelvin during calibration
- β_i is the **Water Beta** value

A **Water Beta** value is assigned to each compound during method development to adjust for changes in water temperature.

The default value for the **Water Beta** is 4000. The **Water Beta** of individual compounds can be found in reference literature or can be determined experimentally.

17.8 Glossary of Terms in the Calibrate Window

Figure 17-57 Calibrate window

| the Factors calletae Toole there Window Help Calibrate Toole there Window Help Calibrate C100 Calibrate C10 | CMS IQ - C100 | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| California : C100 California : C100 Peterd Beome CM5500 CA Stadmh VerwEdt Same Beome CM5500 CA Stadmh VerwEdt Same Seach Seating Method Type CASId Conc. Unit [prin] Beower Diging Peter Libray Data File Tolacer = 0617683 D Analyte In Tale Peter Seatch Recet Libray Peter Seatch Recet Libray Peter Seatch Recet Libray Peter Seatch Recet Libray Data File Tolacer = 0617683 D Analyte In Tale Peter Seatch Recet Libray Peter Seatch Recet Libra | le Functions Calibrate Tools View Window Help | | | |
| Calibrate: C100 Method Bernere CMS5000C.Std.mh Vew/Edl. Save Badget I mejde: ^ Calebrate Lbray Andyte: in File Vew/Edl. Save Badget I mejde: ^ Calebrate Lbray Andyte: in File Vew/Edl. Save Badget I medide: ^ Calebrate Lbray Data File Device: Duplay Data File Device: Du | 🎽 🌌 🏽 🖉 🖺 🎒 🚹 ? 🛄 C100 | | | |
| Method Outbody Calabrate Librory Browner Method Stadmith Yewuff, Edit Stad Seeuch Stadmith Rest Librory Data File Seeuch Stadmith Pack Seach Recadulate Stad Stad Data File Stadmith Data File Core Charles Data File Core Charles Data File Stadmith Stadmith Stadmith | Calibrate : C100 | | | |
| Pade Search Reducted Initial Record | Méthod Browne ICMS5000 Ck Sid m/h Ubavier [Ck Sid Ubavier [Ck Sid Save Lbray Save Lbray Data Fale Browne Display Reset Lbray D Data File Name Co Coro-Fa Sel. | Build/E di Template Cabinale Linary Analysis in Libray - cummendo Verer Reports Inalysis in File ₩ Data Ref Compound CAS # Ref. Time 1 1 Tokere 0617 659 | Ainea Standard 0 Andyte 🗶 | C. Calbration A Conc. Area • 1.00+r00 637+e0 1.00+r00 637+e0 1.00+r00 637+e0 |
| | Peak Search | | | Concentration [Average RF [53555:563] FSD or RF %] 0.339 Linear, Forced through ▼ External Calibration Relative Standard Deviation % 0.339 Correlation Coefficient 1.000 |
| | | 02.00 04.00 89.00 | | ख वि |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

17.8.1 Method

Figure 17-58 Method section

| 📅 Calibrate : 10.210.50.116 | | | |
|-----------------------------|------------------------|--------------|--------|
| Method | | | |
| Browse | CMS5000 Water Purge.mt | View/Edit | Save |
| Libraries 🛛 | Q-4406 🗾 💌 | Save L | ibrary |
| Search S | ettings Co | onc. Unit pp | b 🖵 |

| Browse | Opens the Method Selection window |
|-----------------|-------------------------------------------------|
| View/Edit | Opens the Method Editor with the current method |
| Save | Saves the current method |
| Libraries | Displays the currently saved libraries |
| Save Library | Opens the window to save the library |
| Search Settings | Displays the Search Parameter settings |
| Conc. Unit | Defines the concentration units |

17.8.2 Data Files

Figure 17-59 Data Files section

| | Browse | Display | | | 🔲 Reset Li | ibrary |
|----|-----------------------|-------------|--------------------------|-----|------------|--------|
| D | Data File N | lame | | Co | Conc/Fa | Se |
| 4. | \CMS500 | 00 Water Pu | rge_2009070 [°] | G 💌 | 0 | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Pe | ak Search- | | | | | |
| Pe | ak Search− `Search | • Re | calculate | | Start | |

| Display | Displays the chromatogram for the selected data file |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reset Library | When selected, will delete all previous data points in the library during calibration |
| Browse | Selects the data files for building and calibrating the library |
| Data Ref (D) | Displays the data file reference number |
| Data File Name | Displays the data file name and path |
| Conc Ref (Co) | Basis for calculating the concentration of data files. When Global is selected, the Conc/Factor column represents the concentration of all compounds. When Analyte is selected, the Conc/Factor column is multiplied by value in the Conc box of each analyte in the library. See section 17.8.7, Calibrate Display, on page 17-41 for information on the Conc column in the library |
| Conc/Factor (Conc/Fa) | The concentration of the chemicals in the data file. The value is dependant on the Conc Ref . (Refer to Step 18 through Step 21a) |
| Selection (Se). | When selected, the file will be processed when Start is selected |

17.8.3 Peak Search Section

Figure 17-60 Peak Search section

| -Peak Search C Search | Recalculate | Start | |
|--------------------------|---------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------|
| Search | Perfo areas | rms a peak search and o during calibration | calculates peak |
| Recalculate | Reca perfo This i peak | lculates the peak areas rming a peak search du s most useful after man baseline points | without ring calibration. ual editing of |
| Start | Initiat | es calibration | |

17.8.4 Calibrate Options

Figure 17-61 Template / Calibrate section

| Build/Edit Template | Calibrate Library | |
|-------------------------------------------------------------------------------------|-------------------------|--|
| Analytes in Library - <un< td=""><td>named> Analytes in File</td><td></td></un<> | named> Analytes in File | |
| View Reports | | |

 Build/Edit Template
 When selected, identifies analytes and retention times to build the calibration library template

 Calibrate Library
 When selected, data files are processed to

calibrate the library

17.8.5 Analytes

Figure 17-62 Analytes Tabs



| Analytes in Library | Displays the analytes in the library |
|---------------------|-------------------------------------------------------------------|
| Analytes in File | Displays the analytes in the currently displayed or selected file |



17.8.6 View Reports

Figure 17-63 View Reports



If View Reports is clicked, the following window and options are displayed. (Refer to Figure 17-63.)

NOTE: Select **Analytes** from the box at the top of the screen.

| Calibration Response Table | Report that displays the response factor and curve statistics based on the selected curve type for each calibration standard |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Calibration Report | Report that displays the retention time, the area, and concentration of each calibration standard (See Figure 17-64.) |

Figure 17-64 View Reports

| Calibration Response Report | E | | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| Internal Standards Analyte: | libration Response Table / S Method: /Maps/Method/CMS5000 Test 01.mth thod Bescription: S 5000, Tri-bed Conc | | | | | |
| Reports Calibration Response Table reports Calibration Response Table reports Calibration Report | st Modified: 6/30/2010 9:32:05 RM = RT +- (0:20.00 / 2 + RT * 0.050) n Area = 500 | | | | | |
| Analytes Analytes Analytes #1 Methylene Chloride 3 Calibration Points (Guadratic (3 or nore points)) Concentration = (3.0052e-011)(AREA+2)+(3.1120e-005)(AREA)+1.2591e-001 pt. File pt. File [] Conc. Cratio Area Aratio Resp. Factor 1 Ch55000 Mater Purge_2009001 1.006e+000 100e+000 27170 2.710e+004 2.7170e-064 2 Ch55000 Vater Purge_2009011 1.006e+000 100e+000 120171 1.345+005 2.64955e+004 2 Ch55000 Vater Purge_2019011 = 2.61609+004 1550 cf Pursge RF = 5.78303% RSB of Curve Fit = 0.0000% | | | | | | |
| hallyte. #2 trans-1,2-dichloroetheme 3 Calibration Fonds- Concentration of the points) Concentrations (3.9.7714e-012)(ARER**2)+(1.3742e-005)(ARE Concentrations (3.9.7714e-012)(ARER**2)+(1.3742e-005)(ARE 1.015500 Water purge_2009001 5.000e+000 .000e 3 CHS5000 Water purge_2009001 5.000e+000 .000e 3 CHS5000 Water purge_2009001 5.000e+000 .000e ARES ARE = 5.361543e+004; BS BS D of Curve Fit = 0.00004; BS | A)+2.5711e-001 Aratio Beeg. Factor atio Brea Aratio Beeg. Factor 900 52090 5.2030+004 5.20300e+004 +000 515945 2.0530+005 5.11073e+004 D of Average RF = 5.75902% | | | | | |
| Analyte. #3 cis-1,2-dichloroethene 3 Calibration Points 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 < | A)+1.8603e-001 Altio Area Aratio Reep. Factor +000 33602 3.360e+004 3.36022e+004 +000 18800 1.808e+005 3.7600e+004 +001 364066 3.661±+005 3.7600e+004 D of Arexaps AF = 5.90346% | | | | | |
| | Export to Excel Save to File Print Close | | | | | |

17.8.7 Calibrate Display

Figure 17-65 Calibrate display

| C Build/Edit Ten | nplate 🔍 Cal | ibrate Library | | | | | | | | | | |
|------------------------------|---------------|--------------------------------|--------|------------------------|-----------|--------------------------------|------------------------------------------|----------------------------------------------|----------------------------------------------------|--------------------------------|-----------------------------------------|--------------------------------------------|
| Analytes in Libr View Rep | ioits | nalytes in File | | | | - | | | | Caib | pration | |
| # 1 | Data Ref 3 | Compound Methylene Chloride | CAS I | Ret. Time 03:33 000 | Area 0 | Standard Analyte | Conc 1 | Water Beta 4000 | Water Temp 0 | A 1 | | Conc. Area |
| 2 | 7 | trans-1,2-dichloroethene | - | 04:14 199 | 0 | Analyte | <u>•</u> 1 | 4000 | 0 | e a | | 3.00e+000 9.35e+004 |
| 4 | 7 | Chloroform | - | 05:20 600 | Ő | Analyte | - 1 | 4000 | 0 | | | 6.00e+000 1.74e+005 1.00e+001 2.75e+005 |
| 5 | 7 | 1,2-dichloroethane Benzene | - - | 06:05 600 | 0 | Analyte Analyte | • 1 | 4000 | 0 | - | / | |
| 7 | 7 | 1,2-dichloropropane | - | 07:51 299 | 0 | Analyte | 1 | 4000 | 0 | - * | Concentratio | Bestore Initial Becord |
| 9 | 7 | Toluene | - | 10:46 700 | 0 | Analyte Analyte | • 1 | 4000 | 0 | Ave | erage RF 30673.25 | 4 RSD of RF % 10.710 |
| 10 | 7 | tetrachloroethene | - | 12:37 900 | 0 | Analyte | • 1 | 4000 | 0 | Qua | dratic (3 or More P | External Calibration |
| 12 | 7 | ethylbenzene | - | 14:26 000 | 0 | Anayte | • 1 | 4000 | 0 | - F | Relative Standard D Correlation Coef | reviation % 0.623 fficient 0.999 |
| | | | | | | | | | | | | |
| # | | | | | • • | . The | assig | ned ana | llyte nur | nbei | r in th | e library |
| Data F | Ref | | | | | . Disp the libra pag | olays ti data fi ary. Re e 17-3 | he data le used fer to se 8 | file refe to add t ction 17 | renc he p .8.2 | ce nur beak to , Data | nber of o the I Files, o |
| Comp | ound | | | | | . Disp by t | blays tl he use | he anal <u>y</u> er | ∕te nam | e tha | at is a | ssigned |
| CAS # | ŧ | | | | | . Che a ur that | emical nique n is acc | Abstrac iumber epted w | ts Servi assigne vorld-wic | ce n d to de | umbe each | r. This is chemica |
| | | | | | | NO | TE: C | AS# mւ | ist be a | ddec | d by th | ne user. |
| Ret. T | ime . | | | | | . The | retent | ion time | e for the | ana | lyte | |
| Area . | | | | | | . Disp | olays tl | he integ | rated ar | nalyt | te are | а |
| Stand | ard . | | | | | . Des an i | ignate nterna | s the co I standa | ompound Ird | d as | an ar | nalyte or |
| | | | | | | NO | FE: Ar Cl int | nalyte is MS5000 ternal st | typically) methoe andards | y sel ds d s. | ected o not | , as mos use |
| Conc. | | | | | | . Disp rela | olays ti tive to | he conc the oth | entratio er analy | n of tes | the a | nalyte |
| Water | Beta | | | | | . Valu corr Refe valu | ie use ects fo er to re ies. Fo | d in con or chang eference or water | centration ges in water literatuon method | on c ater ire to s on | alcula tempo o obta nly | ation tha erature. iin these |
| Water | Temp |) | | | | . The by C For | tempe CMS50 water | erature o 000 at th method | of the wa ne time o s only | ater b of ca | being alibrati | analyze ion. |



Chapter A Appendix

A.1 Modbus Protocol

The CMS ModBus server listens on TCP port 502.

All Strings are null terminated.

Timestamps are the number of seconds since midnight on 1/1/70 - UTC

Register Map -

0:699 - Analog Input Registers (read-only)

700 : 799 - Holding Register (read-write)

800 : 10000 - Analog Input Registers (read-only)

0: Status - 32 bit integer - 2 words

Bit 0 - restarting The system is restarting, rebooting or shutting down. When this bit is set, all other information on the modbus is invalid.

Bit 1 - method is running

Bit 2 - method is complete The method has finished its run, but hasn't exited yet (probably waiting for SEL).

Bit 3 - script is running

Bit 4 - script is sleeping between methods

Bit 5 - method is warming up

Bits 6-25 - undefined (all 0)

- Bit 26 system is waiting for user input
- Bit 27 Alarm
- Bit 28 Heater Timeout
- Bit 29 Argon Pressure Warning
- Bit 30 Argon Pressure Error
- Bit 31 System Error

6: Current Argon Pressure - float - 2 words

8: Current Water Temperature - float - 2 words

100: Current Method - 100 words - string Return currently running method, empty string if no method is running

200: Current Script - 100 words - string Return current script, empty string if no script is running

300: Current Message - 100 words

Return the status line from the bottom of the current screen. This is two parts separated by a | giving the left and right sides of the line.

400: Current Alarm Message - 100 words

700: Command - 100 words - command to execute Write a string to this field to execute a command on CMS5000. The string may be one of the following:

run "method" - run the specifies method. Method should be the full path and in quotes (e.g. run "/Method/Ck Std.mth")

abort - abort the current method

restart -

reboot -

shutdown - restart, reboot or shutdown the instrument

key keylist - simulate one or more key presses. Keylist may contain the following:

- R Run
- P Stop
- H Help
- T Stat
- E Escape
- U Up
- D Down
- L Select

0 1 2 3 4 5 6 7 8 9 - numbers 0-9

V - Save

C - Clear

sending the command "key EUL" would be the same as pressing the Escape, Up and Select keys one after the other.

Examples:

run "/Method/Ck Std.mth" - runs the method Ck Std.mth

key 4L1L1L- simulates pressing keys 4 SEL 1 SEL 1 SEL

reboot- reboots the system

800: Response - string - 100 words - response to last command

When a command is written to address 700, the response is set to "PENDING."

After the command has been processed by CMS5000, the response is set to either

"OK" or "ERROR: error message"

Results Section:

The Results Section contains the results from the most recent run.

The sequence number is an arbitrary number that is incremented each time the results are updated. To make sure the results haven't changed while reading, read the sequence number first, read all of the results of interest, then read the sequence number again to make sure it is the same.

Address Field

1000 Sequence Number - 2 words

- 1002 Timestamp 2 words timestamp = time method started
- 1004 Number of Records 1 word
- 1005 Flags 1 word
- Bit 0 Alarm in records
- 1006 Argon Pressure = 2 words float in kPa, -1.0 if not recorded
- 1008 Water Temperature float in degrees C, -1.0 if not recorded
- 1010 Calibration Water Temperature float in degrees C, -1.0 if not recorded
- 1100 Method Name 100 words name of method file string

1200 DataFile Name - 100 words - name of data file - string

2000 Start of compound records.

Each records is 100 words. There can be up to 630 records (1000 - 64000).

Each record is a string with the following fields:

RECNO

CASNUM

Target name

Predicted RT

Actual RT

Area

Conc

No Adjust

Limit

Flags

The fields are separated by pipe characters ("|"). Any field that isn't being set by the current method is left empty.

A.2 Ethernet Integration

CMS5000 can be programmed to be integrated into the site's water monitoring system. The CMS5000API is a simple C/C++ programming interface that provides software programmers access to the CMS5000's basic control and status functions from within their applications. The CMS5000 API is not a stand-alone application; it is used by programmers to build their own applications.

CMS5000 API files:

| CMS5000api.h | (Header file) |
|----------------|-------------------------------------------------|
| CMS5000api.dll | (Windows Dynamic Link Library) |
| CMS5000api.lib | (Import library used to link to CMS5000api.dll) |

In addition to the CMS5000 API files, a sample application (CMS5000tester.exe) is provided that will start a method, get status as the method runs, then display some results when the method finishes. The source code for CMS5000tester.exe is provided along with a Microsoft VC++ project that can be used to build it.

A.2.1 CMS5000API.H

//-----

// CMS5000api.h provides an API for accessing a CMS5000's basic control and status functions. //

// The following four lines of code (error checking omitted) show the proper steps for // connecting to a CMS5000, starting a method, and then disconnecting.

// CMS5000_HANDLE CMS5000_handle;

// // C]

CMS5000_Connect(&CMS5000_handle, _T("10.1.1.1"));

//

//

// CMS5000_Run_Method(CMS5000_handle, _T("/Method/MyMethod.mth"));
//

// CMS5000_Disconnect(CMS5000_handle);

// //-----

// The following ifdef block is the standard way of creating macros which make exporting // from a DLL simpler. All files within the DLL are compiled with the CMS5000API EXPORTS // symbol defined on the command line. this symbol should not be defined on any project // that uses the DLL. This way any other project whose source files include this file see // CMS5000API API functions as being imported from a DLL, whereas the DLL sees symbols // defined with this macro as being exported. #ifdef CMS5000API EXPORTS #define CMS5000API declspec(dllexport) #else #define CMS5000API declspec(dllimport) #endif #include "stdlib.h" typedef void* CMS5000 HANDLE; * Warnings Codes #define CMS5000 WARN NONE 0 #define CMS5000 WARN GC COLUMN TEMPERATURE 1 #define CMS5000 WARN VALVE OVEN TEMPERATURE 2 #define CMS5000 WARN AI DETECTOR TEMPERATURE 3 #define CMS5000 WARN CARD CAGE TEMPERATURE 4 #define CMS5000 WARN WATER TEMPERATURE 5 #define CMS5000 WARN CK STD TEMPERATURE 6 #define CMS5000 WARN 9 * Method State may be one of the following: * * NONE - No method running * WARMUP - Method is warming up * WAITING - Method is waiting for RUN key to be pressed * RUNNING - Method is running

* SEARCHING - Method has finished running, but is still searching



* COMPLETED - Method has completed and is waiting for user to press ESC FINISHED - Method has finished and is no longer active #define CMS5000 MTHSTATE NONE 0 #define CMS5000_MTHSTATE_WARMUP 1 2 #define CMS5000 MTHSTATE START #define CMS5000 MTHSTATE WAITING 3 #define CMS5000 MTHSTATE RUNNING 4 #define CMS5000_MTHSTATE_SEARCHING 5 #define CMS5000 MTHSTATE COMPLETED 6 #define CMS5000_MTHSTATE_FINISHED 7 Length Constants #define METHOD LENGTH 1024 #define FILE NAME LENGTH 1024 #define CASNUM LENGTH 16 #define COMP NAME LENGTH 128 #define UNITS_LENGTH 16 #define PROMPT MSG LENGTH 2048 Data Structures typedef struct CMS5000API hw_status { float GCColumnTemp; float AIDetectorTemp; float GCBaoardTemp; float WaterTemp; float CkStdTemp; float RegulatorTemp; float InternalTemp; float ValveTemp; long RESERVED1[8]; float CarrierSupplyPressure; long RESERVED2[15]; } HardwareStatus; typedef struct CMS5000API sys_status { MethodState; long long WarningID; long AnalyteAlarm; // check report file for specifics. long ErrorFlag; // Fatal Error Exist. Check ErrorMessage. wchar t ErrorMessage [PROMPT MSG LENGTH]; long RESERVED[29]; } SystemStatus; typedef struct CMS5000API results info { wchar t MethodName [METHOD LENGTH];

```
wchar_t DataFileName [FILE_NAME_LENGTH];
 long SearchCount;
 long RESERVED[32];
} ResultInfo;
typedef struct CMS5000API search result {
 wchar t CASNUM [CASNUM LENGTH];
 wchar t Compound [COMP NAME LENGTH];
 long Retention Time;
 float Area;
 wchar t Units [UNITS LENGTH];
 float Concentration;
 float AlarmLevel;
 long RESERVED[345];
} SearchResult;
* Function Return Codes
 If function return is 0:
                    No Error
* If function return is negative: CMS5000 error
*
 If function return is positive: Windows Error
#define RTN NO ERROR
                           0
#define RTN_CONNECTION_TIMED_OUT
                                 -1
#define RTN CMD INVALID COMMAND ARG
                                     -2
#define RTN CMD INVALID METHOD NAME
                                    -3
#define RTN METHOD NOT FOUND
                                -4
#define RTN_METHOD_ALLREADY_RUNNING
                                     -5
#define RTN COM ERROR
                            -6
                         _9
#define RTN_ERROR
* CMS5000_Connect
*
 Connects to a CMS5000. Each Successful Connect must be paired with a Disconnect.
 Parameters
*
               : [OUT] Handle to a CMS5000
   CMS5000
*
   CMS5000 ip address : [ IN] IP address of CMS5000 you wish to connect to
*
  Returns
*
   See Function Return Codes
 Example
*
   CMS5000_Connect( &CMS5000_handle, _T("10.210.50.101") );
CMS5000API int CMS5000 Connect (CMS5000 HANDLE* CMS5000, const wchar t*
```

CMS5000_ip_address);

```
* CMS5000 Disconnect
*
 Disconnects with CMS5000 and free's up associated rescources.
 Each Successful Connect must be paired with a Disconnect.
 Parameters
*
  CMS5000 : [ IN] Handle to a CMS5000
*
 Returns
*
  See Function Return Codes.
*
 Example
  CMS5000_Disconnect( CMS5000_handle );
CMS5000API int CMS5000 Disconnect (CMS5000 HANDLE CMS5000);
CMS5000_Restart
*
*
 Restarts software running on CMS5000.
*
 Parameters
*
  CMS5000 : [ IN] Handle to a CMS5000
*
 Returns
  See Function Return Codes.
*
 Example
*
  CMS5000_Restart( CMS5000_handle );
CMS5000API int CMS5000_Restart (CMS5000_HANDLE CMS5000);
*
CMS5000 Reboot
 Reboots the unit.
 Parameters
  CMS5000 : [ IN] Handle to a CMS5000
*
 Returns
*
  See Function Return Codes.
*
 Example
  CMS5000 Reboot( CMS5000 handle );
```

PINFICON

CMS5000API int CMS5000_Reboot (CMS5000_HANDLE CMS5000);

```
*
 CMS5000_Shut_Down
*
 Turns CMS5000 off.
 ** NOTE ** There is no way to remotely turn CMS5000 back on once it is Off.
*
 Parameters
   CMS5000 : [ IN] Handle to a CMS5000
*
 Returns
*
   See Function Return Codes.
*
 Example
*
   CMS5000_Shut_Down( CMS5000_handle );
CMS5000API int CMS5000 Shut Down (CMS5000 HANDLE CMS5000);
CMS5000_Run_Method
*
 Runs a method
 Parameters
*
*
   CMS5000 : [ IN] Handle to a CMS5000
*
   method : [ IN] Full path to method (capitalization sensitive)
*
 Returns
*
   See Function Return Codes.
*
 Example
   CMS5000_Run_Method( CMS5000_handle, _T("/Method/CMS5000 Ck Std.mth") );
CMS5000API int CMS5000_Run_Method (CMS5000_HANDLE CMS5000, const wchar_t*
method);
/**********
* CMS5000 Set Startup Method
*
 Sets the Startup Method
*
 Parameters
   CMS5000 : [ IN] Handle to a CMS5000
*
   method : [ IN] Full path to method (capitalization sensitive)
*
 Returns
   See Function Return Codes.
 Example
```



```
*
   CMS5000_Set_Startup_Method( CMS5000_handle, _T("CMS5000 Ck Std.mth") );
********
                                                  *********/
CMS5000API int CMS5000_Set_Startup_Method (CMS5000_HANDLE CMS5000, const
wchar_t* method);
* CMS5000_Stop_Method
*
 Stops Currently Running Method.
 Parameters
   CMS5000 : [ IN] Handle to a CMS5000
*
 Returns
   See Function Return Codes.
*
 Example
   CMS5000_Stop_Method( CMS5000_handle );
CMS5000API int CMS5000_Stop_Method (CMS5000_HANDLE CMS5000);
*
 CMS5000_Get_Hardware_Status
*
 Retrieves Hardware Status.
*
 Parameters
   CMS5000
           : [ IN] Handle to a CMS5000
*
   hw status : [OUT] Pointer to a HardwareStatus stuct.
*
 Returns
   See Function Return Codes.
*
 Example
   CMS5000_Get_Hardware_Status( CMS5000_handle, &hw_status );
  CMS5000API int CMS5000_Get_Hardware_Status (CMS5000_HANDLE CMS5000, Hardwar-
eStatus* hw_status);
CMS5000_Get_System_Status
*
 Retrieves System Status.
*
 Parameters
   CMS5000
            : [ IN] Handle to a CMS5000
   sys status : [OUT] Pointer to a SystemStatus stuct.
 Returns
```



```
*
   See Function Return Codes.
*
 Example
*
   CMS5000_Get_System_Status( CMS5000_handle, &sys_status );
CMS5000API int CMS5000 Get System Status (CMS5000 HANDLE CMS5000, SystemSta-
tus* sys_status);
CMS5000_Get_Result_Info
  Retrieves Results Info.
*
  Parameters
   CMS5000
              : [ IN] Handle to a CMS5000
*
   result info : [OUT] Pointer to a ResultInfo stuct.
*
*
  Returns
   See Function Return Codes.
*
  Example
   CMS5000_Get_Result_Info( CMS5000_handle , &result_info );
CMS5000API int CMS5000 Get Result Info (CMS5000 HANDLE CMS5000, ResultInfo*
result_info);
CMS5000 Get Result
*
  Retrieves Search Result for an unknown. This function can be used to iterate
  through the array of found compounds.
*
  Parameters
               : [ IN] Handle to a CMS5000
   CMS5000
   search result : [OUT] Pointer to a SearchResult stuct.
*
           : [ IN] Index of specific SearchResult within the array of found
   num
             compounds. The number of found compounds is provide by
             ResultInfo.SearchCount, obtained through CMS5000 Get Result Info().
             Valid range: 0 \le \text{'num'} \le \text{SearchCount-1} [for SearchCount > 0]
*
  Returns
   See Function Return Codes.
*
  Example
   CMS5000 Get Result( CMS5000 handle ,&search result, num );
CMS5000API int CMS5000_Get_Result (CMS5000_HANDLE CMS5000, SearchResult*
search result, int num);
```



CMS5000_Get_All_Results * * * Retrieves a pointer to a list of SearchResult struct. * * Parameters * CMS5000 : [IN] Handle to a CMS5000 * search_results[] : [OUT] Array of SearchResult structs. : [IN] Max number of results your buffer can hold. max results * num results : [IN] Number of actual results recieved from CMS5000. * * Returns * See Function Return Codes. * Example * CMS5000_Get_All_Results(CMS5000_handle, &search_result_buffer, 100, &num_results); * CMS5000API int CMS5000_Get_All_Results (CMS5000_HANDLE CMS5000, SearchResult search_results[], int max_results, int* num_results);



www.inficon.com reachus@inficon.com

Due to our continuing program of product improvements, specifications are subject to change without notice. All trademarks are the property of their respective owners.

PN 074-508-P1E ©2018 INFICON