Reference Manual
2-3-9000-744, Rev H
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Rosemount™ 700XA

Gas Chromatograph

ROSEMOUNT™

EMERSON™

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Precautions and warnings

Note

The analyzer electronics and oven assembly, when housed inside a purged enclosure, meet the certifications and classifications identified in the Specifications section of the this manual (see Equipment description and specifications) and in the Rosemount 700XA Product Data Sheet, which is located on the Rosemount website (Emerson.com/Rosemount). Emerson does not, however, accept any responsibility for installations of these, or any attached equipment, in which the installation or operation thereof has been performed in a manner that is negligent and/or non-compliant with applicable safety requirements.

⚠ WARNING

SAFETY COMPLIANCE

Install and operate all equipment as designed and comply with all safety requirements. The seller does not accept any responsibility for installations of the Rosemount Gas Chromatograph or any attached equipment in which the installation or operation thereof has been performed in a manner that is negligent and/or non-compliant with applicable safety requirements.

⚠ WARNING

SAFETY COMPLIANCE

If the unit is not operated in a manner recommended by the manufacturer, the overall safety could be impaired.

⚠ WARNING

SUPPLY MAINS CONNECTION

The unit is intended to be connected to supply mains by qualified personnel in accordance with local and national codes.

⚠ WARNING

EXPLOSION HAZARD

Do not open when energized or when an explosive atmosphere is present.

⚠ WARNING

EXPLOSION HAZARD

Keep cover tight while circuits are live.

⚠ WARNING

EXPLOSION HAZARD

Use cables or wires suitable for the marked "T" ratings.

⚠ WARNING

EXPLOSION HAZARD

Cover joints must be cleaned before replacing the cover.

⚠ WARNING

EXPLOSION HAZARD

Conduit runs to GC enclosure must have sealing fitting adjacent to enclosure.

⚠ WARNING

POWER

A suitable APPROVED switch and fuse or a circuit breaker shall be provided to facilitate the disconnection of mains power.

⚠ WARNING

VENTILATION

The unit is required to be used in a well ventilated area.

⚠ WARNING

LEAK TESTING

All gas connections must be properly leak tested at installation.

⚠ WARNING

PRECAUTIONARY SIGNS

Observe and comply with all precautionary signs posted on the GC. Failure to do so may result in injury or death to personnel or cause damage to the equipment.

⚠ WARNING

VENTILATION

If you plan to place the GC in a sealed shelter, always vent the GC to atmosphere with ¼-in. tubing or larger. This will prevent the build up of H_2 and sample gas

⚠ WARNING

TOXIC VAPORS

Exit ports may discharge dangerous levels of toxic vapors.

Use proper protection and a suitable exhaust device.

⚠ WARNING

BURN HAZARD

Some parts of the analyzer may be heated to 120 °C (248 °F).

To prevent burns, do not touch any of the hot parts. All parts of an analyzer are always hot unless it has been switched off and allowed to cool down.

- Before fitting, removing, or performing any maintenance on the analyzer, make sure that it ha been switched off and allowed to cool for at least two hours.
- When handling the analyzer, always use suitable protective gloves.
- These precautions are particularly important when working at heights.
- If burned, seek medical treatment immediately.

Failure to observe this warning could cause an explosion or potentially hazardous situation, which if not avoided, may cause personal injury or death.

⚠ CAUTION

REPLACEABLE PARTS

No user replaceable parts inside except a few parts which are only to be accessed by trained service personnel. All replacement parts must be authorized by Rosemount to ensure product certification compliance.

⚠ WARNING

Physical access

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental to protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

NOTICE

The Rosemount 700XA is CSA-certified and ATEX-certified. See the certification tag on the GC for specific details about its agency approvals.

NOTICE

When the vapor regulators and flow switches are fitted, they must be suitably certified with the ratings **Ex d IIC Gb T6/T4/T3** and for a minimum ambient temperature range **Ta = -4 °F to +140 °F (-20 °C to +60 °C)**.

NOTICE

Where right angle bend cable adapters are used, they shall be appropriately certified and shall interface with enclosures via appropriate certified barrier glands.

⚠ CAUTION

EQUIPMENT DAMAGE

If the GC is heated without carrier flow, damage to the columns may occur.

⚠ CAUTION

WASTE DISPOSAL

Waste electrical and electronic products must not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority or retailer for recycling advice.

Contents

1 Overview

This section provides a description of the Rosemount 700XA system, an explanation of the theory of operation, and a glossary of chromatograph terminology.

1.1 Glossary

Auto zero The thermal conductivity detector (TCD) is auto zeroed at the start of a new analysis. The operator can also configure automatic zeroing of the TCD amplifier to take place at any time during the analysis if the component is not eluting or the baseline is steady. The flame ionization detector (FID) will auto zero at each new analysis run and can be configured to auto zero anytime during the analysis if the component is not eluting or the baseline is steady.

Baseline Signal output when there is only carrier gas going across the detectors. In a chromatogram you should only see **Baseline** when running an analysis without injecting a sample.

Carrier gas The gas used to push the sample through the system during an analysis.

Chromatogram A permanent record of the detector output. A chromatogram is obtained from a personal computer (PC) interfaced with the detector output through the controller assembly. A typical chromatogram displays all component peaks, and gain changes. It may be viewed in color as it is processed on a PC display. Tick marks recorded on the chromatogram by the controller assembly indicate where timed events take place.

Component Any one of several different gases that may appear in a sample mixture. For example, natural gas usually contains the following components: nitrogen, carbon dioxide, methane, ethane, propane, isobutane, normal butane, isopentane, normal pentane, and hexanes plus.

CDT Component data table

CTS Clear to send.

DCD Data carrier detect.

DSR Data set ready.

DTR Data terminal ready.

FID Flame ionization detector. The optional FID may be used in place of a TCD for the detection of trace compounds. The FID requires a polarization voltage and its output is connected to the input to a high impedance amplifier, an electrometer. The sample of gas to be measured is injected into the burner with a mixture of hydrogen and air to maintain the flame.

FPD Flame photometric detector. The FPD is used to analyze gas compound impurities, such as sulfur, phosphorous, and metals. When sample gas passes through the hydrogen/air flame the component's wavelengths emitted are electrically measured. The micro FPD (µFPD) is located in the analyzer's upper enclosure.

GC Gas ghromatograph. The GC is a user-configurable analyzer for various process gas applications.

LSIV Liquid sample injection valve. The optional LSIV is used to convert a liquid sample to a gas sample by vaporizing the liquid in a heated chamber, so the resulting gas sample can be analyzed.

Methanator The optional methanator, also known as a catalytic converter, transforms the components that are undetectable by the FID, carbon dioxide and/or carbon monoxide, into methane by adding hydrogen and heat to the sample.

Note
Carbon dioxide and/or carbon monoxide components are detectable by the TCD.

Response factor Correction factor for each component as determined by the following calibration:

$$\mathrm{RF} = \frac{Rawarea}{Calibration\ concentration}$$

Retention time Time, in seconds, that elapses between the start of analysis and the sensing of the maximum concentration of each component by the detector.

RI Ring indicator.

RLSD Received line signal detect. A digital simulation of a carrier detect.

RTS Request to send.

RxD, RD, or S_{in} Receive data, or signal in.

TCD Thermal conductivity detector. A detector that uses the thermal conductivity of the different gas components to produce an unbalanced signal across the bridge of the preamplifier. The higher the temperature, the lower the resistance on the detectors.

TxD, TD, or S_{out} Transmit data, or signal out.

1.2 System description

The Rosemount 700XA is a high-speed gas chromatograph (GC) system that is engineered to meet specific field application requirements based on typical hydrocarbon stream composition and anticipated concentration of selected components. In its standard configuration, the analyzer can handle up to eight streams: seven sample streams and one calibration stream.

The Rosemount 700XA system consists of two major parts: the analyzer assembly and the electronics assembly. Depending upon the particular GC, there may also be a third, optional, assembly called the sample conditioning system (SCS).

The electronics and hardware are housed in an explosion-proof enclosure that meets the approval guidelines of various certification agencies for use in hazardous environments. See the certification tag on the GC for specific details about agency approvals.

1.2.1 Analyzer assembly

The analyzer assembly includes:

- Columns
- Thermal conductivity detectors (TCDs)
- Flame ionization detectors (FIDs)
- Flame photometric detector (FPD)
- Preamplifer
- Preamplifier power supply
- Stream switching valves
- Analytical valves
- Solenoids

Additionally, the Rosemount 700XA can be equipped with a liquid sample injection valve (LSIV) or methanator.

For more information, see Upper compartment.

1.2.2 Electronics assembly

The electronics assembly includes the electronics and ports necessary for signal processing, instrument control, data storage, personal computer (PC) interface, and telecommunications.

The operator uses the electronics assembly and MON2020 to control the gas chromatograph (GC). Refer to Electronics hardware for more details.

The GC-to-PC interface provides you with the greatest capability, ease-of-use, and flexibility. You can use MON2020 to edit applications, monitor operations, calibrate streams, and display analysis chromatograms and reports, which can then be stored as files on the PC's hard drive or printed from a printer connected to the PC.

⚠ WARNING

HAZARDOUS AREA EXPLOSION HAZARD

Failure to follow this warning may result in injury or death to personnel.

Do not use a personal computer (PC) or printer in a hazardous area.
Emerson provides serial and Ethernet communication links to connect the analyzer to the PC and to connect to other computers and printers in a safe area.

1.2.3 Sample conditioning system (SCS)

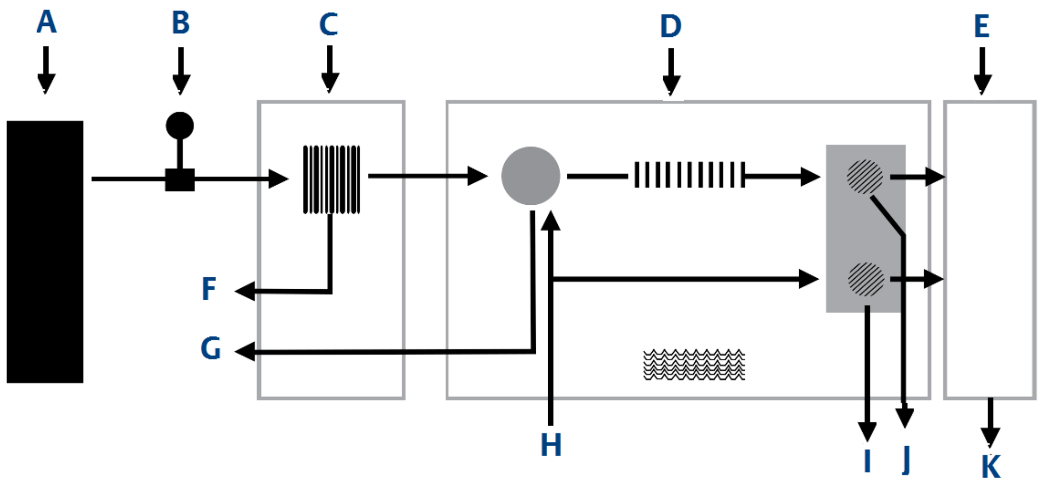
The optional sample conditioning system is located between the process stream and the sample inlet, which is often mounted below the gas chromatograph (GC).

The standard SCS configuration includes a stream switching system and filters.

1.3 Functional description

A sample probe installed in the process line takes a sample of the gas to be analyzed from the process stream. The sample passes through a sample line to the sample conditioning system (SCS) where it is filtered or otherwise conditioned. After conditioning, the sample flows to the analyzer assembly for separation and detection of the gas components.

Figure 1-1: Gas Chromatography Process Model



A. *Process line*
B. *Probe*
C. *Sample system*
D. *Chromatograph oven*
E. *Gas chromatograph (GC) controller*
F. *Sample return*
G. *Slip stream*
H. *Carrier gas*
I. *Reference vent*
J. *Detector vent*
K. *Analysis results*

Separation and analysis

The GC separtes the sample gas into its components as follows:

1. A precise volume of sample gas is injected into one of the analytical columns. The column contains a stationary phase (packing) that is either an active solid or an inert solid support that is coated with a liquid phase (absorption partitioning).
2. A mobile phase (carrier gas) moves the sample gas through the column.
3. The selective retardation of the components takes place in the column, causing each component to move through the column at a different rate. This separates the sample into its constituent gases and vapors.

4. A detector located at the outlet of the analytical column senses the elution of components from the column and produces electrical outputs proportional to the concentration of each component.

Output from the electronic assembly is normally displayed on a remotely located personal computer (PC) or in a distributed control system (flow computer).

To connect the GC to a PC, use a direct serial line, an optional Ethernet cable, or a Modbus®-compatible communication interface.

Several chromatograms may be displayed via MON2020 with separate color schemes, allowing you to compare present and past data.

In most cases, it is essential to use MON2020 to configure and troubleshoot the GC. The PC may be remotely connected via Ethernet, telephone, radio or satellite communications. Once installed and configured, the GC can operate independently for long periods of time.

1.4 Software description

The GC uses two distinct types of software. This enables total flexibility in defining the calculation sequence, report content, format, type and amount of data for viewing, control, and/or transmission to another computer or controller assembly. The two types are:

- Embedded GC firmware
- MON2020 software

The application configuration is tailored to the customer's process and shipped on a USB stick. The hardware and software are tested together as a unit before the equipment leaves the factory.

MON2020 communicates with the GC and can be used to initiate site system setup, i.e., operational parameters, application modifications, and maintenance.

1.4.1 Embedded GC firmware

The GC's embedded firmware supervises operation of the Rosemount 700XA through its internal microprocessor-based controller. All direct hardware interface is via this control software. It consists of a multi-tasking program that controls separate tasks in system operation, as well as hardware self-testing, user application downloading, startup, and communications. Once configured, the Rosemount 700XA can operate as a stand alone unit.

1.4.2 MON2020

MON2020 provides operator control of the Rosemount 700XA, monitors analysis results, and inspects and edits various parameters that affect the analyzer operation. It also controls display and printout of the chromatograms and reports, and it stops and starts automatic analysis cycling or calibration runs.

After the equipment/software has been installed and the operation stabilized, automatic operation takes place over an Ethernet network.

MON2020 is a Windows™-based program that allows you to maintain, operate, and troubleshoot a gas chromatograph (GC). Individual GC functions that can be initiated or controlled by MON2020 include, but are not limited to, the following:

- Valve activations
- Timing adjustments
- Stream sequences
- Calibrations
- Baseline runs
- Analyses
- Halt operation
- Stream/detector/heater assignments
- Stream/component table assignments
- Stream/calculation assignments
- Diagnostics
- Alarm and event processing
- Event sequence changes
- Component table adjustments
- Calculation adjustments
- Alarm parameters adjustments
- Analog scale adjustments
- Local operator interface (LOI) variable assignments (optional)

Reports and logs that can be produced, depending upon the GC application in use, include, but are not limited to, the following:

- Configuration report
- Parameter list
- Analysis chromatogram
- Chromatogram comparison
- Alarm log (unacknowledged and active alarms)
- Event log

- Various analysis reports

For a complete list of the GC functions, reports, and logs available through MON2020, consult the MON2020 for Gas Chromatographs Reference Manual (P/N 2-3-9000-745).

1.5 Theory of operation

The following sections discuss the theory of operation for the gas chromatograph, including the engineering principles and concepts used.

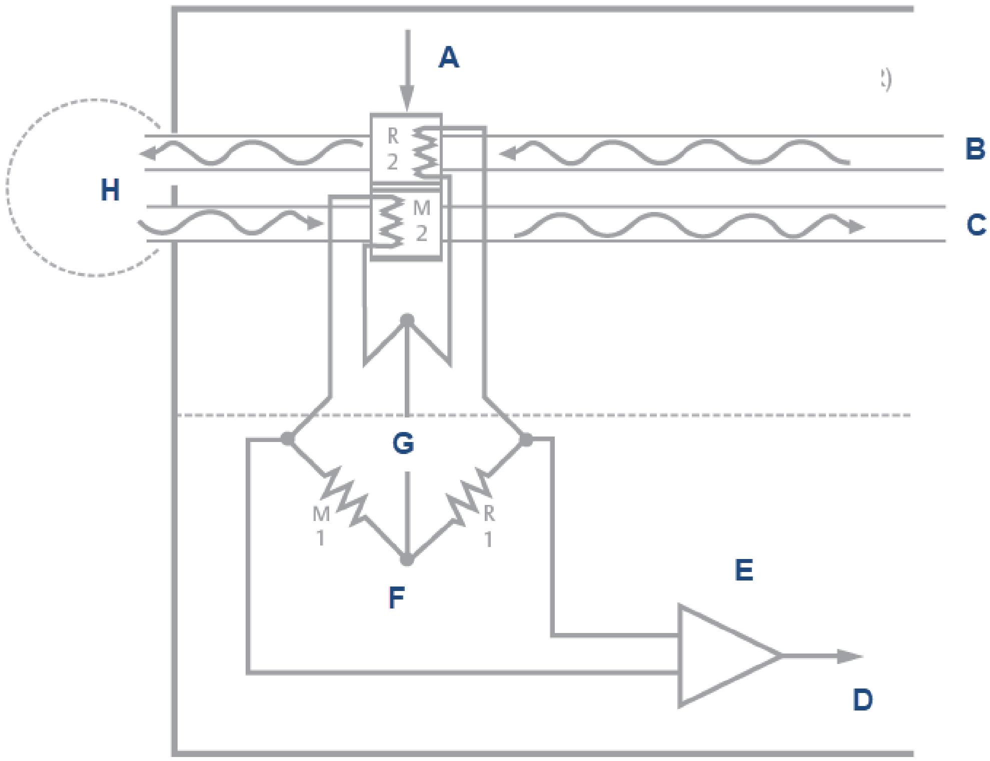
Note
See Glossary for definitions of the terminology used in this document.

1.5.1 Thermal conductivity detector (TCD)

One of the detectors available on the gas chromatograph (GC) is a TCD, which consists of a balanced bridge network with heat sensitive thermistors in each leg of the bridge. Each thermistor is enclosed in a separate chamber of the detector block.

One thermistor is designated the reference element, and the other thermistor is designated the measurement element. See Figure 1-2 for a schematic diagram of the TCD.

Figure 1-2: Analyzer Assembly with TCD Bridge



A. *Detector block (in heated upper section of analyzer)*
B. *Reference flow (carrier gas)*
C. *Measurement flow ("MV")*
D. *Signal out*
E. *Preamplifier (in analyzer electronics housing)*
F. *Detector bridge*
G. *DC power*
H. *Valves, columns, etc.*

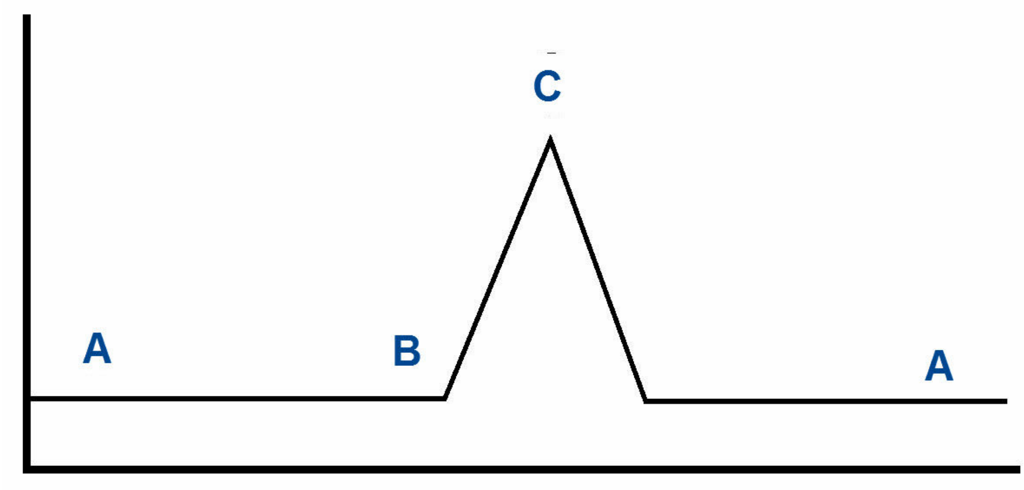
In the quiescent condition, prior to injecting a sample, both legs of the bridge are exposed to pure carrier gas. In this condition, the bridge is balanced, and the bridge output is electrically nulled.

The analysis begins when the sample valve injects a fixed volume of sample into the column. The continuous flow of carrier gas moves the sample through the column. As successive components elute from the column, the temperature of the measurement element changes.

The temperature change unbalances the bridge and produces an electrical output proportional to the component concentration.

The differential signal developed between the two thermistors is amplified by the preamplifier. Figure 1-3 illustrates the change in detector electrical output during elution of a component.

Figure 1-3: Detector Output during Component Elution



A. *Detector bridge balanced*
B. *Component begins to elute from column and is measured by thermistor.*
C. *Peak concentration of component*

In addition to amplifying the differential signal developed between the two thermistors, the preamplifier supplies drive current to the detector bridge.

The signal is proportional to the concentration of a component detected in the gas sample. The preamplifier provides four different gain channels as well as compensation for baseline drift.

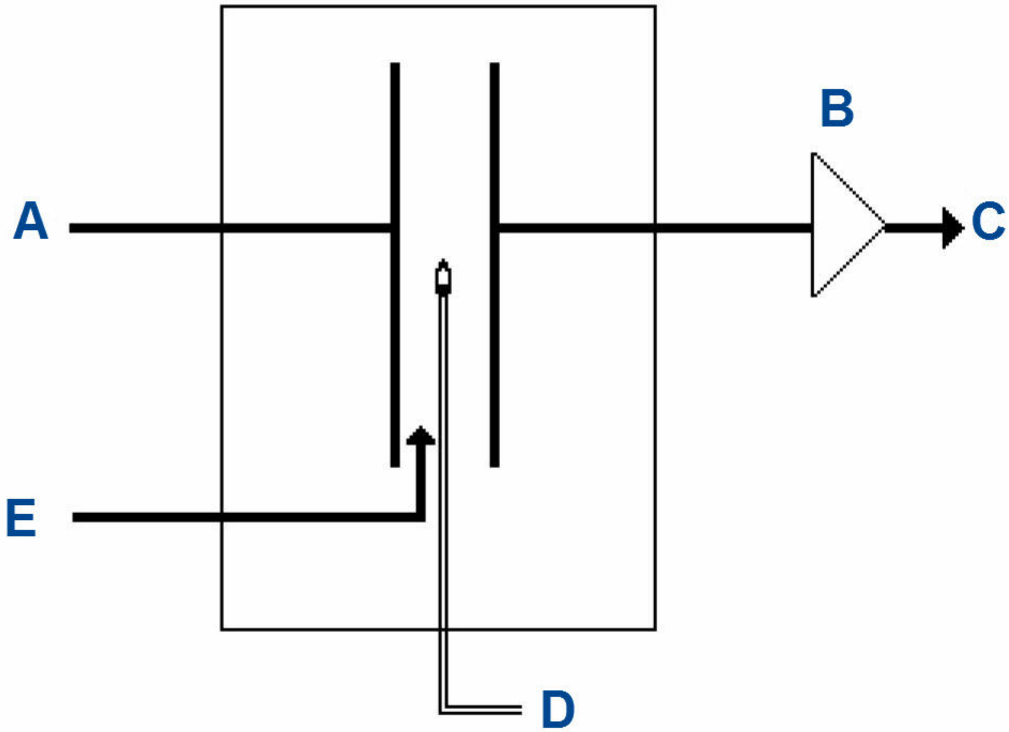
The signals from the preamplifier are sent to the electronic assembly for component concentration computation, recording, or viewing on a PC monitor with MON2020.

1.5.2 Flame ionization detector (FID)

Another detector available for the Rosemount 700XA is the flame ionization detector (FID).

The FID requires a polarization voltage, and its output is connected to the input to a high impedance amplifier that is called an electrometer. The burner uses a mixture of hydrogen and air to maintain the flame. The sample of gas to be measured is also injected into the burner. See Figure 1-4 for a schematic diagram of the FID.

Figure 1-4: Analyzer Assembly with FID Detector Bridge



A. *Polarizing voltage*
B. *Electrometer*
C. *Signal out*
D. *Sample/hydrogen (H_2)*
E. *Air*

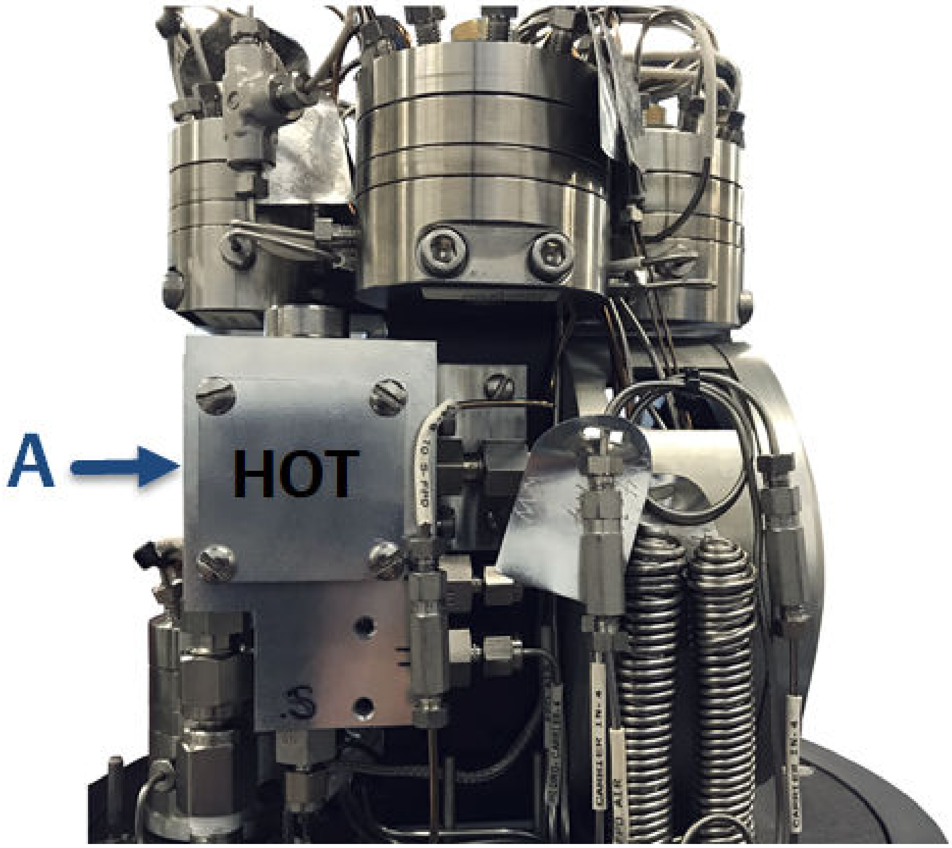
1.5.3 Micro flame photometric detector (µFPD) burner

The flame photometric detector (FPD) is a very sensitive and selective detector for the analysis of sulfur or organophosphorus containing compounds. The detector is very stable and easy to use.

As the analyte is burned in a hydrogen and air flame, a characteristic wavelength of light is emitted at 394 nm for sulfur. The emitted light is amplified by the photomultiplier tube (PMT) and processed by the signal processor. The response to phosphorus is linear and quadratic to sulfur.

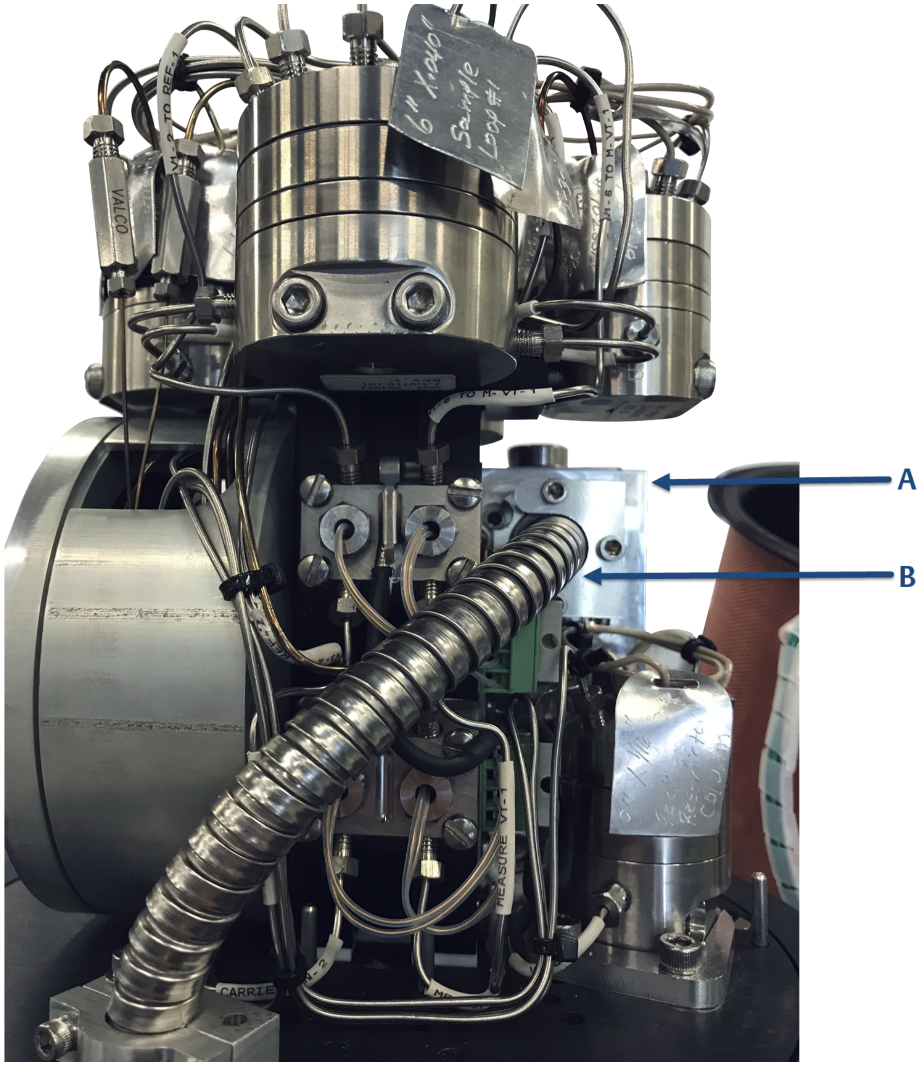
The Emerson µFPD solution consists of three key parts: burner, fiber cable, and PMT electronics. The hydrogen and air in the burner help to burn the sample containing sulfur components. The light emitted from the chemical reaction is then transmitted using the fiber cable from the oven assembly to the electronics module. The PMT electronics module consists of a 394 nm filter, a photomultiplier tube (PMT), and all the necessary electronics to digitize the signal. The digtial signal is then transmitted to the main central processing unit (CPU) using CAN bus.

Figure 1-5: µFPD Detector - Front View



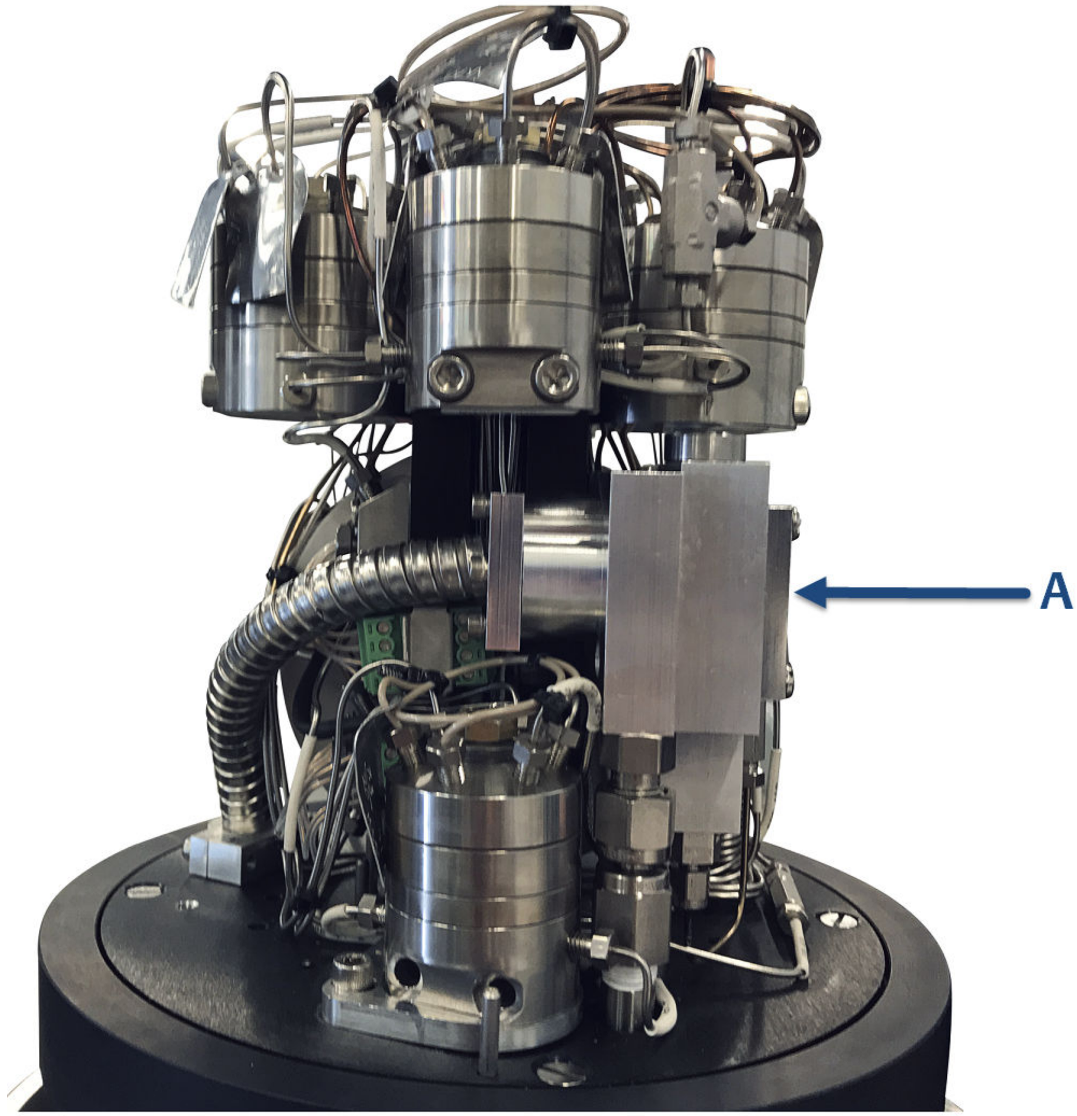
A. µFPD burner

Figure 1-6: µFPD Burner - Back View



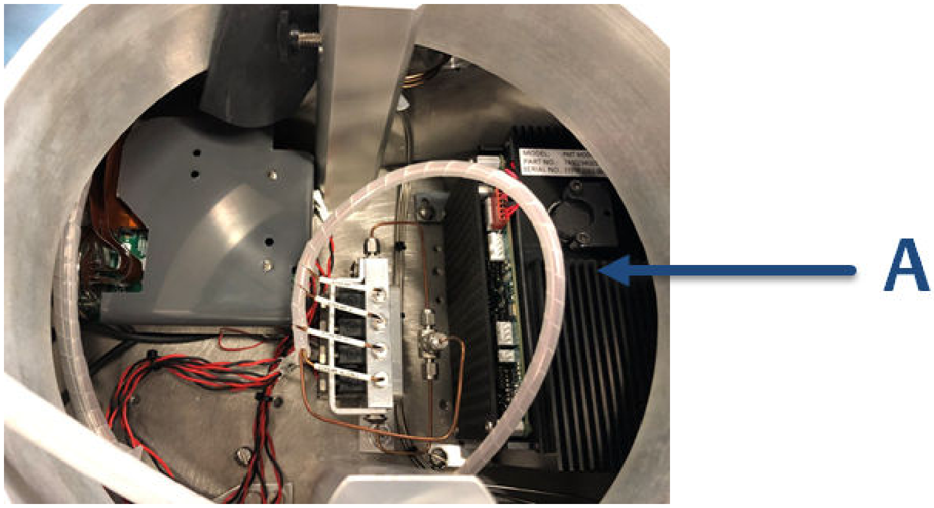
A. µFPD burner
B. Fiber cable

Figure 1-7: μFPD Burner - Side View



A. μFPD burner and cable

Figure 1-8: µFPD PMT



A. µFPD PMT in the upper enclosure

The detection system in the µFPD uses the reactions of sulfur components in a hydrogen/air flame as a source for analytical detection. The source of the µFPD's signal is derived from the light produced by an excited molecule created in the flame's combustion, that is, a photochemical process called chemiluminescence. A thermocouple is fitted to the flame cell to ensure that the flame is present. If the flame is not detected, the electrometer shuts off the hydrogen to the flame cell. It then supplies a voltage to the igniter, waits five seconds, and opens the hydrogen shut off valve. The electrometer will make between one and five ignition attempts if necessary. You can select the number of ignition attempts on the **Hardware** → **Detector** screen. If the electrometer does not succeed in igniting, then the GC shuts off the hydrogen, triggers an alarm, and waits for attention from the operator.

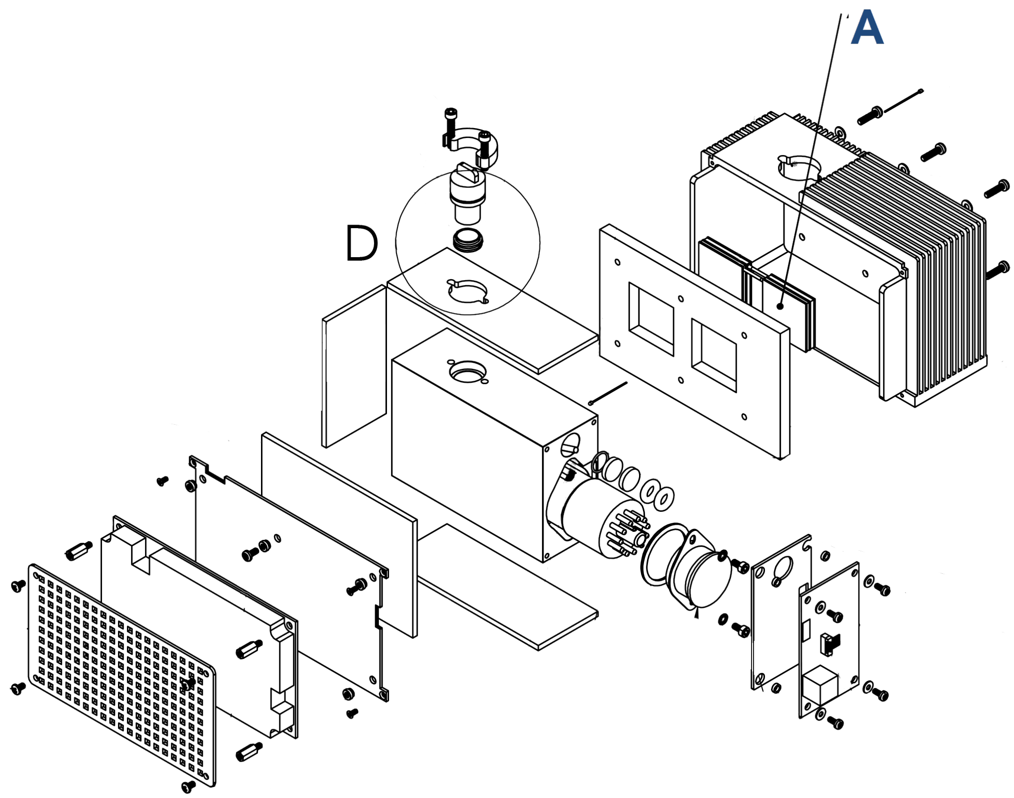
Related information

Micro flame photometric detector (µFPD)

1.5.4 Micro flame photometric detector (µFPD) electronics module

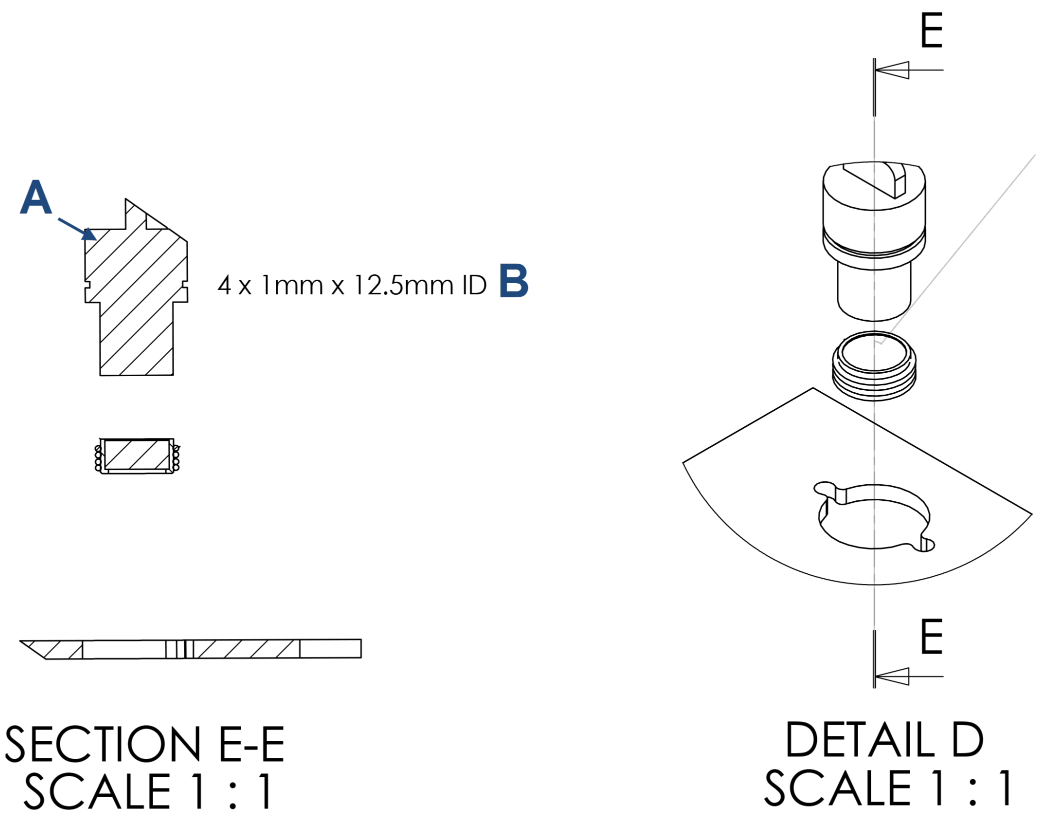
The electronics module contains two chambers. The internal chamber contains the photo multiplier tube (PMT) to insulate it from outside temperature changes. The external chamber is a thermo electric cooler (TEC) controlled chamber, which houses the interal chamber along with the electronic board that generates high voltage power through the PMT.

Figure 1-9: Electronics Module, Exploded View



A. Apply thermal compound to both sides.

Figure 1-10: Electronics Module, Detailed



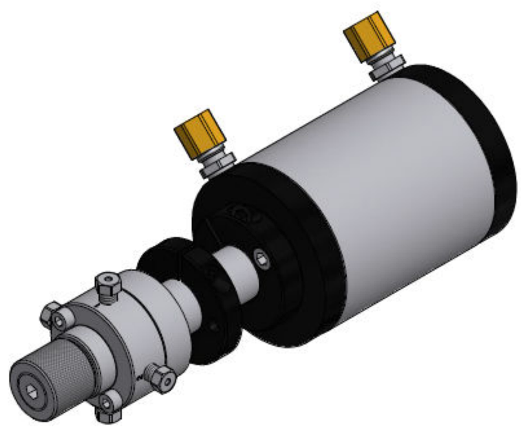
A. *Maier photonics filter*
B. *O-ring*

On the outside of the external chamber is the electronics main board. This board is the vital part of the µFPD electronics module. It controls the temperature of the TEC, provides power to the igniter, monitors the flame temperature, and digitizes the PMT signal and transmits to the main central processing unit (CPU) using CAN bus.

1.5.5 Liquid sample injection valve (LSIV)

The optional LSIV converts a liquid sample into a gas sample for analysis.

Figure 1-11: Liquid Sample Injector Valve (LSIV)



1.5.6 Methanator

After all other components have been separated from the sample, carbon monoxide and carbon dioxide, which are normally present in quantities too small to be detected by the gas chromatograph (GC), can be sent through the optional methanator, where the two gases are combined with hydrogen to make methane in a heat-generated catalytic reaction. The methanator is also known as a methanizer or a catalytic converter.

1.5.7 Data acquisition

Every second, the controller assembly takes exactly 50 equally spaced data samples (i.e., one data sample every 20 milliseconds).

As a part of the data acquisition process, groups of incoming data samples are averaged together before the result is stored for processing. Non-overlapping groups of 50 samples are averaged and stored, and thus reduce the effective incoming data rate to 50/10 samples per second. For example, if $N = 5$, then a total of 40/5 or 8 (averaged) data samples are stored every second.

The value for the variable N is determined by the selection of a peak width parameter (PW). The relationship is

$N = PW$

where PW is given in seconds. Allowable values of N are 1 to 63; this range corresponds to PW values of 2 to 63 seconds.

The variable N is known as the integration factor. This term is used because N determines how many points are averaged, or integrated, to form a single value. The integration of data upon input, before storing, serves two purposes:

- The statistical noise on the input signal is reduced by the square root of *N*. In the case of *N* = 4, a noise reduction of 2 would be realized.
- The integration factor controls the bandwidth of the chromatograph signal. It is necessary to match the bandwidth of the input signal to that of the analysis algorithms in the controller assembly. This prevents small, short-duration perturbations from being recognized as true peaks by the program. It is therefore important to choose a peak width that corresponds to the narrowest peak in the group under consideration.

1.5.8 Peak detection

For normal area or peak height concentration evaluation, the determination of a peak's start point and end point is automatic.

The manual determination of start and end points is used only for area calculations in the Forced Integration mode. Automatic determination of peak onset or start is initiated whenever **Integrate Inhibit** is turned off. Analysis is started in a region of signal quiescence and stability, such that the signal level and activity can be considered as baseline values.

Note
The controller assembly software assumes that a region of signal quiescence and stability will exist.

Having initiated a peak search by turning **Integrate Inhibit** off, the controller assembly performs a point by point examination of the signal slope. This is achieved by using a digital slope detection filter, a combination low pass filter and differentiator. The output is continually compared to a user-defined system constant called Slope Sensitivity. A default value of 8 is assumed if no entry is made. Lower values make peak onset detection more sensitive, and higher values make detection less sensitive. Higher values (20 to 100) would be appropriate for noisy signals, (e.g., high amplifier gain).

Onset is defined where the detector output exceeds the baseline constant, but peak termination is defined where the detector output is less than the same constant.

Sequences of fused peaks are also automatically handled. This is done by testing each termination point to see if the region immediately following it satisfies the criteria of a baseline. A baseline region must have a slope detector value less than the magnitude of the baseline constant for a number of sequential points. When a baseline region is found, this terminates a sequence of peaks.

A zero reference line for peak height and area determination is established by extending a line from the point of the onset of the peak sequence to the point of the termination. The values of these two points are found by averaging the four integrated points just prior to the onset point and just after the termination points, respectively.

The zero reference line will, in general, be non-horizontal, and thus compensates for any linear drift in the system from the time the peak sequence starts until it ends.

In a single peak situation, peak area is the area of the component peak between the curve and the zero reference line. The peak height is the distance from the zero reference line to the maximum point on the component curve. The value and location of the maximum point is determined from quadratic interpolation through the three highest points at the peak of the discrete value curve stored in the controller assembly.

For fused peak sequences, this interpolation technique is used both for peaks, as well as valleys (minimum points). In the latter case, lines are dropped from the interpolated valley points to the zero reference line to partition the fused peak areas into individual peaks.

The use of quadratic interpolation improves both area and height calculation accuracy and eliminates the effects of variations in the integration factor on these calculations.

For calibration, the controller assembly may average several analyses of the calibration stream.

1.5.9 Basic analysis computations

Two basic analysis algorithms are included in the controller assembly:

Area Analysis	Calculates area under component peak.
Peak Height Analysis	Measures height of component peak.

Note
MON2020 can perform a variety of other calculations. For more information, see the MON2020 Software for Gas Chromatographs Reference Manual.

Concentration analysis - response factor

Concentration calculations require a unique response factor for each component in an analysis. These response factors may be manually entered by an operator or determined automatically by the system through calibration procedures (with a calibration gas mixture that has known concentrations).

The response factor calculation, using the external standard, is:

$$ARF_n = \frac{Area_n}{Cal_n} \text{ or } HRF_n \frac{Ht_n}{Cal_n}$$

where

ARF_n Area response factor for component *n* in area per mole percent

$Area_n$ Area associated with component *n* in calibration gas

Cal_n Amount of component *n* in mole percent in calibration gas

Ht_n Peak height associated with component *n* mole percent in calibration gas

HRF_n Peak height response factor for component *n*

The controller assembly stores calculated response factors to use in the concentration calculations; these response factors are printed out in the configuration and calibration reports.

Average response factor is calculated as follows:

$$RFAVG_n = \frac{\sum_{i=1}^{k} RF_i}{k}$$

where

$RFAVG_n$ Area or height average response factor for component *n*

RF_i Area or height average response factor for component *n* from the calibration run

k Number of calibration runs used to calculate the response factors

The percent deviation of new *RF* averages from old *RF* average is calculated in the following manner:

$$deviation = \left[\frac{RF_{new} - RF_{old}}{RF_{old}} \times 100 \right]$$

where the absolute value of percent deviation has been previously entered by the operator.

Concentration calculation - mole percentage (without normalization)

After response factors have been determined by the controller assembly or entered by the operator, component concentrations are determined for each analysis by using the following equations:

$$CONC_n = \frac{Area_n}{ARF_n} \text{ or } CONC_n = \frac{Ht_n}{HRF_n}$$

where:

ARF$_n$	Area response factor for component *n* in area per mole percent
Area$_n$	Area associated with component *n* in unknown sample
CONC$_n$	Concentration of component *n* in mole percent
Ht$_n$	Peak height associated with component *n* mole percent in unknown sample
HRF$_n$	Peak height response factor for component *n*

Component concentrations may also be input through analog inputs 1 to 4 or may be fixed. If a fixed value is used, the calibration for that component is the mole percent that will be used for all analyses.

Concentration calculation in mole percentage (with normalization)

The normalized concentration calculation is:

$$CONCN_n = \frac{CONC_n}{\sum_{i=1}^{k} CONC_i} \times 100$$

where:

CONCN$_n$	Normalized concentration of component *n* in percent of total gas concentration
CONC$_i$	Non-normalized concentration of component n in mole percent for each *k* component
CONC$_n$	Non-normalized concentration of component *n* in mole percent
k	Number of components to be included in the normalization

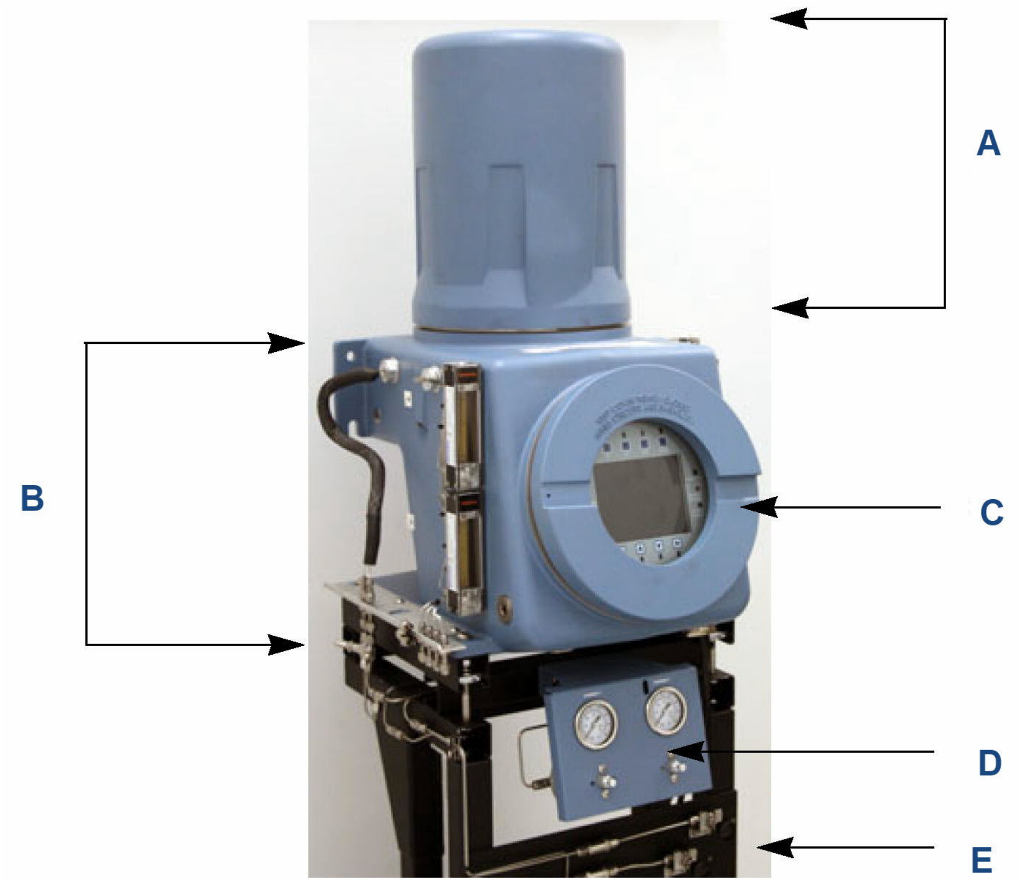
Note
The average concentration of each component will also be calculated when data averaging is requested.

2 Equipment description and specifications

2.1 Equipment description

The Rosemount 700XA consists of a copper-free aluminum explosion-proof chamber and a front panel assembly. The chamber is divided into two compartments that together house the gas chromatograph's (GC's) major components. This GC is designed for hazardous locations.

Figure 2-1: Rosemount 700XA Gas Chromatograph



A. *Upper compartment*
B. *Lower compartment*
C. *Front panel assembly*
D. *Mechanical regulators*
E. *Sampling system (optional)*

2.1.1 Front panel assembly

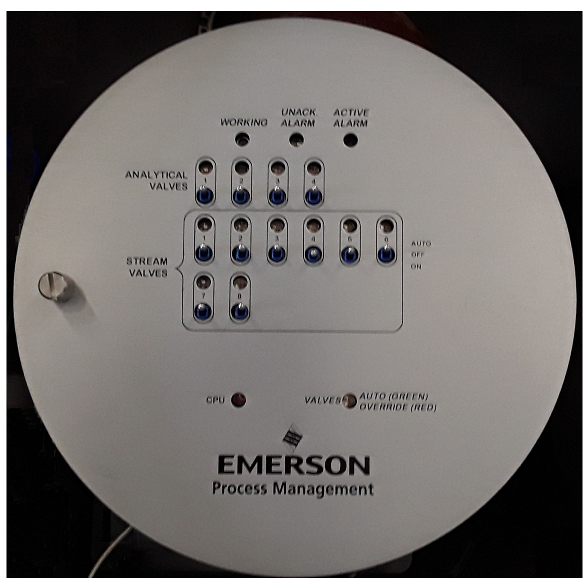
The front panel assembly is located on the front section of the lower enclosure and consists of a removable, explosion-proof panel that shields either a switch panel or a local operator interface (LOI).

Figure 2-2: 8-stream switch panel (left) and 18-stream switch panel (right)

Switch panel

The switch panel contains a network of on/off switches that allow you to manually control the GC's stream and analytical valves.

Figure 2-3: 8-stream Switch Panel



There are two types of switch panels: 8-stream and 18-stream. The 8-stream switch panel is the standard panel, and is used when the GC has only one heater/solenoid board installed; if two heater/solenoid boards are installed, then the 18-stream switch panel is used.

Figure 2-4: Stream Valves Switches

A valve has the following three operational modes:

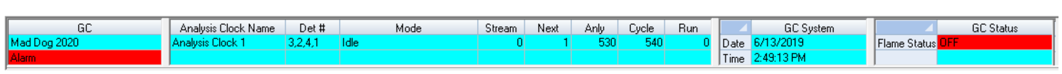
- **AUTO -** The valve turns on and off according to the Timed Events table that is accessible through MON2020. To set a valve to *AUTO* mode, set its switch on the switch panel to the *up* position.
- **OFF -** The valve turns off and remains off until the operational mode is changed. To set a valve to *OFF* mode, set its switch on the switch panel to the *center* position—that is, the switch is neither flipped *up* nor *down*.
- **ON -** The valve turns on and remains on until the operational mode is changed. To set a valve to *ON* mode, set its switch on the switch panel to the *down* position.

Figure 2-5: Status LEDs (Top of switch panel)

The switch panels also contain the following status lights that allow you to monitor the GC's condition:

- **Working -** Turns green when the GC is in analysis mode.
- **Unack. Alarm -** Turns yellow if there is an unacknowledged alarm.
- **Active Alarm -** Turns red if there is an active alarm.
- **FID/FPD -** status is detected by MON2020
  - status is indicated in MON2020
  - flame can be ignited remotely using MON2020 or manually lit

Figure 2-6: MON2020 Status Indicators



- **Figure 2-7: Status LEDs (Bottom of switch panel)**

CPU - Green light blinks continuously while the GC is running.

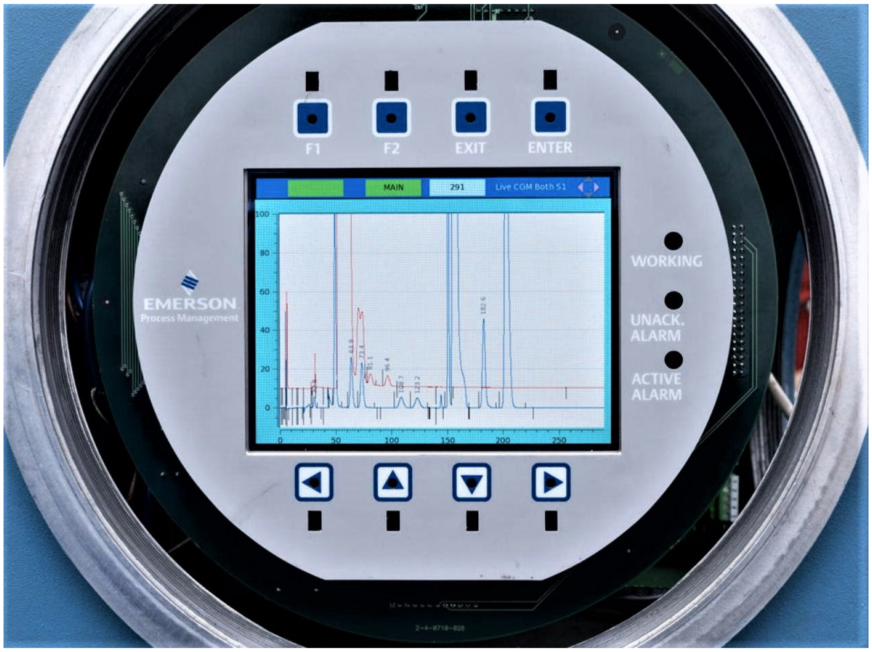
- **Valves -** Turns green if the valves are functioning automatically; turns red if the valves' automatic settings have been overridden.

Note
During GC start up, all LEDs turn on for approximately ten seconds.

Local operator interface

The optional local operator interface (LOI) gives you in-depth control over the GC's functions. It has a high resolution color display that is touch key activated and allows you to operate the GC without a laptop or a PC.

Figure 2-8: Local operator interface



The LOI includes the following features:

- Color LCD display with VGA (640 x 480 pixels) resolution
- ASCII text and graphics modes
- Adjustable auto-backlighting
- 8 infrared-activated touch screen keys that eliminate the requirement for a magnetic pen
- Complete GC status, control, and diagnostics, including full chromatogram display

See Local operator interface (LOI) for more information about operating the LOI.

2.1.2 Upper compartment

The upper compartment contains the following components:

Valves	There are two types of XA valves: 6-port and 10-port. A GC can have a maximum of six XA valves consisting of a maximum of four 10-port valves.
Column module	Either capillary or micro-packed.
Thermal conductivity detector (TCD)	The GC has a maximum of two TCDs as well as a micro flame photometric detector (µFPD), or a flame ionization detector (FID).
Two heating elements	A top hat heater and a column heater.
One temperature switch for each heating element	The switch turns off its heating element if the heating element reaches 257 °F (160 °C).
Pressure switch	The pressure switch activates when the carrier pressure falls below a predetermined set point. When activated, the switch triggers a general alarm that displays on the front panel or local operator interface (LOI) and in MON2020.
Flame ionization detector (FID)	The optional FID detects trace levels of hydrocarbons.
Micro flame photometric detector (µFPD)	The optional integral µFPD detects trace levels of sulfur compounds. For more information, refer to Micro flame photometric detector (µFPD).
Methanator	The methanator, or catalytic converter, is an optional component that converts otherwise undetectable carbon dioxide and/or carbon monoxide into methane by adding hydrogen and heat to the sample.
Liquid sample injection valve (LSIV)	The optional LSIV can vaporize a liquid sample, thereby expanding the GC's capability to measure liquids.

2.1.3 Lower compartment

The lower compartment consists of the following components:

- **Backplane**. The backplane is the GC's central printed circuit board (PCB). Its main function is as a connection point for the GC's specialized plug-in PCBs. The backplane also hosts connections for analog outputs and analog inputs, serial ports and an Ethernet port.
- **Card cage**. The card cage holds the specialized PCBs that plug into the backplane. The following PCBs are housed in the card cage:
  - Preamp board
  - CPU board
  - Base I/O board
  - Heater/Solenoid board
    The card cage also has four additional slots for the following optional PCBs:
  - A second preamp board
  - A second heater/solenoid board
  - Two optional communications boards

    ⚠ WARNING

    EXPLOSION
    The explosion-proof housing should not be opened when the unit is exposed to an explosive environment. If access to the explosion-proof housing is required, take precautions to ensure that an explosive environment is not present. Failure to do so may result in injury or death to personnel or cause damage to the equipment.

- **Optional AC/DC power supply**.

  ⚠ WARNING

  POWER
  See power supply label prior to connection. Check the unit power design to determine if it is equipped for AC or DC power. Applying 110/220 Vac to a DC power input unit severely damages the unit. Failure to check the power supply label may result in injury or death to personnel or cause damage to the equipment.

  Note
  The Rosemount 700XA CSA-certified unit is equipped with 3/4-inch NPT-thread adapters.

2.1.4 Mechanical pressure regulators

The mechanical pressure regulators and gauges are used to set and monitor the pressure of the carrier gas flow through the GC's columns, as well as the pressure of the FID/FPD air and fuel (H_2), if installed.

The regulators and gauges are typically located on front of the analyzer below the electronics enclosure.

Figure 2-9: Regulators and Gauges

2.2 Specifications

Table 2-1: Utility Specifications

Type	Specification
Dimensions (without sampling system)	H x W x D: 50 x 40 x 24 in. (127 x 102 x 61 cm)
Weight (without sampling system)	Approximately 150 lb. (68 kg)
Mounting	• Wall mount (standard) • Free-standing (optional)
Power	• 115 Vac ±10 % • 220 Vac ±10 % • 50/60 Hz 400 watts running • 250 watts start-up
Valve actuation	• Sample gas: 90 psig (620.5 kPa) maximum • Carrier gas: 90 psig (620.5 kPa) maximum • Actuation gas: 110 psig (758.4 kPa) maximum
Environment	Thermal conductivity detector (TCD): -4 to 140 °F (-20 to 60 °C) Flame ionization detector (FID): 32 to 140 °F (0 to 60 °C) Flame photometric detector (FPD): 32 to 122 °F (0 to 50 °C)
Hazardous area certifications (hardware dependent) C US CE 2813 Ex II 2G IECEx	**USA and Canada** • Class I, Zone 1, Ex/AEx db IIC, Gb T6/T4/T3 • Class I, Division 1, Groups B, C, and D, IP66 **EU ATEX and IECEx** • Ex db IIC Gb T6/T4/T3 • Ta = -20 °C to 60 °C • SIRA 08ATEX 1328X • IECEx SIR 08.0093X Consult factory for additional product certifications available.

Table 2-2: Approval Temperature Ratings

T6	Basic system; no alternative options included
T4	Liquid sample injection valve (LSIV) option included
T4	Heat trace option with a maximum 176 ° F (80 ºC) temperature switch setpoint
T3	Heat trace option with a maximum 230 °F (110 ºC) temperature switch setpoint

2.2.1 Analyzer specifications

Type	Specification
Dimensions	• Basic unit envelope Width: 15.2 in. (387 mm) Height: 41.5 in. (1054 mm) Depth: 19.2 in. (488 mm) • Wall mount Width: 18.2 in. (463 mm) Height: 41.5 in.(1054 mm) Depth: 19.2 in. (488 mm) • Pole mount Width: 18.2 in. (463 mm) Height: 41.5 in. (1054 mm) Depth: 25.0 in.(635 mm) • Floor mount Width: 18.2 in. (463 mm) Height: 58.0 in. (1470 mm) Depth: 19.2 in. (488 mm) **Note** Allow 14 in. (360 mm) additional clearance for removal of dome.
Weight	• Wall mount : 110 lb. (59 kg) • Pole mount: 135 lb. (61 kg) • Floor mount: 180 lb. (82 kg)
Tubing	• 316 stainless steel • 316 stainless steel and Kapton® in contact with sample • Sulfinert® steel (optional)
Mounting	• Floor mount • Pole mount: — 2 in. (60.3 mm) — 3 in. (89.0 mm) — 4 in. (114.3 mm) • Direct wall mount
Power	• Standard: 24 Vdc (21-30 Vdc operating voltage range); maximum 150 watts • Optional: 100-120/240 Vac; 50-60 Hz **Note** Voltage range includes line voltage variations.

2.2.2 Electronics hardware

Type	Specifications
Communications (standard)	• Analog inputs: — Two standard 4-20 mA inputs filtered with transient protection • Analog outputs: — Six isolated outputs, 4–20 mA • Serial communication ports: — Three termination blocks — Configurable as RS-232, RS-422, or RS-485 — One D-sub (9-pin) port for PC connection • Digital inputs: — Five inputs, user assignable — Optically isolated, rated to 30 Vdc at 0.5 A • Digital outputs: — Five outputs, user assignable — Form C and electro-mechanically isolated, 24 Vdc
Communications (options)	Four expansion slots available for additional communications. Each slot has the capacity to add one of the following: • Four analog inputs (isolated) card • Four analog outputs (isolated) card • Eight digital inputs (isolated) card • Five digital outputs (isolated) card • One RS-232, RS-422, or RS-485 serial connection card (up to two maximum)
Ethernet	Two available connections • one RJ45 port • one four-wire termination – with 10/100 Mbps

2.2.3 Airless analytical oven

Type	Specification
Valves	6-port and 10-port XA valves; piston-operated diaphragms with pneumatic actuation
Columns	Maximum of 90 ft. (27.4 m) of micro-packed columns; 1/16-inch (1.6 mm) outside diameter or 300 ft (91.4 m) of capillary columns
Solenoid actuation	• 24 Vdc • Max 100 psig (6.9 bar)
Temperature control	• 24 Vdc • 2 heaters • 2 optional heaters • Maximum oven operating temperature of 302 °F (150 °C)

2.2.4 Software

Type	Specification
Software	Windows™-based MON2020™
Firmware	Embedded firmware
Methods	8 timed event tables and 8 component data tables
Analysis clocks	Multiple analysis clock configurations
Peak Integration	• Fixed time or auto slope and peak identification • Update retention time upon calibration or during analysis
Cyber security	Encrypted SSL communication between gas chromatograph (GC) and MON2020

2.2.5 Corrosion protection

Type	Specification
Enclosure material	Copper-free and aluminum-coated with industrial grade powder coat suitable for high humidity and salt-laden environments
Process wetted materials	Stainless steel; if the function of an item excludes the use of stainless steel, such as the glass rotameter tubes, materials that are resistant to corrosion are used
Electronics	All electronic circuit boards are tropicalized with a clear conformal coating

2.2.6 Archived data storage capabilities

Type	Maximum number of records
Analysis results	86,464 (240 days with 4-minute cycle time)
Final calibration results	370
Calibration results	100 (per row in *Analysis Configuration* table)
Final validation results	370 (per row in *Analysis Configuration* table)
Validation results	100 (per row in *Analysis Configuration* table)
Analysis chromatograms	1,703
Final calibration chromatograms	370 (per row in *Analysis Configuration* table)(1)
Final validation chromatograms	370 (per row in *Analysis Configuration* table)(1)
Protected chromatograms	100
Hourly averages (up to 256 variables(2))	2,400
Daily averages (up to 256 variables) (2)	365
Weekly averages (up to 256 variables)(2)	58
Monthly averages (up to 256 variables)(2)	12
Variable averages (up to 256 variables)(2)	2,360
Every run (up to 256 variables)	2,360
Alarm logs	1,000
Event logs	1,000

(1) *The gas chromatograph (GC) can store final calibration or final validation chromatograms for up to one year, provided that no more than one calibration or validation is run per day, and the cycle time is less than 15 minutes. If the cycle time exceeds 15 minutes, the oldest final calibration or validation chromatograms will be deleted to make room for newer ones.*

(2) *A total of 256 averages, including hourly, daily, weekly, monthly, variable, and every run averages are archived.*

2.2.7 Certifications and approvals

The Rosemount 700XA has the following certifications and approvals.

Refer to the Rosemount 700XA product pagefor product certificates and approvals. Follow all safety markings on the analyzer.

Type	Specifications
Environment	Operating temperature • Thermal conductivity detector (TCD): 0 to 130 °F (-18 to 55 °C) • Flame ionization detector (FID): 32 to 140 °F (0 to 60 °C) • Micro flame photometric detector (μFPD): 32 to 122 °F (0 to 50 °C) • Hazardous area certified: -4 to 140 °F (-20 to 60 °C) • 0 to 95% relative humidity (non-condensing) • Indoor/outdoor • Pollution - degree 2 (The GC can withstand some non conductive environmental pollutants, e.g., humidity.) • Vibration: Conforms to ASTM D4169
Hazardous area certifications (hardware dependent)	CE 2813 Ex II 2G CSA c us IECEx USA and Canada • Class I, Zone 1, Ex/AEx db IIC, Gb T6/T4/T3 • Class I, Division 1, Groups B, C, and D, IP66 EU ATEX and IECEx • Ex db IIC Gb T6/T4/T3 • Ta = -20 °C to 60 °C • SIRA 08ATEX 1328X • IECEx SIR 08.0093X Consult factory for additional product certifications available.

<table>
<tr><th>Type</th><th>Specifications</th></tr>
<tr><td>Safety precautions</td><td>
⚠ WARNING
EXPLOSION HAZARD
Do not open when energized or explosive atmosphere is present.
Keep cover tightly closed while circuits are energized.
Use cables or wires suitable for the marked "T" ratings.
Clean cover joints before replacing the cover.
Ensure that conduit runs have sealing fitting adjacent to enclosure.
NOTICE
The Rosemount 700XA is CSA-certified and ATEX-certified. See the certification tag on the GC for specific details about its agency approvals.
NOTICE
When the vapor regulators and flow switches are fitted, they must be suitably certified with the ratings Ex d IIC Gb T6/T4/
T3 and for a minimum ambient temperature range Ta = -20 °C to +60 °C (-4 °F to 140 °F)-.
</td></tr>
</table>

Table 2-3: Approval Temperature Ratings

T6	Basic system no alternative options included
T4	Liquid sample injection valve (LSIV) option included
T4	Heat trace option with a maximum 176 °F (80 °C) temperature switch setpoint
T3	Heat trace option with a maximum 230 °F (110 °C) temperature switch setpoint

3 Getting started

Emerson started and inspected your gas chromatograph (GC) before it left the factory. Emerson also installed program parameters and documented them in the GC Config Report furnished with your GC.

3.1 Select site

The site you select for the gas chromatograph (GC) is important for measurement accuracy.

Procedure

Install the GC as close as possible to the sample system, but allow for adequate access space for maintenance tasks and adjustments.

⚠ WARNING

HAZARDOUS AREA EXPLOSION HAZARD

Failure to follow this warning may result in injury or death to personnel.

Do not use a personal computer (PC) or printer in a hazardous area.

Emerson provides serial and Ethernet communication links to connect the analyzer to the PC and to connect to other computers and printers in a safe area.

Allow a minimum of 3 ft. (0.9 m) in front of the GC for operator access. Ensure that exposure to radio frequency interference (RFI) is minimal.

3.2 Unpack the gas chromatograph (GC)

Unpack and inspect the Rosemount 700XA gas chromatograph upon receipt.

⚠ WARNING

LIFTING HAZARD

The Rosemount 700XA is heavy equipment. Failure to observe this warning may cause serious injury to personnel.

Use two people to move the GC.

Observe all proper lifting methods as defined by your site operating procedures.

Procedure

1. Unpack the equipment.
   a) Remove the Rosemount 700XA from the shipping crate.
   b) Remove the USB memory stick containing the software, applications, Quick Start Guide, and manuals.

Note
The MON2020 version number is located on the back of the USB card.

2. Retain the shipping information.
3. Inspect all parts and assemblies for possible shipping damage.
4. If any parts or assemblies appear to have been damaged in shipment, first file a claim with the carrier.
5. Next, complete a full report describing the nature and extent of the damage and forward this report immediately to your Emerson Customer Care representative.
6. Include the GC's model number in the report.

   Emerson will provide disposition instructions as soon as possible.

   If you have any questions regarding the claim process, contact your Emerson Customer Care representative for assistance.

   Only proceed to install and start up the GC if all required materials are on hand and free from obvious defects.

7. If your GC is configured with an flame ionization detector (FID) or micro flame photometric detector (μFPD), remove the vent plug from the FID/μFPD outlet.

   ⚠ CAUTION

   The vent plug has a tag attached to it that reads REMOVE VENT PLUGS PRIOR TO OPERATION.

   Failure to remove the cap could result in a performance failure or damage to the detector.

3.3 Required tools and components

You will need the following tools and components to install the 700XA

- Zero grade carrier gas:
  - 99.995% pure
  - Less than 5 ppm water
  - Less than 0.5 ppm hydrocarbons
- High pressure dual-stage regulator for the carrier gas cylinder
  - High side up to 3000 psig (20684.3 kPa)
  - Gauge (psig)
  - Low side capable of controlling pressure up to 150 psig (1034.2 kPa)
- Calibration standard gas with correct number of components and concentrations
- Dual-stage regulator for the calibration gas cylinder with a low pressure side capable of controlling pressure up to 30 psig (206.9 kPa)
- Sample probe regulator (fixture for procuring the stream or sample gas for chromatographic analysis)
- Coalescing filter
- Membrane filter
- ⅛-in. stainless steel tubing
  - For connecting calibration gas to the GC
  - For connecting carrier gas to the GC
  - For connecting stream gas to the GC
  - Sulfinert tubing required if sulfur components are present in calibration gas
- Heat tracing, as required for sample transport and calibration lines
- Miscellaneous tube fittings, tubing benders, and tubing cutter
- 14 American wire gauage (AWG) (18 metric wire gauge [MWG]) or larger electrical wiring and conduit to provide 120 or 240 Vac, single phase, 50 to 60 Hz, from an appropriate circuit breaker and power disconnect switch. See guidelines in Gas chromatograph wiring.
- Digital volt-ohm meter with probe-type leads
- Flow measuring device
- Open-end wrenches sized ¼-in., 5/16-in., 7/16-in., ½-in., 9/16-in., and ⅝-in.
- Torque wrench

3.4 Supporting tools and components

⚠ WARNING

Failure to follow this warning may result in injury or death to personnel or cause damage to the equipment.

Do not use a personal computer (PC) or printer in a hazardous area.
Emerson provides serial port and Modbus® communciation links to connect the gas chromatograph (GC) to the PC and to connect to other computers and printers in a safe area.

- Use a Windows®-based PC and either a direct or remote communications connection to interface with the GC. See the MON2020 Software for Gas Chromatographs Reference Manual for more information on specific PC requirements.
- The GC comes with an Ethernet port on the back plane factory-wired with an RJ-45 connector. Refer to Connect directly to a personal computer (PC) using the gas chromatograph's (GC's) Ethernet1 port for more information.

4 Installation and start-up

Note
Because the Rosemount 700XA is available in different configurations, it is possible that not all of the instructions in this section apply to your particular gas chromatograph (GC). In most cases, however, to install and set up a Rosemount 700XA, Emerson recommends that you follow the instructions in the same order as they are presented in this manual.

4.1 Installation considerations

Before installing the gas chromatograph (GC):

1. **⚠ WARNING**

   The GC is heavy and has a high potential of injuring personnel or damaging equipment.

   Anchor the GC solidly before making electrical connections. Several options for mounting the GC are covered in Mounting arrangements.

2. Ensure that the connections to the enclosure meet local standards.
3. Use approved seals: either cable glands or conduit seals.
   a. Install conduit seals within 3 in. (76.2 mm) of the enclosure.
   b. Seal unused openings with approved blanks (plugs). Threads for these openings are M32 x 1.5.
4. Remove any packing materials before powering up the GC.
5. **⚠ WARNING**

   Do not power up an open GC unless the surrounding area is certified non-hazardous.

6. **⚠ WARNING**

   HAZARDOUS AREA EXPLOSION HAZARD

   Failure to follow this warning may result in injury or death to personnel.

   Do not use a personal computer (PC) or printer in a hazardous area.
   Emerson provides serial and Ethernet communication links to connect the analyzer to the PC and to connect to other computers and printers in a safe area.

4.2 Mounting arrangements

The Rosemount 700XA can be installed in one of the following mounting arrangements:

- Wall mount
- Pole mount
- Floor mount

⚠ WARNING

HEAVY EQUIPMENT

Due to the size, weight, and shape of the gas chromatograph (GC), at least two people are required to safely mount it.

Ensure that you understand the installation procedur before handling the GC and collect the appropriate tools beforehand.

When putting the GC into its final position, be careful to avoid damaging any of the external components or their attachments.

4.2.1 Wall mount

The simplest mounting arrangement is the wall mount.

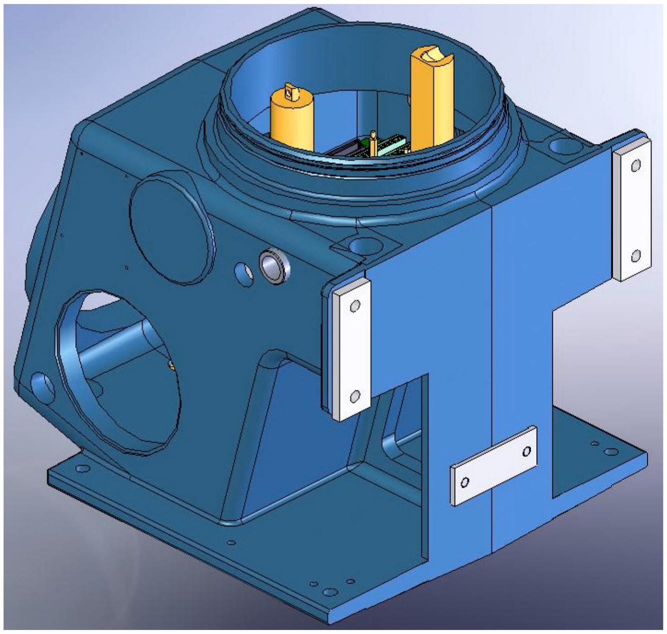
If you specify *Wall Mount* on the sales order, Emerson will ship the gas chromatograph (GC) with a wall mount installation kit. Four locations on the mounting ears are available for support.

⚠ WARNING

HEAVY EQUIPMENT

Until all bolts are tight, ensure that the GC is supported to prevent unforeseen accidents.

Figure 4-1: Wall Mount



Prerequisites

Pre-install a pair of 7/16-in. (10 mm) diameter bolts with washers on the wall before installing the final pair of bolts.

The first pair of bolts should be approximately 41.625 in. (1055 mm) off the ground, and 13.625 in. (346 mm) apart. Each bolt should have ⅝ in. (16 mm) of bare length projecting. Drill a second pair of holes 3.56 in. (90.5 mm) above the first.

Procedure

1. Maneuver the GC so that the notches in the mounting ears can be placed over the bolts on the wall and then place the washers over the bolts.
2. Install the second pair of bolts with washers and then tighten all the bolts.

4.2.2 Pole mount

Prerequisites

The pole mount arrangement uses an additional plate and spacers to allow the necessary clearance for nuts.

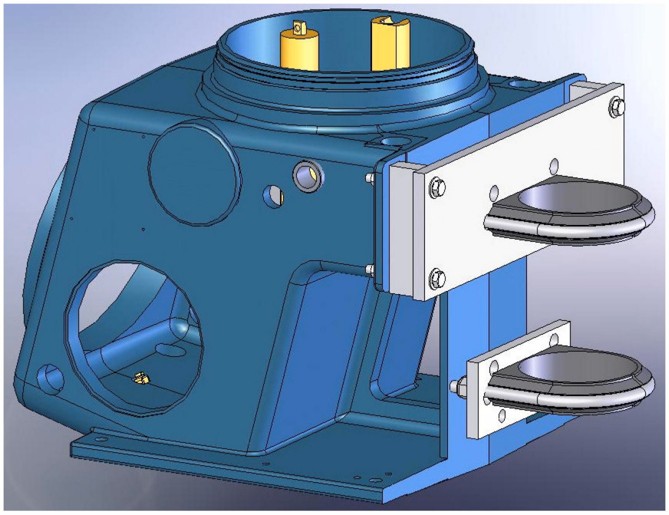
If you specify *Pole Mount* on the sales order, Emerson will provide the necessary hardware.

⚠ WARNING

HEAVY EQUIPMENT

Until all bolts are tight, ensure that the gas chromatograph (GC) is supported to prevent unforeseen accidents.

Figure 4-2: Pole Mount



Procedure

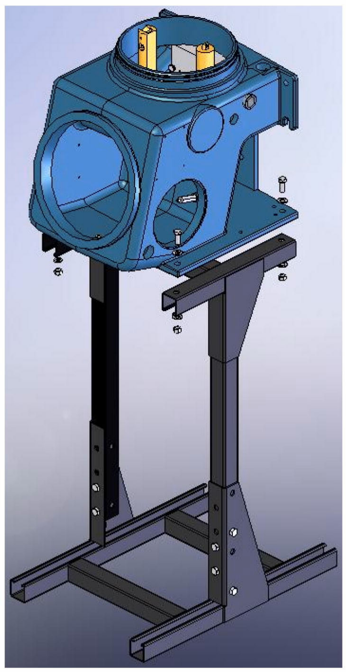
1. Use the U-bolt to firmly install the large plate on the pole about 44 in. (1120 mm) above the ground.
2. Install the long bolts and spacers.
3. Place nuts and washers on the lower bolts.
4. Install the small plate just tightly enough to hold its position, with the small plate's U-bolt about 6.875 in. (174.625 mm) below the large plate's U-bolt.
5. Hold the matching spacer in place with the bolts installed loosely.
6. Orient the GC so that the notches in the mounting ears can be placed over the lower bolts on the plate and then add the washers and nuts.
7. Place the nuts with washers on the upper bolts and then tighten all bolts.
8. Adjust the lower bracket to align the bolts with the plate. Tighten the bolts.

4.2.3 Floor mount

If you specify *Floor Mount* in the sales order, Emerson sends the arrangement pre-assembled with the gas chromatograph (GC).

The arrangement includes an additional support stand that is intended to be anchored to a floor or an instrument pad. The base rails have holes that are 13.625 in. (346 mm) apart, side to side, and 16.75 in. (425.5 mm) apart front to back. The holes are ½ in. (12.7 mm) in diameter and will accept up to 7/16-in. (10 mm) bolts.

Figure 4-3: Floor Mount



4.3 Gas chromatograph wiring

4.3.1 Wiring precautions

- All wiring, as well as circuit breaker or power disconnect switch locations, must conform to the CEC or NEC; all local, state, or other jurisdictions; and company standards and practices.
- Provide single-phase, three-wire power at 115 or 220 Vac, 50-60 Hz.

NOTICE

If you do not have a single phase, three-wire AC power source, you must purchase an isolation transformer.

- Locate a power shut-off or disconnect switch in a safe area.
- Provide the gas chromatograph (GC) and any optionally installed devices with one 20-amp circuit breaker for protection.

⚠ CAUTION

POWER

15 amps is the maximum current for 14 American Wire Gauge (AWG).

- Use multi-stranded copper conductor wire according to the following recommendations:
  - For power feed distances up to 250 ft. (76 m), use 14 AWG (18 Metric Wire Gauge), stranded.
  - For power feed distances 250 to 500 ft. (76 to 152 m), use 12 AWG (25 Metric Wire Gauge), stranded.
  - For power feed distances 500 to 1000 ft. (152 to 305 m), use 10 AWG (30 Metric Wire Gauge), stranded.

4.3.2 Signal wiring

Follow these general precautions for field wiring digital and analog input/output (I/O) lines:

- Metal conduit or cable (according to local code) used for process signal wiring must be grounded at conduit support points, because intermittent grounding helps prevent the induction of magnetic loops between the conduit and cable shielding.
- All process signal wiring should be of a single, continuous length between field devices and the gas chromatograph (GC). If, however, the length of the conduit runs require that multiple wiring pulls be made, the individual conductors must be interconnected with suitable terminal blocks.
- Use suitable lubrication for wire pulls in conduit to prevent wire stress.
- Use separate conduits for AC voltage and DC voltage circuits.

- Do not place digital or analog I/O lines in the same conduit as AC power circuits.
- Use only shielded cable for digital I/O line connections.
  - Ground the shield at only one end.
  - Shield-drain wires must not be more than two American Wire Gauge (AWG) sizes smaller than the conductors for the cable.
- When inductive loads (relay coils) are driven by digital output lines, the inductive transients must be diode-clamped directly at the coil.
- Any auxiliary equipment wired to the GC must have its signal common isolated from earth/chassis ground.

⚠ CAUTION

SIGNAL INTERFERENCE

If you don't follow this precaution, the data and control signals to and from the GC could be adversely affected.

Do not place any loop of extra cable left for service purposes inside the GC purged housing near the conduit entry for AC power.

4.3.3 Grounding precautions

Follow these general precautions for grounding electrical and signal lines:

- For shielded signal conducting cables, shield-drain wires must not be more than two American Wire Gauge (AWG) sizes smaller than the conductors for the cable. Shielding is grounded at only one end.
- Metal conduit used for process signal wiring must be grounded at conduit support points (intermittent grounding of conduit helps prevent induction of magnetic loops between the conduit and cable shielding).
- A single-point ground must be connected to a copper-clad, 10-ft. long, ¾-in. diameter (3 m long, 19.1 mm diameter) steel rod, which is buried, full-length, vertically into the soil as close to the equipment as is practical.

Note
The grounding rod is not furnished.

- Resistance between the copper-clad steel ground rod and the earth ground must not exceed 25 Ohms.
- On ATEX-certified units, the external ground lug must be connected to the customer's protective ground system via 9 AWG (6 mm^2) ground wire. After the connection is made, apply a non-acidic grease to the surface of the external ground lug to prevent corrosion.
- The equipment-grounding conductors used between the gas chromatograph (GC) and the copper-clad steel ground rod must be sized according to your local regulations.

4.3.4 Electrical conduit installation precautions

- Conduit cutoffs must be cut at a 90-degree angle. Cutoffs must be made by a cold cutting tool, hacksaw, or by some other approved means that does not deform the conduit ends or leave sharp edges.
- All conduit fitting-threads, including factory-cut threads, must be coated with a metal-bearing conducting grease prior to assembly.
- Temporarily cap the ends of all conduit runs immediately after installation to prevent accumulation of water, dirt, or other contaminants. If necessary, swab out conduits prior to installing the conductors.
- Install drain fittings at the lowest point in the conduit run; install seals at the point of entry to the gas chromatograph (GC) to prevent vapor passage and accumulation of moisture.
- Use liquid-tight conduit fittings for conduits exposed to moisture.

When a conduit is installed in hazardous areas, follow these general precautions for conduit installation:

- All conduit runs must have a fitting, which contains explosion-proof sealing (potting) located within 3 in. (76.2 mm) from the conduit entrance to the explosion-proof housing. The seal should have a minimum IP rating of IP54 or equivalent NEMA®/Type rating on the conduit sealing devices.
- The conduit installation must be vapor tight, with threaded hub fittings, sealed conduit joints and gaskets on covers, or other approved vapor-tight conduit fittings.

⚠ WARNING

Failure to observe precautionary signs may result in serious injury or death to personnel.

Observe all precautionary signs posted on the certified explosion-proof equipment. Consult your company's polices and procedures and other applicable documents to determine wiring and installation practices that are appropriate for hazardous areas.

4.3.5 Sample system requirements

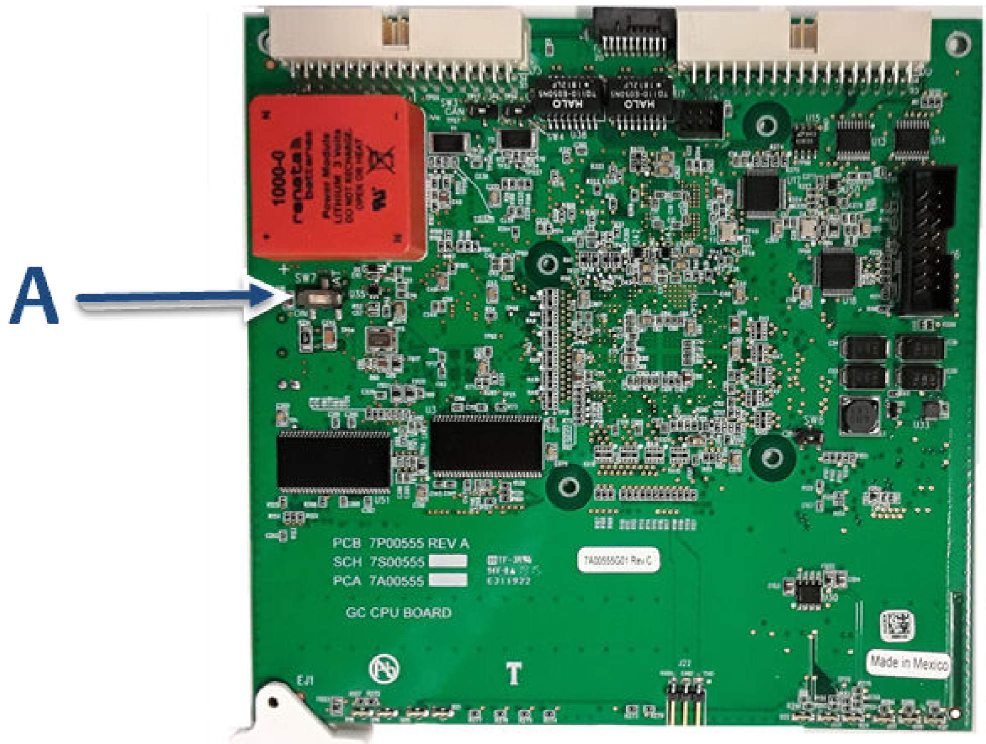
Line length	If possible, avoid long sample lines. In long s, flow sample lines, velocity can be increased by decreasing downstream pressure and using by-pass flow via a fast loop. **⚠ CAUTION** Stream switching requires a sample pressure of 20 psig (137.9 kPa).
Sample line tubing material	• Use sulfur-inert tubing for H_2S streams; for all other applications, use stainless steel tubing. • Ensure tubing is clean and free of grease.
Dryers and filters	Use small sizes to minimize time lag and prevent back diffusion. • Install a minimum of one filter to remove solid particles. Most applications require fine-element filters upstream of the gas chromatograph (GC). The GC includes a 2-micron filter. • Use ceramic or porous metallic type filters. Do not use cork or felt filters. **NOTICE** Install the probe/regulator first, immediately followed by the coalescing filter and then the membrane filter. See Carrier gas installation and maintenance for a recommended natural gas installation.
Pressure regulators and flow controllers	• Use stainless steel wetted materials. • Parts should be rated for sample pressure and temperature.
Pipe threads and dressings	Use PTFE tape. Do not use pipe thread compounds or pipe dope.
Valving	• Install a block valve downstream of sample takeoff point for maintenance and shutdown. • The block valve should be a needle valve or cock valve type, of proper material and packing, and rated for process line pressure.

4.4 Electrical installation

NOTICE

Emerson switches off central processing unit (CPU) boards before shipping to preserve their batteries. Before installing the CPU board, be sure to switch it on..

Figure 4-4: CPU Board



A. *SW7 battery power* ***ON***

4.4.1 Connect power supply

⚠ WARNING

ELECTRICAL HAZARD

Failure to follow this warning may result in injury or death to personnel or cause damage to equipment.

Ensure that the 24 Vdc input power source is switched Off before connecting the wires.
Ensure that the 24 Vdc power supply is safety extra low voltage (SELV) compliant by suitable electrical separation from other circuits.

⚠ CAUTION

EQUIPMENT DAMAGE

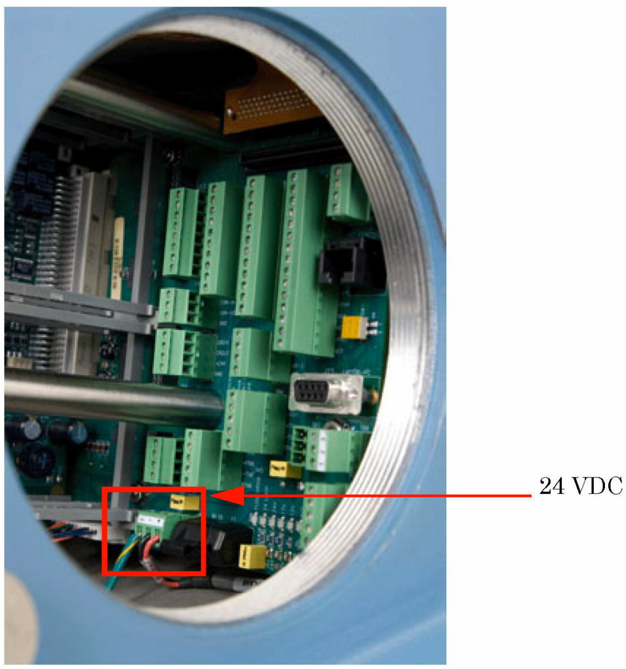
Failure to observe this precaution may damage equipment.

Check the GC prior to wiring to determine if it is equipped for DC power.

Procedure

1. Locate the plug-together termination block inside the electronics enclosure.

Figure 4-5: 24 Vdc power connection on the back plane



2. Bring the two leads in through one of the two possible entries on the lower compartment. Connect to the termination plug provided with the GC.

Figure 4-6: Wiring Entries on the Under Side of the Lower Enclosure

Attribute	Wire Color
+ (positive)	red
– (negative)	black

Note
Do not disconnect the factory-installed ground wire.

The backplane board that connects to the 24 Vdc is protected from lead reversal by the use of blocking diodes.

If the red (+) and black (-) leads are inadvertently reversed, no damage will occur; however, the system will not have power.

3. Connect the DC power leads to the power disconnect switch that should be properly fused.

   The recommended fuse size is 8 amps.

4.4.2 Connect optional AC/DC power converter

⚠ WARNING

Failure to follow this warning may result in injury or death to personnel or cause damage to equipment.

Check the gas chromatograph (GC) prior to wiring to determine if it is equipped for optional AC power.

Procedure

1. Locate the plug-together termination block inside the electronics enclosure, atop the power supply and adjacent to the card cage.

Figure 4-7: AC/DC Termination Block

⚠ WARNING

Failure to follow this warning may result in injury or death to personnel or cause damage to equipment.

Do not connect the AC power leads without first ensuring that the AC power source is switched **Off**.

⚠ CAUTION

Failure to observe this precaution may cause damage to equipment.

Do not apply electrical power to the GC until all interconnections and external signal connections have been verified and proper grounds have been made.

AC wiring is usually color coded as:

Label	Wire color
Hot (H)	Brown or black
Neutral (N)	Blue or white

Label	Wire color
Ground (G)	Green with yellow tracer or green

2. Bring the power leads in through the left entry on the bottom of the enclosure.
3. If necessary at remote locations, connect the GC chassis ground wire to an external copper ground rod.

   See Grounding precautions regarding electrical and signal grounding.

4.4.3 Connect gas lines

Procedure

1. Remove the plug from the 1/16 in. sample vent tubing marked **SV1** that is located on the flow panel assembly.
   - If desired, connect the sample vent lines to an external, ambient pressure vent. If the vent line is terminated in an area exposed to wind, protect the exposed vent with a metal shield.
   - Use ¼-in. or ⅜-in. tubing for vent lines longer than 10 ft. (3 m).

   At this stage in the installation, the measure vent (**MV**) lines (labeled on the side of the gas chromatograph [GC]) should remain plugged until the GC has been checked for leaks. For regular operation, however, the **MV** lines must be unplugged.

   Note
   Do not discard the vent line plugs. They are useful when leak-checking the GC and its sample or gas line connections.

2. Connect the carrier gas to the GC. The carrier gas inlet is labeled **Carrier In** and is a ¼-in. T-fitting.

   ⚠ WARNING

   EXPLOSION HAZARD

   Failure to follow this warning may result in injury or death to personnel.

   Do not turn on sample gas until you have completely checked the carrier lines for leaks.

   - Use stainless steel tubing to convey carrier gas.
   - Use a dual-stage regulator with high-side capacity of 3,000 psig (20,684.3 kPa) and low-side capacity of 150 psig (1,034.2 kPa).
   - Carrier gas is fed from two bottles (see Carrier gas installation and maintenance) for carrier gas plumbing.

3. Connect calibration standard gas to the GC.

   When installing the calibration standard gas line, ensure that the correct tubing connection is made.

- Use ⅛-in. stainless steel tubing to connect calibration standard gas unless the application requires treated tubing.
- Use a dual-stage regulator with low-side capacity of up to 30 psig (206.8 kPa).

4. Connect sample gas stream(s) to the GC.
   - Use ⅛-in. stainless steel tubing, as appropriate, to connect sample gas.
   - Unless stated otherwise in the product documentation, ensure that the pressure of the calibration and sample line is regulated at 15 psig to 20 psig (103.4 to 137.9 kPa).

Postrequisites

After all lines have been installed, proceed with leak-checking the carrier and sample lines. See Leak checking and purging for first calibration.

4.4.4 Maximum effective distance by communication protocol type

The table below lists the maximum distance at which the indicated protocol can transmit data without losing effectiveness. If longer runs are required, the use of a repeater or other type of extender will be necessary to maintain the protocol's efficiency.

Communication protocol	Maximum distance
RS-232	50 ft. (15.24 m)
RS-422/RS-485	4,000 ft. (1,219.2 m)
Ethernet (CAT5)	300 ft. (91.44 m)

4.4.5 RS-485 serial port terminating resistors

To ensure correct communication with all hosts, place a 120-ohm terminating resistor across the GC serial port terminals on the RS-485 link. On a multi-dropped link, install the terminating resistor on the last controller link only.

4.4.6 Connect directly to a personal computer (PC) using the gas chromatograph's (GC’s) Ethernet1 port

Procedure

1. Plug one end of the Ethernet cable into the PC’s Ethernet port and the other end into the GC’s RJ45 socket on on the backplane.
2. Locate switch at **SW1** on the backplane. Place SW1 in the **On** position.

Note
The GC can be connected (or remain connected) to the local network on Ethernet2 on the backplane while the DHCP feature on Ethernet1 is being used.

This starts the GC's DHCP server feature. The server typically takes approximately 20 seconds to initialize and start up.

3. Wait for 20 seconds and then do the following to ensure that the server has provided an IP address to the PC:
   a) From the PC, go to **Start** → **Control Panel** → **Network Connections...**.
      The *Network Connections* window lists all dial-up and local area network (LAN)/high-speed Internet connections installed on the PC.
   b) In the list of LAN / high speed Internet connections, find the icon that corresponds to the PC-to-GC connection and check the status that displays beneath the Local Area Connection.
      It should show the status as **Connected**. The PC is now capable of connecting to the GC. See Connect to the gas chromatograph (GC) using MON2020.

      If the status is **Disconnected**, it may be that the PC is not configured to accept IP addresses; therefore, do the following:

4. Right-click the **Properties** icon.
   The *Local Area Connection Properties* window displays.
5. Scroll to the bottom of the *Connection* list box and select **Internet Protocol (TCP/IP)**.
6. To configure the PC to accept IP addresses issued from the GC, select the **Obtain an IP address automatically** and **Obtain DNS server address automatically** check boxes.
7. Click **OK** to save the changes and to close the *Internet Protocol (TCP/IP) Properties* window.
8. Click **OK** to close the *Local Area Connection Properties* window.
9. Return to the *Network Connections* window and confirm that the appropriate icon's status reads **Connected**.

   If the icon still reads **Disconnected** refer to Troubleshoot DHCP connectivity issues.

NOTICE

If you power cycle the GC, then you will lose connectivity. After the GC initializes completely, refer to Troubleshoot DHCP connectivity issues to learn how to repair the connection.

4.4.7 Connect to the gas chromatograph (GC) using MON2020

To connect to the GC using the RJ45 Ethernet1 connection, do the following:

Procedure

1. Start MON2020.
   The *Connect to GC* window displays.
2. Locate the default **Direct-DHCP** under the **GC Name** column.

This GC directory is created automatically when MON2020 is installed. You can rename the GC, but do not change the IP address that it references, *192.168.135.100*.

3. Click the associated **Ethernet** button.
   MON2020 prompts you to enter a user name and password.
4. Enter your user name and password.
5. MON2020 connects you to the GC.

4.4.8 Troubleshoot DHCP connectivity issues

Use the following tips to troubleshoot server connectivity issues:

Procedure

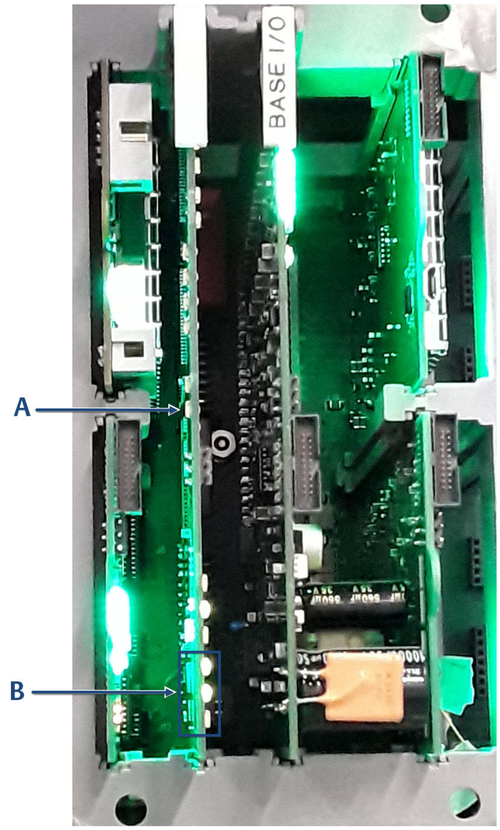
1. Ensure that the gas chromatograph (GC) is up and running.
2. Check that the **SW1** switch is in the **On** position.
3. Check the following connections:
   a) If you are using a Ethernet straight-through cable, ensure that the personal computer (PC) has an Ethernet network interface card with auto-MDIX.

   b) If your Ethernet network interface card does not support auto-MDIX, ensure that you are using an Ethernet crossover patch cable.

   c) Check to see if the GC's central processing unit (CPU) board link lights are on.

   see Figure 4-8. The three Ethernet1 light-emitting diodes (LEDs) are located on the front bottom edge of the card. If link lights are off, then check your connections. (see Figure 4-8).

Figure 4-8: CPU Board Link Lights



A. CPU board
B. Ethernet link lights

4. Do the following to ensure that your network adapter is enabled:
   a) Go to **Start** → **Control Panel** → **Network Connections...**.
   b) Check the status of the *Local Area Connection* icon. If the status appears as **Disabled**, right-click the icon and select **Enable** from the context menu.
5. Do the following to try to repair the network connection:
   a) **Go to Start** → **Control Panel** → **Network Connections...**.
   b) Right-click the **Local Area Connection** icon and select **Repair** from the context menu.

4.4.9 Connect directly to a personal computer (PC) using the gas chromatograph's (GC's) serial port

The GC's serial port at J23 on the backplane allows a PC with the same type of port to connect directly to the GC. This is a useful feature for a GC that is located in an area without Internet access; all that is needed is a PC running Microsoft Windows®, a notebook computer, and a straight-through serial cable.

To set up the PC for the direct connection, do the following:

Procedure

1. Install the communications cable between two computers:
   a) Navigate to **Start** → **Control Panel** and select the **Phones and Modem Options** icon.
      The *Phones and Modem Options* dialog window displays.
   b) Select the *Modem* tab and click **Add...**.
      The *Add Hardware Wizard* displays.
   c) Select the **Don't detect my modem; I will select it from a list** check box and then click **Next**.
   d) Click **Have Disk**.
      The *Install from Disk* dialog window appears.
   e) Click **Browse**
      The *Browse* dialog window displays.
   f) Navigate to the MON2020 install directory (typically *C:\Program Files (x86)\Emerson Process Management\MON2020*) and select **Daniel Direct Connection.inf**.
   g) Click **Open**.
      You return to the *Install from Disk* dialog window.
   h) Click **OK**.
      You return to the *Add Hardware Wizard*.
   i) Click **Next**.
   j) Select an available serial port and click **Next**.
      The *Hardware Installation* dialog window displays.
   k) Click **Continue Anyway**.
      After the driver is installed, you return to the *Add Hardware Wizard*.
   l) Click **Finish**.
      You return to the *Phones and Modems* dialog window. The **Daniel Direct Connect** modem should be listed in the *Modem* column.
2. Start MON2020 and do the following to create a GC connection for the Daniel Direct Connection modem:
   a) Select **GC Directory** from the *File* menu.
      The *GC Directory* window displays.

b) Select **Add** from the *GC Directory* window's *File* menu.
A New GC row is added to the bottom of the table.

c) Select the **New GC** text and type a new name for the GC connection.

d) Select the new GC's **Direct** check box.

e) Click the **Direct** button located at the bottom of the *GC Directory* window.
The *Direct Connection Properties* window displays.

f) Select **Communications cable between two computers** (COM *n*) from the *Port* dropdown menu.

Note
The letter *n* stands for the COM port number.

g) Select **57600** from the *Baud Rate* dropdown menu.

h) Click **OK** to save the settings.
You return to the *GC Directory* window.

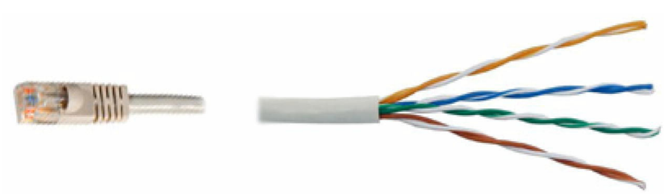
i) Click **OK** to save the new GC connection and to close the *GC Directory* window.

3. Connect one end of the direct connect cable to the GC's serial port at J23 on the backplane.
4. Connect the other end of the direct connect cable to the PC's corresponding serial port.
5. Select **Connect...** from the *Chromatograph* menu.
   The *Connect to GC* window displays.
6. Click **Direct** to connect to the GC using the serial cable connection.

4.4.10 Connect directly to a personal computer (PC) using the gas chromatograph's (GC's) wired Ethernet terminal

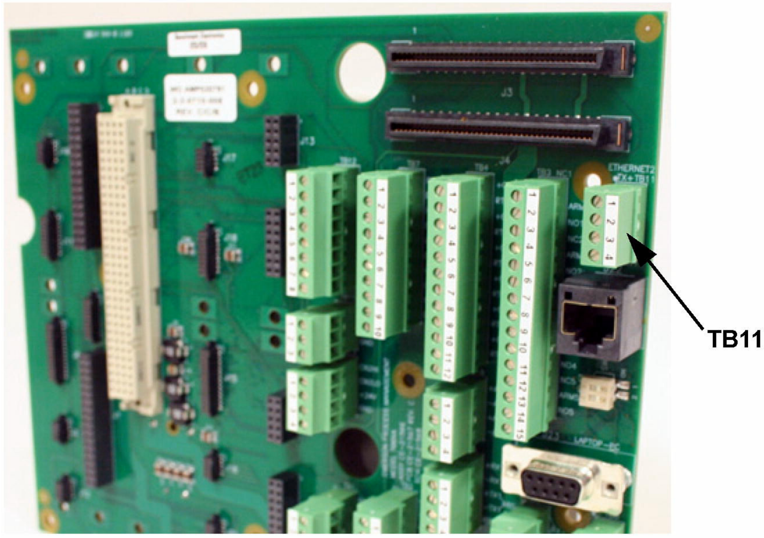
The Rosemount 700XA has a wired Ethernet terminal at TB11 on the backplane that you can connect to with a static IP address. All that is needed is a PC, typically a notebook computer, and a two-wire, twisted pair, CAT5 Ethernet cable with one of its plugs removed to expose the wires.

Figure 4-9: Crimped CAT5 Cable



Note
The GC can be connected (or remain connected) to the local network on Ethernet2 on the backplane while the DHCP feature is being used.

Figure 4-10: Wired Ethernet Terminal Block on the Backplane



Procedure

1. Use the following schematics as a guide to wiring the GC via its four wire connector at TB11.

   Figure 4-11 shows the traditional wiring scheme. Figure 4-12 shows how to wire a CAT5 cable without the RJ45 plug.

Figure 4-11: Field Wiring to TB11

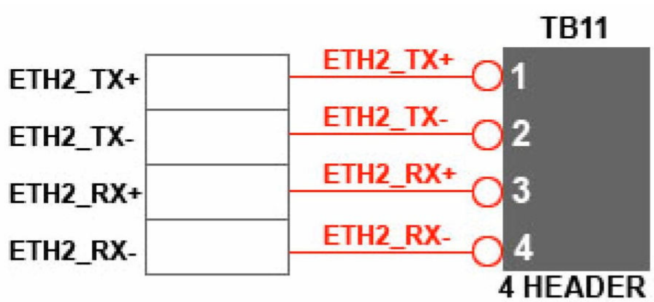
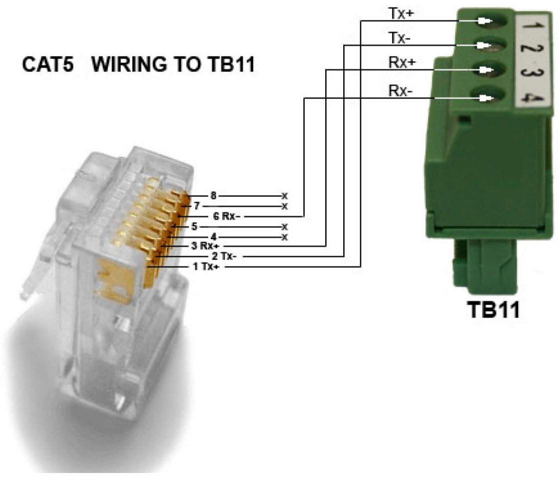


Figure 4-12: CAT5 Wiring to TB11



2. Once you have wired the cable to the Ethernet terminal, plug the other end into a PC or a wall jack.

   See Assign a static IP address to the gas chromatograph (GC) to continue configuring the GC.

4.4.11 Assign a static IP address to the gas chromatograph (GC)

Procedure

1. Start MON2020 and log in to the GC using a direct Ethernet connection.

   For more information, refer to Connect directly to a personal computer (PC) using the gas chromatograph's (GC's) Ethernet1 port.

2. Select **Application** → **Ethernet ports...**.
   The *Ethernet Ports* window displays.
3. Depending upon the Ethernet port to which you want to assign a static IP address, do the following:
   a) The Ethernet port at TB11: Enter the appropriate values in the **Ethernet2 IP Address**, the **Ethernet 2 Subnet**, and the **Default Gateway** fields.
   b) The RJ45 Ethernet port at J22: Enter the appropriate values in the **Ethernet1 IP Address**, the **Ethernet1 Subnet**, and the **Default Gateway** fields.

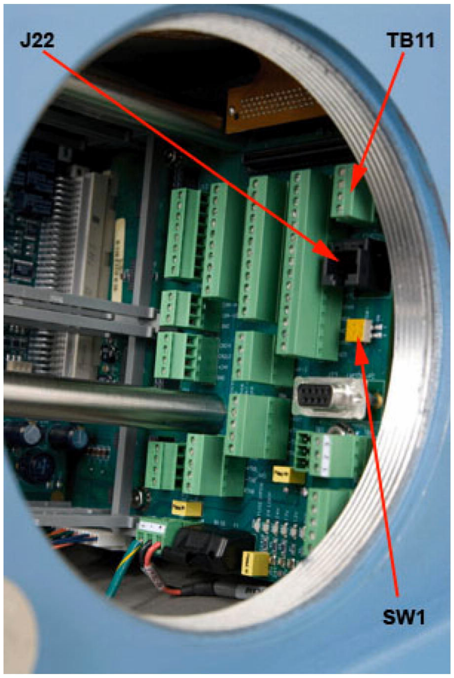
   Note
   See your information technology (IT) staff to obtain IP, subnet, and gateway addresses.

   Important
   To configure a Ethernet IP address using the local operator interface (LOI), refer to Figure A-54.

4. Click **OK**.

5. Log off the GC.
6. Access the backplane, which is located in the GC's lower enclosure.

Figure 4-13: Port Locations on the Backplane



7. If you are setting up a static IP address for the Ethernet1 port at J22, and you also intend to connect to your company's local area network, do the following:
   a) Locate the set of dip switches, labeled 1 and 2 , at **SW1** on the backplane.

      SW1 is located directly beneath the Ethernet port at J22 .

   b) Move dip switch **1** to its left position (**Off**).

   This disables the DHCP server.
8. To connect to the GC, do the following:
   a) Start MON2020 and select **File** → **GC Directory...**.
      The *GC Directory* window displays.
   b) Select **Add**.
      MON2020 adds a new GC profile to the end of the table.

      Note
      You can name the GC's profile as well as add a short description.

   c) Select the new profile and click **Ethernet...** Enter the GC's static IP address in the **IP address** field.
   d) Click **OK**.

The *Ethernet Connection Properties for New GC* window closes.

9. Click **Save** to save the new profile.
10. Click **OK** to close the *GC Directory* window.
11. Select **Chromatograph** → **Connect...** to connect to the GC or click .
    The *Connect to GC* window displays. The newly created GC profile should be listed in the table.
12. Locate the new GC profile and click the **Ethernet** button that is associated with it.
    The *Login* window displays.
13. Enter a **User Name** and **User Pin** and click **OK**.

4.4.12 Wiring the discrete digital inputs and outputs

The GC's backplane has five discrete outputs and five discrete inputs.

If more than five digital outputs are required, see Wire a ROC800 digital output (DO) module to add the ROC800 Digital Output Module.

Wire the discrete digital inputs

⚠ DANGER

ELECTRIC SHOCK

Failure to observe this precaution will cause serious personal injury or death.

The equipment operates using mains voltage that is dangerous to life. Make sure that the circuit breakers are set to **OFF** and tagged off before

⚠ WARNING

EXPLOSION HAZARD

Failure to de-energize the analyzer may cause an explosion and severly injure personnel.

Do not open the enclosure unless the area is known to be non-hazardous or unless all devices within the enclosure have been de-energized.

To connect digital signal input lines to the GC, see Engineering drawings and do the following:

Procedure

1. Disconnect power to the analyzer and allow the components to cool for at least five minutes.
2. Open the electronics enclosure door and access the backplane.
3. Make the digital input wiring connections on the backplane at **TB7**.

Note
The discrete digital input terminals on the backplane are self-powered. Devices connected to the digital input will be powered by the gas chromatograph's (GC's) dedicated isolated 24 V power supply.

Note
The discrete digital input terminals are optically isolated from the GC's other circuitry.

4. Route digital in/out (I/O) lines away from the sensitive detector lines (on the left side of the backplane) and away from the analog inputs and outputs.

   There are connections for five digital inputs on the backplane at **TB7**, as indicated in the following table.

Table 4-1: Discrete Digital Inputs TB7

TB7	Function
Pin 1	DI1
Pin 2	DI-RTN
Pin 3	DI2
Pin 4	DI-RTN
Pin 5	DI3
Pin 6	DI-RTN
Pin 7	DI4
Pin 8	DI-RTN
Pin 9	DI5
Pin 10	DI-RTN

Wire a ROC800 digital input (DI) module

To connect the ROC800 DI module to a field device, do the following:

Procedure

1. Expose the end of the wire to a maximum length of ¼-in. (6.4 mm).

Note
Twisted-pair cables are recommended for in/out (I/O) signal wiring. The module’s terminal blocks accept wire sizes between 12 and 22 American wire gauge (AWG). Allow some slack when making connections to prevent strain.

⚠ CAUTION

Failure to follow this precaution may cause a short circuit and damage equipment.

Allow only a minimum exposure of bare wires to prevent short circuits.

2. Insert the exposed end into the clamp beneath the termination screw.
3. Tighten the screw.

Figure 4-14: Typical Wiring

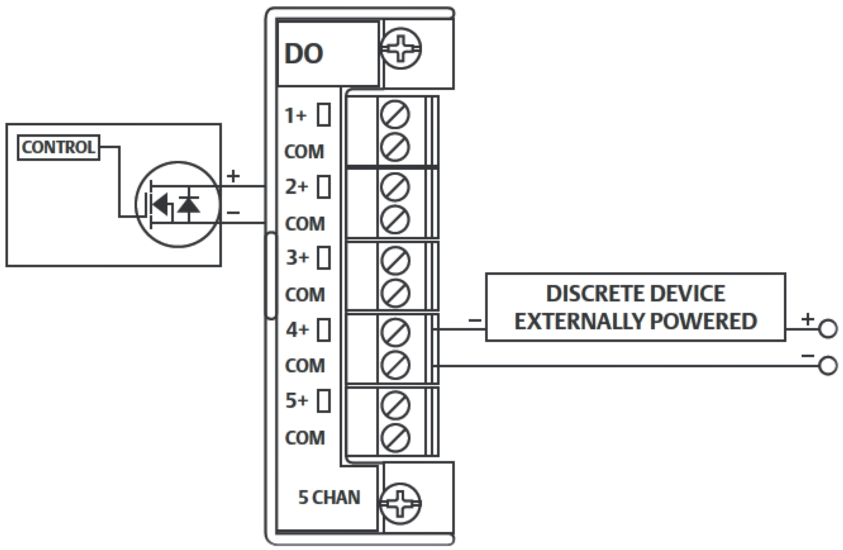


Table 4-2: ROC800 Discrete digital wiring

Terminal	Label	Definition
1	1	CH 1 Positive
2	2	CH 2 Positive
3	3	CH 3 Positive
4	4	CH 4 Positive
5	5	CH 5 Positive
6	6	CH 6 Positive
7	7	CH 7 Positive
8	8	CH 8 Positive
9	COM	Common
10	COM	Common

Wiring the discrete digital outputs

The discrete outputs are located on TB3, which is a 15-pin connector, and have five Form-C relays on the back plane. All contact outputs have a rating of 1A at 30 Vdc.

Refer to drawing BE-22175 in List of engineering drawings - Rosemount 700XA

Figure 4-15: TB3 on the Backplane

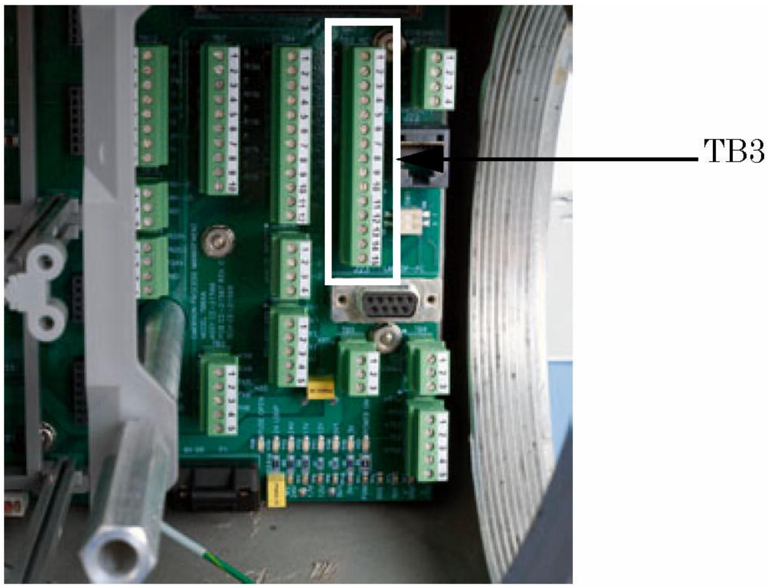


Table 4-3 lists the discrete digital output function for each pin on the TB3 connector.

Table 4-3: Discrete Digital Outputs - TB3

TB3	Function
Pin 1	NC1 DIG_OUT NC1
Pin 2	ARM1 DIG_OUT ARM1
Pin 3	NO1 DIG_OUT NO1
Pin 4	NC2 DIG_OUT NC2
Pin 5	ARM 2 DIG_OUT ARM2
Pin 6	NO2 DIG_OUT NO2
Pin 7	NC3 DIG_OUT NC3

Table 4-3: Discrete Digital Outputs - TB3 *(continued)*

TB3	Function
Pin 8	ARM3 DIG_OUT ARM3
Pin 9	NO3 DIG_OUT NO3
Pin 10	NC4 DIG_OUT NC4
Pin 11	ARM4 DIG_OUT ARM4
Pin 12	NO4 DIG_OUT NO4
Pin 13	NC5 DIG_OUT NC5
Pin 14	ARM5 DIG_OUT ARM5
Pin 15	NO5 DIG_OUT NO5

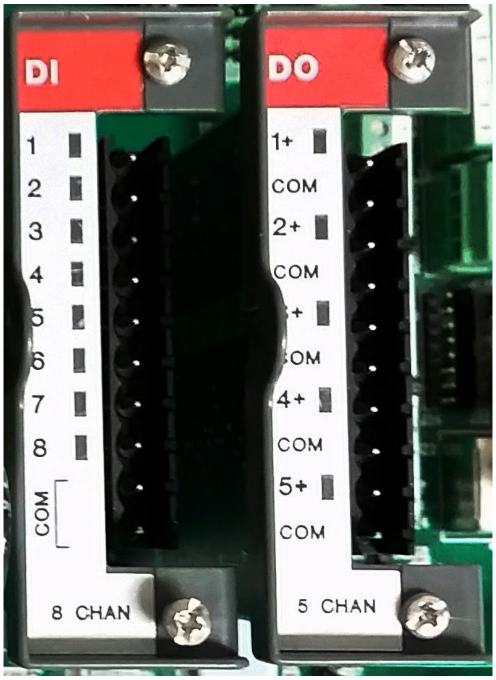
Note

Form-C relays are single-pole double-throw (SPDT) relays that have three positions: normally closed (**NC**); an intermediate position, also called the *make-before-break* position (**ARM**); and normally open (**NO**).

Optional discrete digital inputs (DI)

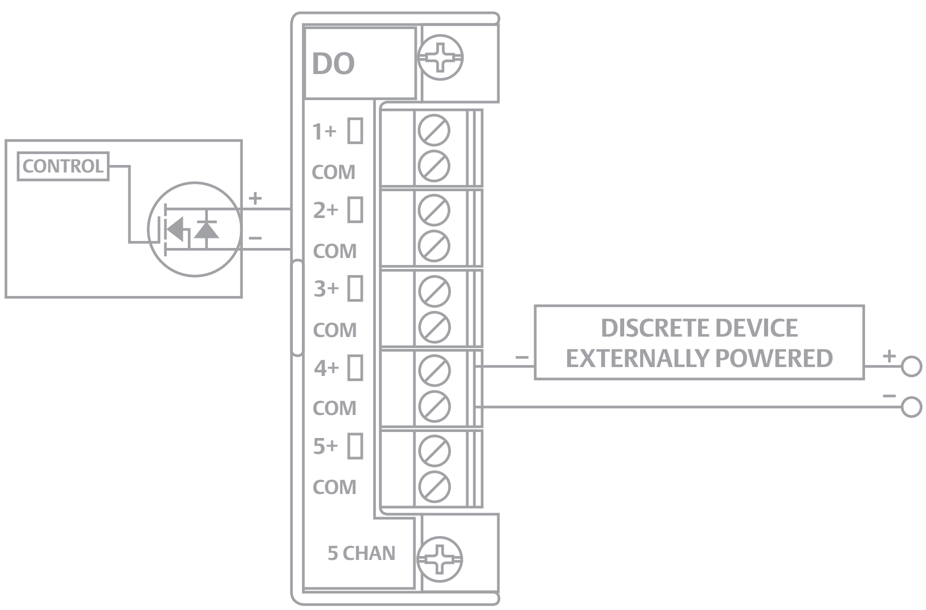
When plugged into one of the optional card slots in the card cage, the Emerson ROC800 DI card provides eight additional discrete digital inputs. The discrete digital inputs can monitor the status of relays, open-collector or open-drain type solid-state switches, and other two-state devices. For more information, see *ROC800-Series Discrete Input Module* at Emerson's *ROC 800-Series* website at Emerson.com/en-us/catalog/emerson-roc800-series

Figure 4-16: Optional Digital in/out (I/O) Modules



Wire a ROC800 digital output (DO) module

Figure 4-17: Discrete Digital Output Wiring



Terminal	Label	Definition
1	1+	Positive discrete output

Terminal	Label	Definition
2	COM	Discrete output return
3	2+	Positive discrete output
4	COM	Discrete output return
5	3+	Positive discrete output
6	COM	Discrete output return
7	4+	Positive discrete output
8	COM	Discrete output return
9	5+	Positive discrete output
10	COM	Discrete output return

To connect the ROC800 DO module to a field device:

Procedure

1. Expose the end of the wire to a maximum length of ¼ in. (6.4 mm).

   Note
   Twisted-pair cables are recommended for I/O signal wiring. The module's terminal blocks accept wire sizes between 12 and 22 American wire gauge (AWG). Allow some slack when making connections to prevent strain.

   ⚠ CAUTION

   ELECTRICAL HAZARD

   Failure to follow this precaution may cause a short circuit and damage equipment.

   Allow only a minimum exposure of bare wires to prevent short circuits.

2. Insert the exposed end into the clamp beneath the termination screw.
3. Tighten the screw.

4.4.13 Wiring the analog inputs

All Rosemount 700XA gas chromatographs (GCs) have at least two analog inputs. An additional four analog inputs are available with a ROC800 AI-16 card (see Wire a ROC800 digital output (DO) module) that can be installed into one of the optional slots in the card cage.

Analog inputs on the backplane

There are two analog input connections on the backplane at terminal block 10 (TB10).

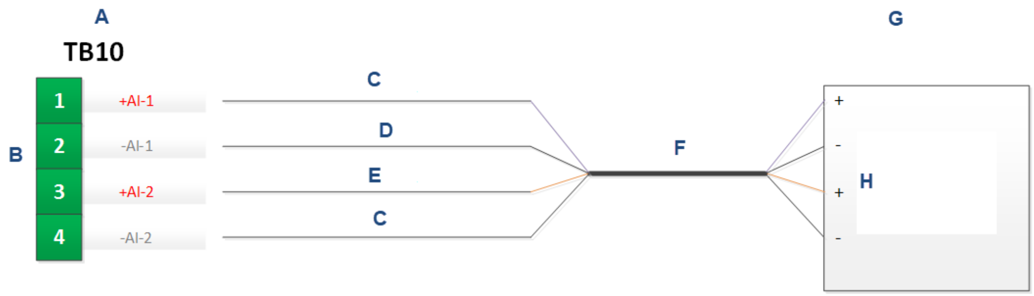
Table 4-4: Analog Inputs TB10

TB10	Function
Pin 1	+AI_1
Pin 2	-AI_1
Pin 3	+AI_2
Pin 4	-AI_2

Analog inputs settings

Figure 4-18 shows how to wire two analog inputs (TB10).

Figure 4-18: Customer Wiring for Analog Inputs



A. Backplane
B. Analog inputs
C. Analog input 1
D. Analog input ground
E. Analog input 2
F. Cable
G. Customer devices
H. Customer 4-20 mA outputs

Use the **Hardware** → **Analog Inputs** menu in MON2020 to configure the analog inputs.

Select the input type for an analog input

You can set an analog input to either voltage (0-10 V) or current (4-20 mA) .

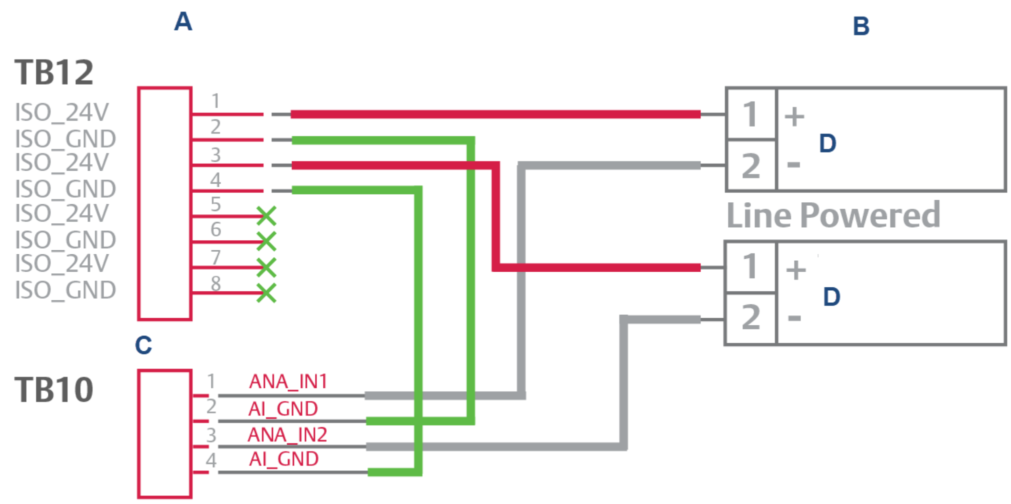
Procedure

1. Select **Hardware** → **Analog Inputs....**
   The *Analog Inputs* window displays.
2. To set the analog input to current, select **mA** from the *mA/Volts* drop-down list for the appropriate analog input; to set the analog input to voltage, select **Volts** from the *mA/Volts* drop-down list for the appropriate analog input.
3. Click **Save** to save the changes and keep the window open, or click **OK** to save the changes and close the window.

Typical wiring for line-powered transmitters

The following drawing shows the most common wiring plan for supplying power to two 4-20 mA transmitters, such as pressure sensor transmitters.

Figure 4-19: Typical Wiring for Line-Powered Transmitters



A. Back plane
B. Customer transmitter
C. Analog inputs
D. Transmitter 4-20 mA output

Optional analog inputs (AI)

When plugged into one of the optional card slots on the card cage, the ROC800 AI-16 card provides four additional analog inputs.

The AI channels are scalable, but are typically used to measure either a 4-20 mA analog signal or a 1-5 Vdc signal. If required, the low end of the AI module's analog signal can be calibrated to zero. For more information, see *Analog Input Modules (ROC800-Series* at Emerson's ROC800-Series website.

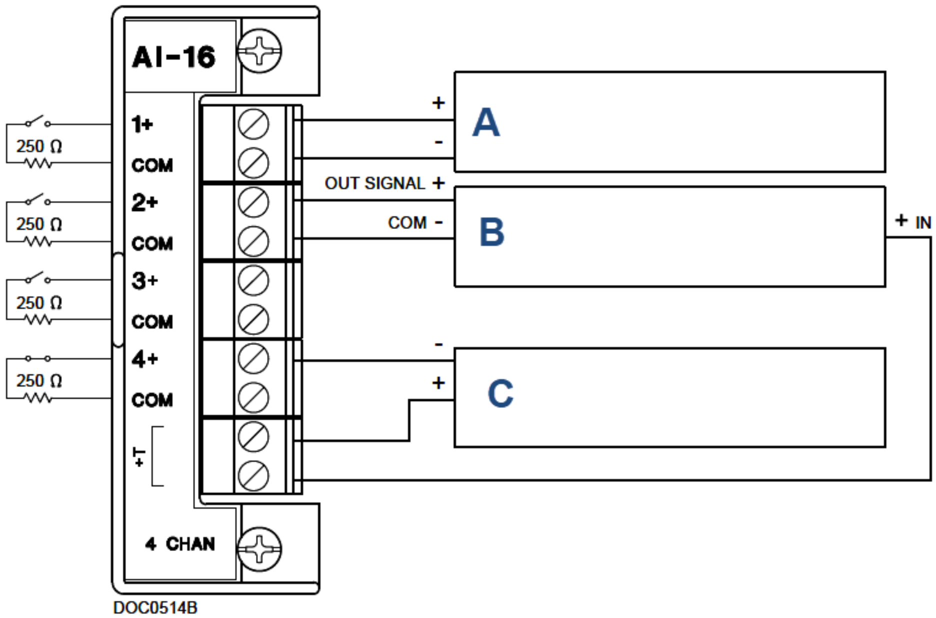
Wire an ROC800 AI-16 module

⚠ CAUTION

ELECTROSTATIC DISCHARGE (ESD)

Operators and technicians must wear an electrostatic wrist strap when handling printed circuit cards to prevent shorting the boards through static electricity.

Figure 4-20: Typical ROC800 Wiring



A. 1-5 volt device, externally powered
B. 1-5 volt device, ROC800 powered
C. Current loop device 4-20 mA, ROC800 powered

To connect the ROC800 AI-16 module to a device:

Procedure

1. Expose the end of the wire to a maximum length of ¼ in. (6.4 mm).

Note
Twisted-pair cables are recommended for in/out (I/O) signal wiring. The module's terminal blocks accept wire sizes between 12 and 22 American wire gauge (AWG). Allow some slack when making connections to prevent strain.

⚠ CAUTION

ELECTRICAL HAZARD

Exposing bare wires may cause a short circuit and damage equipment.

Only allow a minimum exposure of bare wires.

2. Insert the exposed end into the clamp beneath the termination screw.
3. Tighten the screw.

There are two dip switches on the terminal block side of the module that can be used to set a 250 Ω resistor in or out of circuit for each analog input.

To put an analog input's resistor *in circuit*, flip the appropriate dip switch to **I**; to put an analog input's resistor *out of circuit*, flip the appropriate dip switch to **V**.

Calibrate a ROC800 AI-16 module

Prerequisites

To calibrate the ROC800 AI-16 module you must have a personal computer (PC) with the *ROCLINK™ 800 Configuration* software installed and open.

See Emerson's ROC 800-Series for details, downloads and manuals.

Procedure

1. Go to **Configure** → **I/O** → **RTD Points** → **Calibration**.
2. Select an analog input.
3. Click **Update** to request one value update from the input.
4. Click **Freeze** to stop the values of the input from being updated during calibration.

   Note
   If you are calibrating a temperature input, disconnect the resistance temperature device (RTD) sensor and connect a decade box or comparable equipment to the RTD terminals of the ROC card.

5. Click **Calibrate**.
6. Enter a value for **Set Zero** after stabilization.
7. Enter a value for **Set Span** after stabilization.
8. Enter values for up to three **Midpoints** one at a time or click **Done** if you are not configuring midpoints.
9. Click **OK** to close the main calibration window and unfreeze the associated inputs.
   To calibrate the inputs for another analog input, return to Step 1.

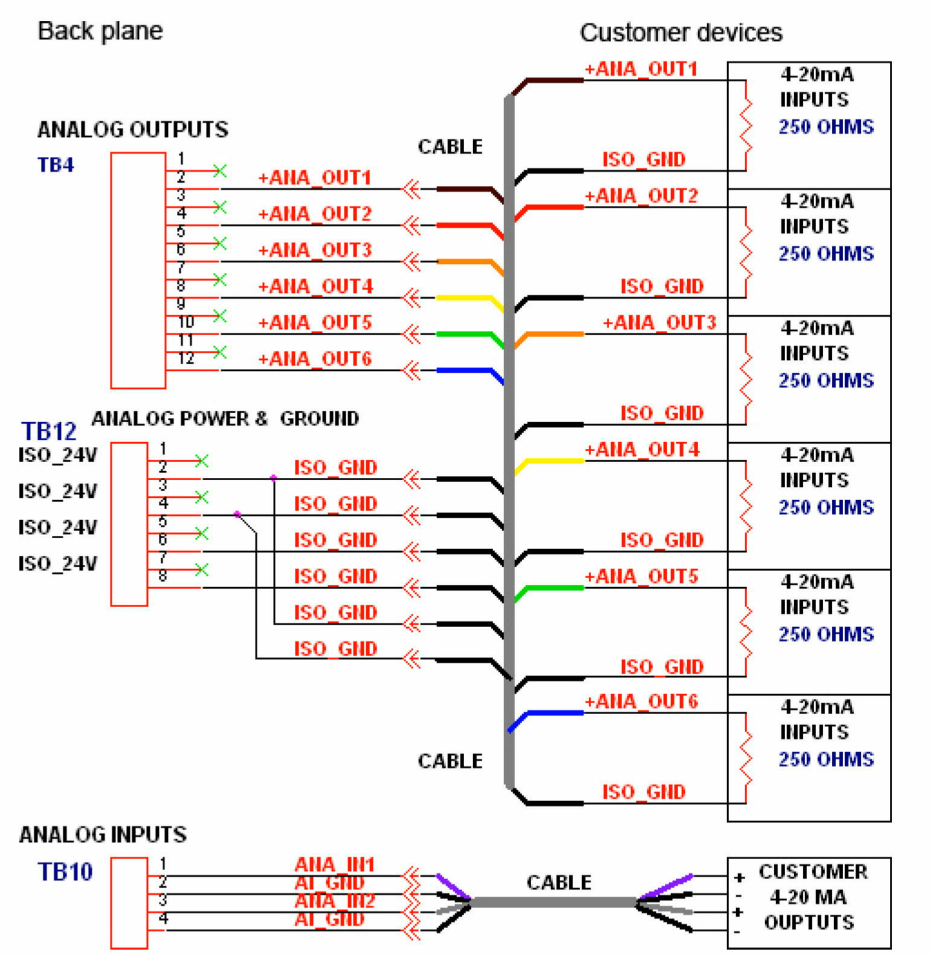
4.4.14 Analog output wiring

The Rosemount 700XA has at least six analog outputs. An additional four analog inputs are available with an ROC800 AO card that can be installed into one of the optional slots in the card cage.

Factory settings for analog output switches

Figure 4-21 shows how to wire up to six devices to the analog outputs that are located on the backplane. It also shows how to wire up to two analog inputs.

Figure 4-21: Wiring for Six Analog Outputs



Wire customer externally-powered analog outputs

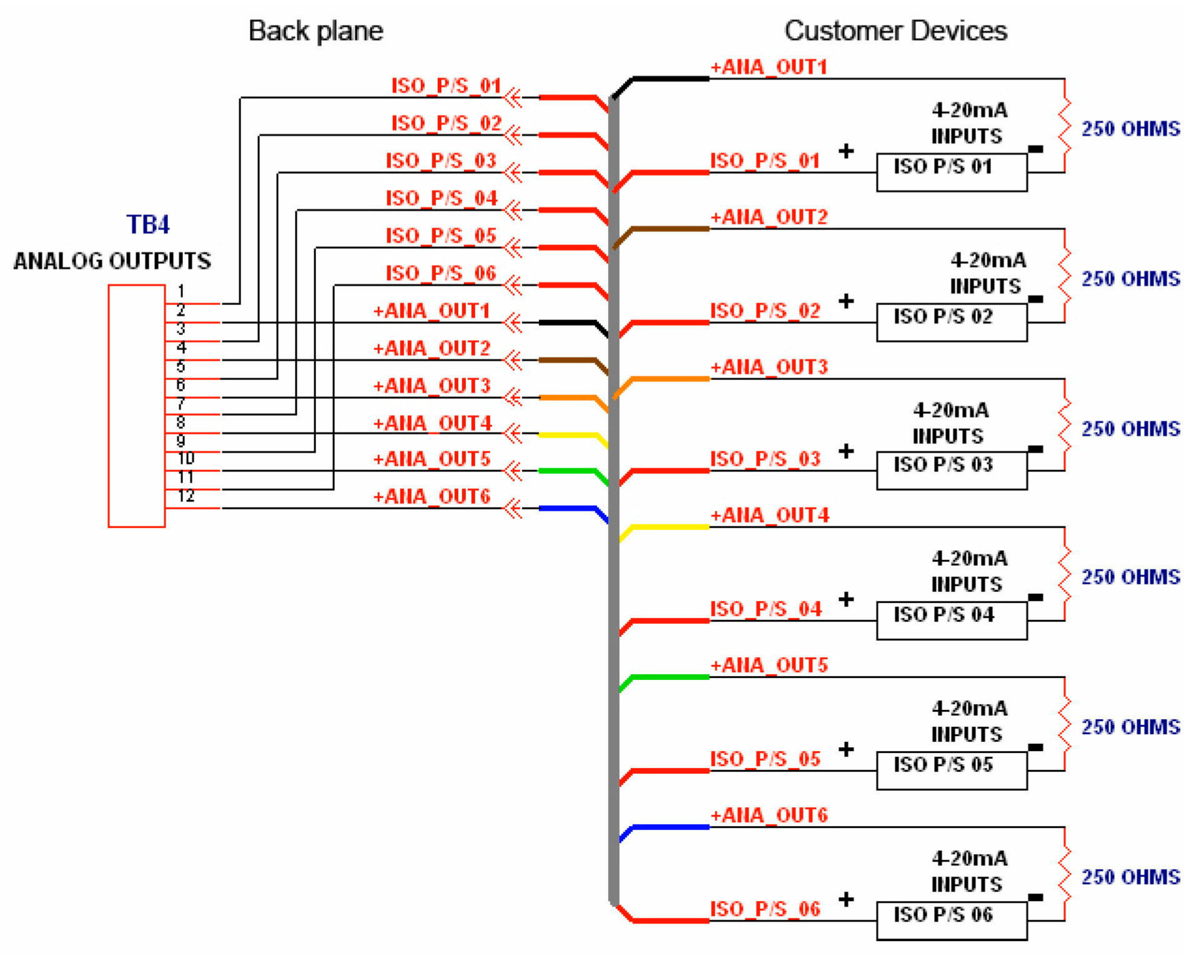
It is possible to furnish power to each analog output while maintaining isolation between channels.

Consult Figure 4-22 before wiring a customer-powered device:

Procedure

1. Use Figure 4-22 to provide power wiring to each analog output while maintaining isolation between channels.

Figure 4-22: Wiring for Customer-Powered Analog Outputs



2. The settings for the analog outputs connections, located on the backplane are necessary to provide power to each analog output while maintaining isolation between channels.

Optional analog outputs

When plugged into one of the optional card slots on the card cage, the ROC800 AO card provides four additional analog outputs. Each channel provides a 4 to 20 mA current signal for controlling analog current loop devices.

For more information, see Emerson's ROC 800-Series website.

Connect ROC800 analog output (AO) module to a field device

Procedure

1. Expose the end of the wire to a maximum length of ¼ in. (6.4 mm).

Note
Emerson recommends using twisted-pair cables for in/out (I/O) signal wiring. The module's terminal blocks accept wire sizes between 12 and 22 American wire gauge (AWG). Expose minimal bare wire to prevent short circuits. Allow some slack when making connections to prevent strain.

2. Insert the exposed end into the clamp beneath the termination screw.
3. Tighten the screw.
4. Close the electronics enclosure door and apply power to the gas chromatograph (GC).
5. Run MON2020 and connect to the GC.

4.4.15 Configure analytical train

Use the Analytical Train Configuration window for multiple analysis clocks to assign the valve, digital outputs (DO), and detectors to each train and then assign each train to its respective analysis clock.

Procedure

1. Assign the usage of valves and DO to Analyzer# on **Hardware** → **Valves**, **Hardware** → **Detectors** and **Hardware** → **Discrete Outputs** screens.
2. Open the **Application** → **Analytical Train Configuration** screen.
3. Click **Discrete Output** and **Valves**. Assign the respective DOs, valves, and detectors to each analytical train.

   The valves and DOs are assigned with Usage as **Analyzer#** displayed on this screen. All available detectors are also displayed on this screen. You cannot configure the same detector, valve or DO to multiple trains.
4. On the **Application** → **Timed Event** screen, filter the configured events as per train selection by selecting the **Train#** checkbox.

4.4.16 Configure analysis clock

Use this feature to configure a single analysis or multiple analyses.

One analysis can be considered as one virtual gas chromatograph (G) that has independent *Sample Loop*, *Analytical Path*, and *Timed Event* tables.

Multiple analyses can run independently to analyze multiple streams at the same time. The number of analyses are set at factory per the mechanical configurations.

Mechanical configurations	Description
Trains 1 - 6	The configured trains that are used by the analysis
Default Stream Sequence	Sets the default sequence to be used by the indicated analysis during auto-sequencing. To create a new stream sequence or to edit an already-created sequence, click **Stream Sequence** .

Mechanical configurations	Description
Purge Duration	The amount of time, in seconds, to purge the stream before starting an analysis, calibration, or validation run. The default value is **60 SEC**. Purging allows sample gas to flow through the sample loop prior to beginning the run.
Energy Value Check	If enabled, the GC analyzes the calibration gas as an unknown stream and computes its energy value. The GC then compares this value to the *Cal Gas Cert CV* and determines if the calibration gas's energy value is within the CV Check Allowed Deviation. If it isn't, the GC triggers the **Energy Value Invalid** alarm. The following conditions must be met before the GC can perform a EV Check: • The **EV Check** flag in the *System* window must be enabled. • At least one stream must be set up in the *Streams* window as a calibration stream, and the **Auto** flag for this stream must be enabled. The EV Check is performed under any of the following circumstances: • During a warm start that follows a power failure during normal operation. The GC waits for the heater and electronic pressure controller to reach their respective set points and stabilize. It then analyzes the calibration gas as an unknown stream and identifies the peaks. If all the component peaks are identified, the GC computes the calibration gas' energy value and performs the EV Check. • After a successful calibration, the GC computes the gas' energy value with the new response factors and performs the EV Check

1. Press **Insert** to add a new analysis.
2. Press **Delete** to delete an analysis.

Related information

Configure analytical train

4.5 Leak checking and purging for first calibration

⚠ CAUTION

EQUIPMENT DAMAGE

Failure to clean and dry the tubing may compromise the integrity of the analyzer or its warranty.

Make sure all tubing is clean and dry internally.
Prior to installation, blow the tubing free of internal moisture, dust, or other contaminants.

Verify that all electrical connections are correct and safe and then turn the gas chromatograph (GC) on.

4.5.1 Check the gas chromatograph (GC) for leaks

Prerequisites

Leak checking carrier and calibration gas lines requires power and a personal computer (PC) connected to the GC.

Note
Refer to the analyzer's drawing documentation package that shipped with the GC for leak checking and identifying vents.

Emerson tested the GC and fittings for leaks at the factory prior to shipment.

Procedure

1. Plug the measure vent (labeled **MV**) vent line if it is open.

   Leave the **SV** or sample vent line open or unplugged.

2. Slowly pressurize each line in turn; then block-in the line, making sure the pressure holds.

   For example, the carrier gas line should be slowly brought up to 100 psig (689.5 kPa) ± two percent with the dual-stage regulator at the carrier gas cylinder, and the actuation pressure should be 100 psig (689.5 kPa) maximum.

3. After two minutes, shut the carrier gas bottle valve and observe the high side regulator gauge on the carrier gas bottle.

   a. The gauge should not bleed down more than 100 psig in ten minutes.

   b. If helium is lost at a faster rate, leaks are usually found between the carrier gas bottle and the analyzer. Check and tighten all connections, as well as the dual-stage regulator.

4. When the leak check is complete, reopen the helium bottle valve. Remove the plug from the **MV** line.

5. Shut the metering valve below the rotameter on the front of the flow panel.

   Leave the metering valve shhut for now; you will reopen it later during initial purging and the analyzer's first calibration.

6. Repeat the procedure with sample gas and stream gas.

   Note
   Do not use a liquid leak detector, such as Snoop®, on the valves or components in the oven.

   Note
   Refer to the *Flow Configuration* schematic in the documentation packet that shipped with the GC for detailed instructions on plugging the flame ionization detector (FID) and flame photometric detector (FPD) vents..

4.5.2 Plugged lines, columns, and valves

If the lines, columns, or valves are plugged, check the gas flow at valve ports.

For a reference, use the flow diagram in the drawing package that shipped with your gas chromatograph (GC), and remember these points about flow diagrams:

- Port-to-port flow paths are indicated by solid or dashed lines on the valve symbol in the drawing.
- A dashed line indicates flow direction when the valve is **On**, i.e., energized.
- A solid line indicates flow direction when the valve is **Off**, i.e., not energized.

4.5.3 Purge carrier gas lines

Prerequisites

Purging carrier and calibration gas lines requires power and a personal computer (PC) connected to the gas chromatograph (GC).

Procedure

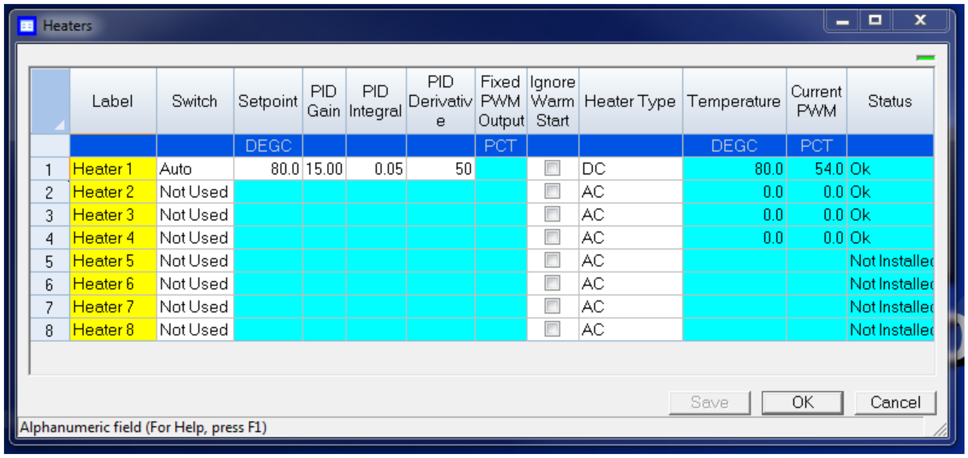
1. Ensure that the vent line plugs have been removed and the vent lines are open.
2. Ensure that the carrier gas bottle valve is open.
3. Set the GC side of the carrier gas to 115 psig (792.9 kPa).
4. Turn on the GC and the PC.
5. Start MON2020 and connect to the GC.

   NOTICE

   Consult the MON2020 Software for Gas Chromatographs Reference Manual for information about connecting to a GC.

6. Select **Hardware** → **Heaters...**.
   The *Heaters* window displays.

Figure 4-23: Heaters Window



	Label	Switch	Setpoint	PID Gain	PID Integral	PID Derivative	Fixed PWM Output	Ignore Warm Start	Heater Type	Temperature	Current PWM	Status
			DEGC				PCT			DEGC	PCT	
1	Heater 1	Auto	80.0	15.00	0.05	50			DC	80.0	54.0	Ok
2	Heater 2	Not Used							AC	0.0	0.0	Ok
3	Heater 3	Not Used							AC	0.0	0.0	Ok
4	Heater 4	Not Used							AC	0.0	0.0	Ok
5	Heater 5	Not Used							AC			Not Installed
6	Heater 6	Not Used							AC			Not Installed
7	Heater 7	Not Used							AC			Not Installed
8	Heater 8	Not Used							AC			Not Installed

7. Allow the GC system temperature to stabilize and the carrier gas lines to become fully purged with carrier gas, which usually takes at least an hour.

   The temperature values for the heaters should indicate that the GC is warming up.

   The ***Status*** column displays **OK**.

8. Select **Control** → **Auto Sequence...**.

   For more information about this function, refer to the *MON2020 Software for Gas Chromatographs Reference Manual*.

Note
You can also performStep 6 through Step 8 with the local operator interface (LOI).

Important
A continuous operation without sample gas for a period of four to eight hours (or overnight) is recommended, during which no changes should be made to the settings described in Step 1 through Step 7.

4.5.4 Purge calibration gas lines

Prerequisites

Purging calibration gas lines requires power and a personal computer (PC) connected to the gas chromatograph (GC).

Procedure

1. Ensure that the carrier gas lines have been fully purged and that the sample vent plugs have been removed.
2. Close the calibration gas bottle valve.
3. Fully open the block valve associated with the calibration gas feed.

   Refer to the *MON2020 Software for Gas Chromatographs Reference Manual* for instructions on selecting streams.

4. Open the calibration gas bottle valve.
5. Increase the outlet pressure to 15 psig (103.4 kPa), plus or minus five percent, at the calibration gas bottle regulator.
6. Close the calibration gas bottle valve.
7. Let both gauges on the calibration gas bottle valve bleed down to 0 psig (0 kPa).
8. Repeat Step 4 through Step 7 five times.
9. Open the calibration gas bottle valve.

Note
This applies to vapor calibration standard.

⚠ WARNING

Failure to follow the safety instructions may cause injury to personnel.

Observe all safety precauations defined in the calibration gas Safety Data Sheet (SDS), especially for hazardous locations.

4.6 Start up the system

Procedure

1. For system startup, run a single-stream analysis of the calibration gas.
   a) Verify the calibration stream is set to **Auto**.
   b) Use MON2020 to run a single stream analysis on the calibration stream. Once proper operation of the GC is verified, halt the analysis by selecting **Control** → **Halt...**.

      Note
      Example - use the **MON2020** → **Control** → **Single Stream** → **Calibrate** menu path and select the associated analysis stream.

      Unless stated otherwise in the product documentation, ensure that the pressure of the calibration and sample line is regulated at 10 to 30 psig (68.9 to 206.8 kPa). 15 psig (103.4 kPa) is recommended.

   c) Validate calibration gas and retention times and run a manual calibration.
   d) Go to **MON2020** → **Application** → **Component Data** and select the associated stream. Check the ***Component Data*** table for calibration gas validation information and retention times.
   e) Go to **MON2020** → **Control** → **Calibration** and select the analysis stream to run a manual calibration. Select the **Purge stream for 60 seconds** checkbox and **Normal** calibration type radio button; then click **OK**.

      Refer to the *MON2020 Software for Gas Chromatographs Reference Manual* for more information.

2. Select **Control** → **Auto Sequence...** to start auto sequencing of the line gas stream(s).

   Refer to the *MON2020 Software for Gas Chromatographs Reference Manual* for more information.

   The gas chromatograph (GC) begins the auto sequence analysis.

5 Operation and maintenance

5.1 Warning and precautions

⚠ WARNING

Failure to observe the precautionary signs posted on the Rosemount 700XA can result in injury or death to personnel or cause damage to the equipment.

Observe all precautionary signs posted on the GC.

⚠ CAUTION

Failure to follow this precaution can result in damage to the card.

Turn off the gas chromatograph (GC) before removing a card from the card cage assembly.

5.2 Start a 2-point calibration

The 2-point calibration process calculates an exponential power fit that the gas chromatograph (GC) uses to accurately analyze a sample stream with a flame photometric detector (FPD).

Prerequisites

The 2-Point calibration process requires two calibration gases that will be used to generate the data for the exponential power fit calculation. While both calibration gases should have the same components, one of the calibrations gases, called the low calibration gas (LCG), should have a lower concentration of the components than the other calibration gas, which is called the high calibration gas (HCG). The GC can then compute the coefficients for the 2-point (2-Pt) exponential power fit by doing a single-level calibration on these individual LCG and HCG streams.

Procedure

1. Start MON2020 and press **F6** to open the *Component Data* window.
2. Change the Calib Type for the target component to **2 pt Calib**.
3. For the target component, select the component data table (CDT) that is associated with the LCG from the *2 Pt Calib High CDT* drop-down list.
4. For the target component, select the CDT that is associated with the HCG from the **2 Pt Calib High CDT** drop-down list.
5. Run a single stream analysis on the stream associated with the LCG until the readings stabilize.
6. Run a forced calibration on the stream associated with the LCG.
7. Run a normal calibration on the stream associated with the LCG.

8. Run a single stream analysis on the stream associated with the HCG until the readings stabilize.
9. Run a forced calibration on the stream associated with the HCG.
10. Run a normal calibration on the stream associated with the HCG.
    The GC is ready to analyze the sample or validation stream using the 2 Pt Exp with the response factor that was calculated during the LCG and HCG runs.

5.3 Troubleshooting and repair

The most efficient method for maintaining and repairing the Rosemount 700XA is a component-replacement concept that allows you to return the system to operation as quickly as possible.

Use troubleshooting test procedures to identify sources of trouble, such as printed-circuit assemblies, valves, etc., and replace them with parts in known good working order.

5.4 Routine maintenance

The Rosemount 700XA will perform accurately for long periods with very little attention (except for maintaining the carrier gas cylinders).

It helps to keep a bi-monthly record of certain parameters to assure that the gas chromatograph (GC) is operating to specifications. Fill out the maintenance checklist should be filled out bi-monthly, date it, and keep it on file for access by maintenance technicians as necessary. This gives a historical record of the operation of the Rosemount 700XA, enables a maintenance technician to schedule replacement of gas cylinders at a convenient time, and allows quick troubleshooting and repair when necessary.

Also, create a diagnostic file, which contains calibration and analysis chromatograms, alarm and event logs, analysis reports, and the complete configuration file, and file it with the checklist, furnishing a positive dated record of the Rosemount 700XA. You can compare these chromatograms and reports to the chromatograms and reports run during the troubleshooting process.

Before contacting Customer Care, connect to your GC and save the diagnostics data file. From **MON2020** → **Tools** → **Save Diagnostic Data**, save the diagnostic data file.

MON2020 prompts you to send an email to Customer Care (at gc.csc@emerson.com) with the diagnostic data file.

5.4.1 Maintenance checklist

Print the sample maintenance checklist in Figure 5-1 for your records.

If you have a problem, please complete the checklist first and have the results available, as well as the sales order number, when calling your Emerson Customer Care representative for technical assistance. The sales order number is on the nameplate located on the front of the Rosemount 700XA. Emerson files the chromatograms and reports archived when your gas chromatograph (GC) left the factory by this number.

Note
To find the default measurements for the parameters on the checklist, use MON2020 to view the GC's parameter list.

Figure 5-1: Sample Maintenance Checklist

MAINTENANCE CHECKLIST

Date Performed: ________________ Sales Order Number: ________________

System Parameters	As Found	As Left
Carrier Gas Cylinder		
Cylinder Pressure Reading (High)	_____ psig	_____ psig
Cylinder Pressure Outlet Reading	_____ psig	_____ psig
Cylinder Pressure Panel Regulator	_____ psig	_____ psig
Sample System		
Sample Line Pressure(s)	(1)_____ psig	_____ psig
	(2)_____ psig	_____ psig
	(3)_____ psig	_____ psig
	(4)_____ psig	_____ psig
	(5)_____ psig	_____ psig
Sample Flows	(1)___ cc/min	___ cc/min
Sample Vent 1 (SV1)	(2)___ cc/min	___ cc/min
Sample Vent 2 (SV2)	(3)___ cc/min	___ cc/min
	(4)___ cc/min	___ cc/min
	(5)___ cc/min	___ cc/min
Calibration Gas		
High Pressure Reading	_____ psig	_____ psig
Outlet Pressure Reading	_____ psig	_____ psig
Flow	___ cc/min	___ cc/min

5.4.2 Routine maintenance procedures

At least bi-monthly, create and save a diagnostic data file and check carrier and calibration gas supplies.

Diagnostic data file

The diagnostic data file is a small data file that contains the last chromatogram from each stream, the final calibration chromatogram, calibration reports, validation reports, protected chromatograms, the maintenance log, and the event log. To create the diagnostic data file in MON2020, go to **Tools** → **Save Diagnostic Data...** and save the file to your computer.

5.4.3 Service programs

Rosemount Lifecycle Services offers maintenance service programs that are tailored to fit specific requirements.

Contracts for service and repair can be arranged by contacting Lifecycle Services at the address or telephone number on the back of this manual or visiting the website at: Lifecycle Services

5.4.4 Precautions for handling printed circuit (PC) assemblies

Printed circuit assemblies contain complementary metal-oxide-semiconductor (CMOS) integrated circuits, which can be damaged if the assemblies are not properly handled.

⚠ CAUTION

EQUIPMENT DAMAGE

Do not install or remove the printed circuit assemblies while power is applied to the gas chromatograph (GC).

Keep electrical components and assemblies in their protective (conductive) carriers or wrapping until ready for use.

Use the protective carrier as a glove when installing or removing printed circuit assemblies.

Wear an electrostatic discharge (ESD) strap to prevent static discharge when installing or removing printed circuit assemblies.

Figure 5-2: SW7 on the Central Processing Unit (CPU) Board

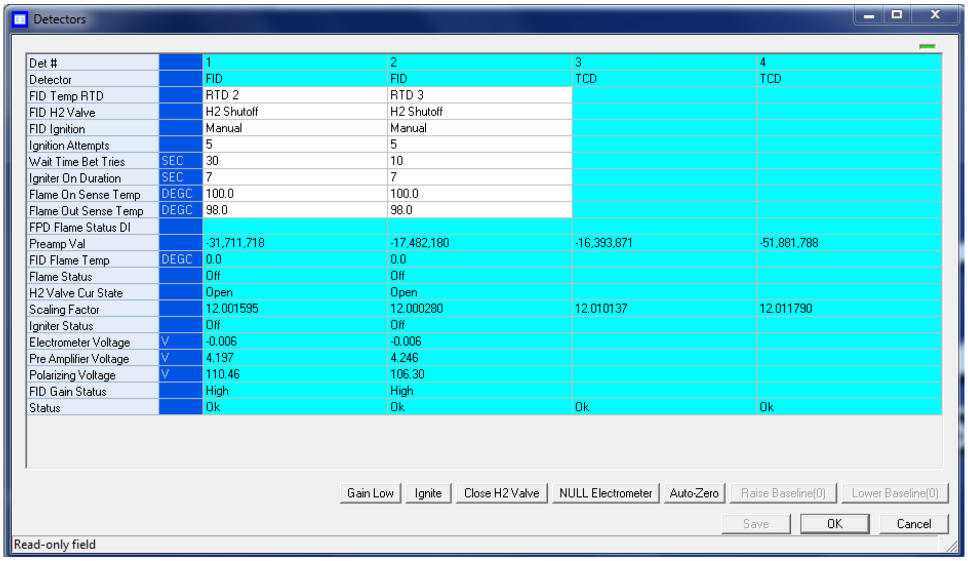
A. *SW7 switch (**ON** is towards the dot.)*

5.4.5 Flame ionization detector (FID) configuration

When connected to the gas chromatograph (GC) via MON2020, select **Hardware** → **Detectors** to access the *Detectors* dialog.

Refer to the MON2020 Software for Gas Chromatographs Reference Manual for additional configuration details.

Figure 5-3: MON2020 - Detectors Window



Det #		1	2	3	4
Detector		FID	FID	TCD	TCD
FID Temp RTD		RTD 2	RTD 3		
FID H2 Valve		H2 Shutoff	H2 Shutoff		
FID Ignition		Manual	Manual		
Ignition Attempts		5	5		
Wait Time Bet Tries	SEC	30	10		
Igniter On Duration	SEC	7	7		
Flame On Sense Temp	DEGC	100.0	100.0		
Flame Out Sense Temp	DEGC	98.0	98.0		
FPD Flame Status DI					
Preamp Val		-31,711,718	-17,482,180	-16,393,871	-51,881,788
FID Flame Temp	DEGC	0.0	0.0		
Flame Status		Off	Off		
H2 Valve Cur State		Open	Open		
Scaling Factor		12.001595	12.000280	12.010137	12.011790
Igniter Status		Off	Off		
Electrometer Voltage	V	-0.006	-0.006		
Pre Amplifier Voltage	V	4.197	4.246		
Polarizing Voltage	V	110.46	106.30		
FID Gain Status		High	High		
Status		Ok	Ok	Ok	Ok

Halt the analysis: **Control** → **Halt (F3)**.

Configure the following fields from the *Detectors* dialog:

- FID Ignition - Manual or Automatic
- Ignition Attempts
- Wait Time Bet (between) Tries
- Igniter On duration
- Flame On Sense Temp
- Flame Out Sense Temp
- Electrometer Voltage

Note
If the FID does not appear in the *Detectors* window your GC may not be fitted with an FID.

5.4.6 Replace the central processing unit (CPU)

Procedure

1. Save the gas chromatograph (GC) configuration file. In MON2020, go to **File** → **Save Configuration (to PC)**.
2. Power down the GC.
3. Open the GC cover.
4. Remove the clear plastic cover that holds the boards in place.
5. Remove the CPU board.

⚠ CAUTION

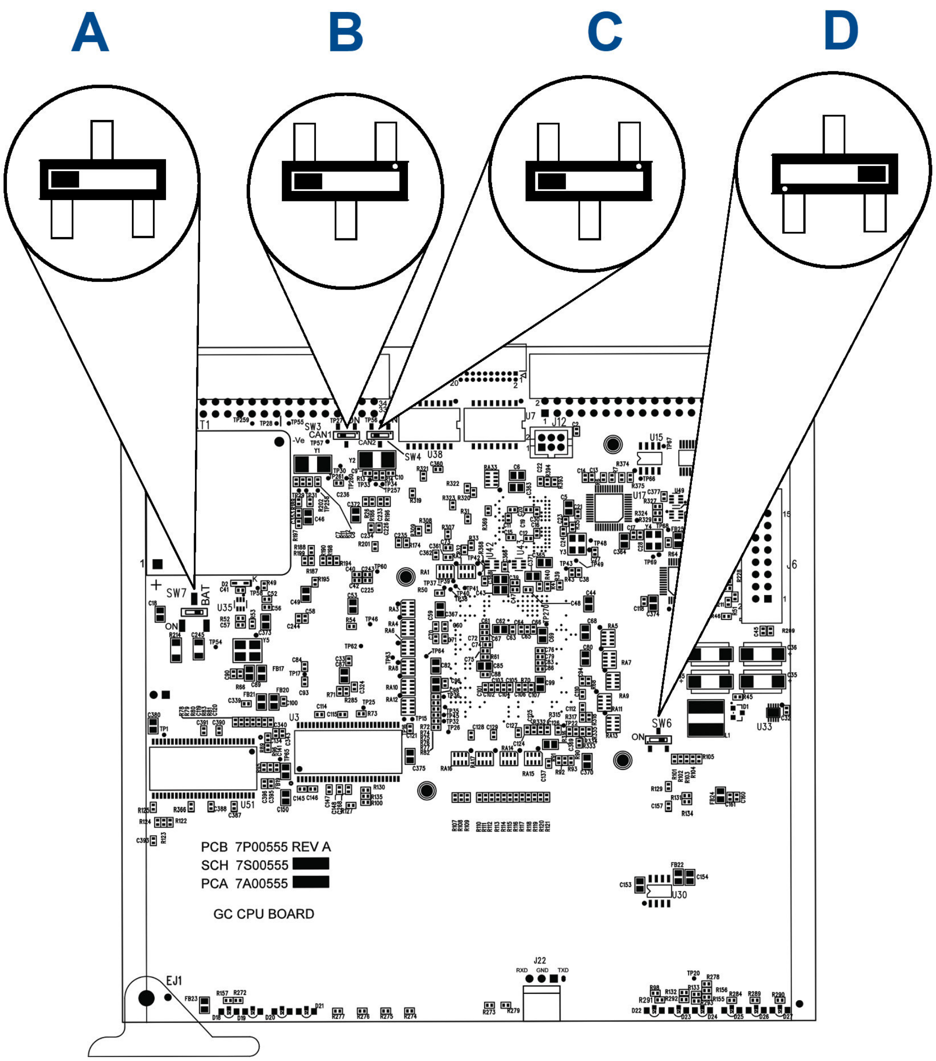
ELECTROSTATIC DISCHARGE (ESD) HANDLING PRECAUTIONS REQUIRED

CPU boards are sensitive electronic devices.

- Do not ship or store near strong electrostatic, electromagnetic, or radioactive fields.
- Use an antistatic wrist strap (or ESD wrist strap) when handling the boards.

6. On the new CPU board, set up switches as shown in the following image:

Figure 5-4: CPU Switch Settings



A. Turn SW7 ON (toward the dot).
B. Turn SW3 OFF (away from the dot).
C. Turn SW4 OFF (away from the dot).
D. Turn SW6 OFF (away from the dot).

Note
Rosemount 700XA GCs are tagged with CPU board part number *7A00555G02*.

7. Install the new CPU board in the card cage.
   Ensure the board is seated firmly in place.
8. Place the clear plastic cover back over the boards.
9. Close the GC cover.

10. Power up the GC and connect to it through MON2020.
11. In MON2020, go to **Chromatograph** → **View/Set Date_Time**. Set the date and time for the GC.

    See the MON2020 Software for Gas Chromatographs Reference Manual for more information.
12. In MON2020, go to **Tools** → **Cold Boot**. Cold boot the GC.
    The GC reboots automatically and disconnects from MON2020.
13. Wait for the GC to reboot.
14. Reconnect to the GC using MON2020.
15. In MON2020, go to **File** → **Restore Configuration (to GC)**. Use the configuration file you saved in Step 1 or use the last known good configuration.
16. Wait for the heaters to stabilize.
17. Go to **Control** → **Auto Sequence** to auto sequence the GC.

5.4.7 Repairing and maintaining the valves

Only minimal valve repair and maintenance is required (e.g., replacing the diaphragms).

Required tools for valve maintenance

The tools required for performing repair and general maintenance on the Rosemount XA Series valve assemblies are:

- Torque wrench, scaled in foot-pounds
- ½-in. socket for 10-port valves
- 7/16-in. socket for 6-port valves
- ¼-in. open-ended wrench
- 5/16-in. open-ended wrench
- 5/32-in. Allen wrench

Valve replacement parts

Replacement parts required for each Rosemount XA Series valves consist of the following parts:

- Diaphragm kit 6-port XA valve (PN 2-4-0710-248)
- Diaphragm kit 10-port XA valve (PN 2-4-0710-171)

Figure 5-5: XA Series Valves

Overhaul a valve

Note

Rosemount valves have a lifetime warranty. Replacement factory-built XA Series valves are available. Call your local Emerson Customer Care representative for more information.

If you are overhauling a 6-port valve, refer to drawing #CE-22260; If you are overhauling a 10-port valve, refer to drawing #CE-22300. Both drawings are available in Engineering drawings.

Procedure

1. Shut off the carrier and sample gas streams entering the unit.

   ⚠ WARNING

   HOT SURFACES

   Failure to allow the analyzer to cool may cause burns from hot surfaces in the enclosure.

   Power down the GC and allow it to cool for at least five minutes.

2. Disconnect tubing and fittings that attach to the valve from other locations.

3. Loosen the valve's torque bolt.

Figure 5-6: Valve

A. Torque bolt

4. Holding the lower piston plate, pull the valve straight off the block.

   The alignment pins may stick slightly.
5. Remove and discard the old valve diaphragms and gaskets.
6. Clean the sealing surface as required using a non-lint-forming cloth and isopropyl alcohol. Blow the sealing surface with clean, dry instrument air or carrier gas.

Note

Dirt, including dust and lint, can cause troublesome leakage.
Do not use an oil-based cleaner on the valve.

7. Replace the old diaphragms and gaskets, in the same order, with the new ones supplied.
8. Reassemble the valve using the following steps:
   a) Align the pins with holes in the block and push the valve assembly into place.
   b) Tighten the valve's torque bolt.

      The 6-port valve requires 20 ft./lb. of torque; the 10-port valve requires 30 ft./lb. of torque.
   c) Reinstall the valve using the two mounting screws and reconnect all fittings and tubing.

Replace solenoids

You can replace the oven system solenoids and/or the stream switching solenoids.

⚠ WARNING

EXPLOSION

Failure to follow this warning may result in injury or death to personnel or cause damage to equipment.

Disconnect all electrical power to the gas chromatogaph (GC) and ensure the area is free of explosive gases.

Procedure

1. Remove the thermal cover from the upper enclosure.
2. Loosen the ultem thumb screw and tilt the oven on its side to gain access to the solenoids that are located on the underside of the ultem.
3. Loosen the screws holding the solenoid in place and remove the solenoid.
4. Place a small amount of silicone grease on the target device (pneumatic block, four-way stream block, etc.) where the solenoid is to be placed.

   The grease ensures a tight seal.
5. Tighten the screws to hold the solenoid in place.
6. Place the oven upright.
7. Tighten the ultem thumb screw.

5.4.8 Repairing and maintaining the detectors

When a thermal conductivity detector (TCD) fails to perform normally, you may need to replace it.

Signs that a TCD may be faulty include, but are not limited to, the following:

- A chromatogram with a wandering or drifting baseline
- A chromatogram with a noisy baseline
- A chromatogram with a no peaks
- No chromatogram

A test for a faulty TCD involves measuring the resistance of each filament using a multimeter. A pair of thermistors should give the same resistance reading; therefore, if a thermistor reading is significantly different from the reading of its mate, replace the pair. Otherwise, the TCD bridge will be unbalanced, noisy, and drifty.

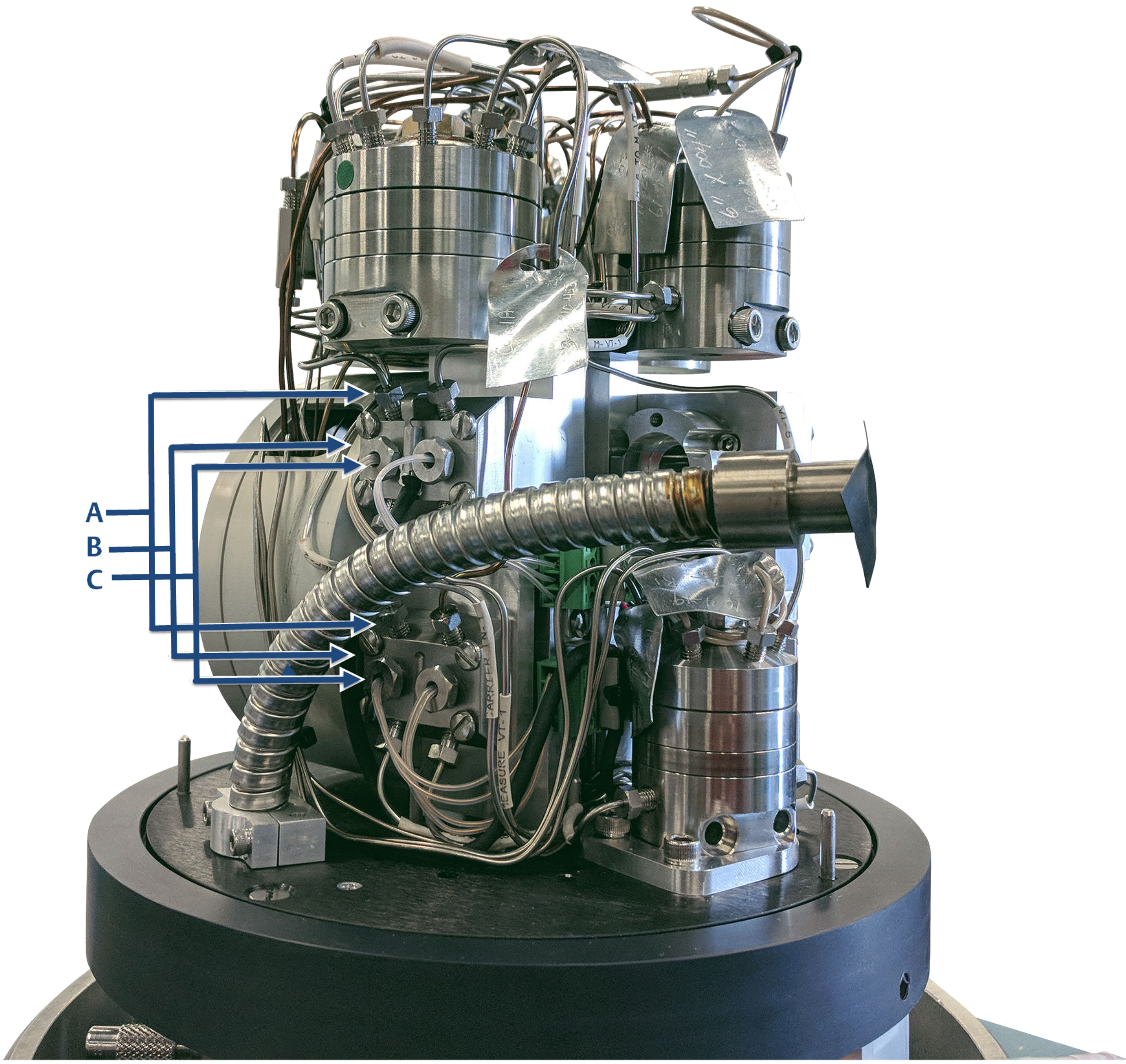
Required tools for thermal conductivity detector (TCD) maintenance

A flat-head screwdriver is required for removing and replacing TCDs. Use a multimeter to test the thermistor pair.

Thermal conductivity detector (TCD) replacement parts

Consult the parameter list that was provided with the gas chromatograph (GC) for the thermistor kit required to replace one TCD. A new thermistor seal (2-6-5000-084) is also required.

Figure 5-7: TCD



A. *Gas connector*
B. *TCD block*
C. *TCD 1 and TCD 2 retainer nuts and thermistor leads*

Replace a thermal conductivity detector (TCD)

See drawing DE-22143 in List of engineering drawings - Rosemount 700XA.

⚠ WARNING

EXPLOSION HAZARD

Failure to de-energize the analyzer may cause an explosion and severely injure personnel.

Do not open the enclosure unless the area is known to be non-hazardous or unless all devices within the enclosure have been de-energized.

⚠ WARNING

Failure to follow this warning may result in injury or death to personnel or cause damage to the equipment.

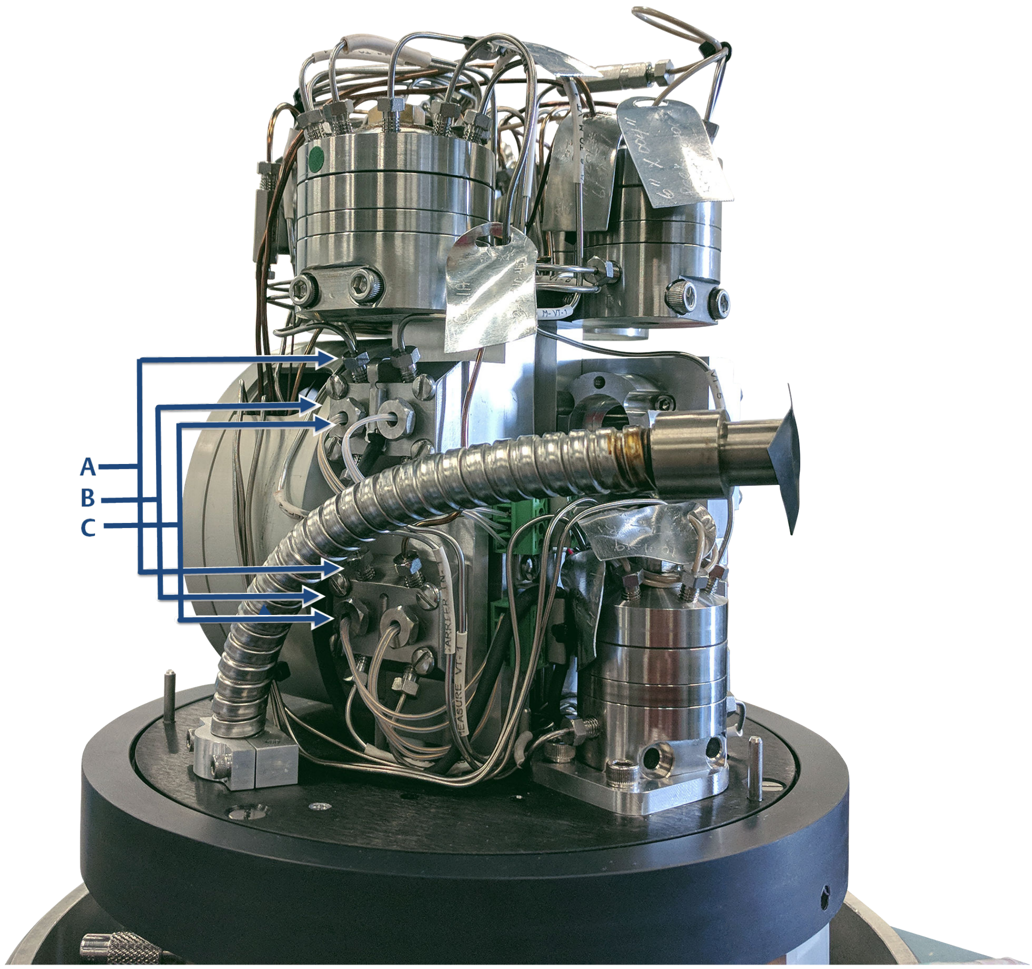
Disconnect all electrical power to the gas chromatograph (GC) and ensure the area is free of explosive gases.

Procedure

1. Disconnect all power to the GC.
2. If you have not already done so, remove the explosion-proof dome and the thermal cover.

3. Unscrew and remove the TCDs from the TCD block and the gas connectors.

Figure 5-8: Components of a TCD



A. Gas tubing connector
B. TCD block
C. TCD 1 and TCD 2 retaainer nuts and thermistor leads

4. Loosen the two retainer nuts.
5. Use a flat head screw driver and remove the four TCD termination block screws.
6. The TCD thermistors are held within the TCD block by the retainer nut. To replace the thermistor, do the following:
    a) Unscrew and release the thermistor leads from the termination block.
    b) Unscrew the retainer nut from the TCD block.
    c) Remove the PTFE seals as well as the thermistor and its wires from the retainer nut.
    d) Remove the PTFE shields from the old thermistor wires and install on the new thermistor wires.

e) Insert a new PTFE seal into the TCD block.

f) Thread the thermistor through the retainer nut.

g) Screw the retainer nut back into the TCD block.

   Ensure a tight fit (quarter turn after finger tight); otherwise a potential leak path might open.

h) Reconnect the thermistor leads to the termination block, taking care to reconnect the thermistor leads to the corresponding terminal block screws.

Note

The thermistors are a matched pair (2-5-1611-003) and must be replaced as such. Repeat Step 6 for each thermistor in a pair.

Note

Tighten the block screws with a torque wrench to 20 in.-oz.

7. Reconnect the gas tubings.

   Make sure tubing is properly seated and reattach the TCD housing with the four screws.

8. Replace the thermal cover and explosion-proof dome.

9. Apply power to the GC.

5.4.9 Remove the flame ionization detector (FID)

The FID has no replaceable parts. If it has damage (such as as broken resistance temperature device [RTD] or igniter coil) you will need to remove and replace the FID.

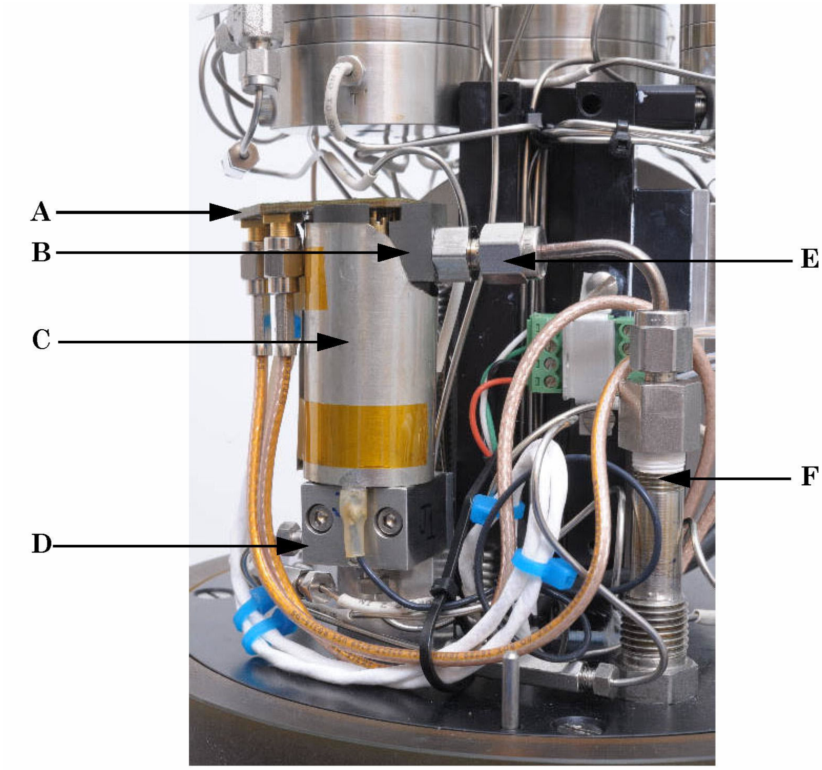
⚠ WARNING

EXPLOSION HAZARD

Failure to de-energize the analyzer may cause serious injury or death to personnel.

Do not open when energized or when an explosive atmosphere may be present. Keep cover tight while circuits are live.

Figure 5-9: FID



A. *Termination board*
B. *Cap*
C. *Ground shield cover*
D. *Mounting bracket*
E. *Vent connector*
F. *Exhaust tube*

Procedure

1. Disconnect all power to the gas chromatograph (GC).

   Allow at least 10 minutes for the components to cool down.

2. Remove the explosion-proof dome and the thermal hood.
3. Remove the screw connecting the termination board to the FID cap.
4. Remove the two screws from the mounting bracket.
5. Unscrew and remove the vent connector.

   Note
   Use a backing wrench on the bolt fronting the FID cap when removing the vent connector.

6. Remove the screw from the top of the FID assembly.

⚠ CAUTION

ELECTROSTATIC DISCHARGE (ESD)

Operators and technicians must wear an electrostatic wrist strap when handling printed circuit cards to prevent shorting the boards through static electricity.

Postrequisites

To reassemble the FID, refer to Reassemble the flame ionization detector (FID). The final step is to flip the FID switch to the **ON** position.

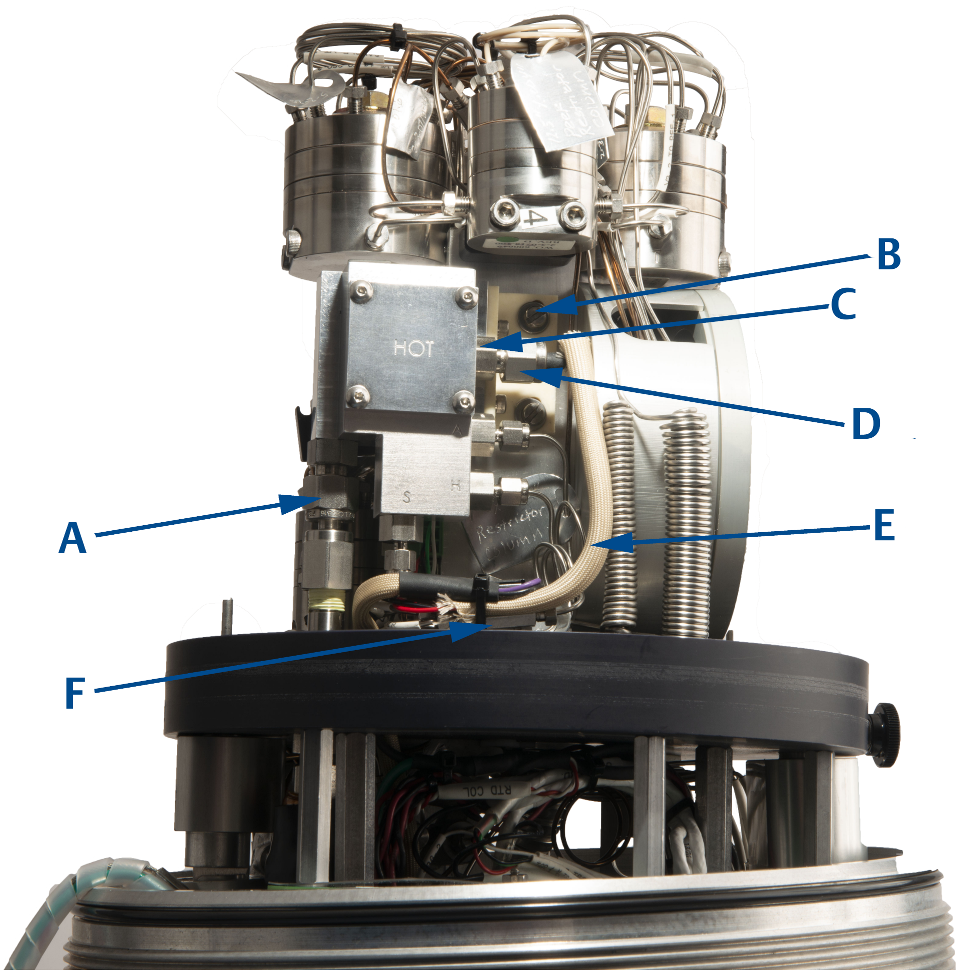
5.4.10 Reassemble the flame ionization detector (FID)

Procedure

1. Insert the FID into the mounting bracket and secure with the two block screws.
2. Grasp the edges of the FID board and align with the six socket tubes that extend into the pins in the cap.
3. Replace the screw at the top of the FID assembly.
4. Tighten the tubing nut connector, securing the FID exhaust tube.
5. Screw in the tubing nut connectors located at the base of the FID.
6. Install the explosion-proof cover over the FID assembly and secure to the base with eight bolts.

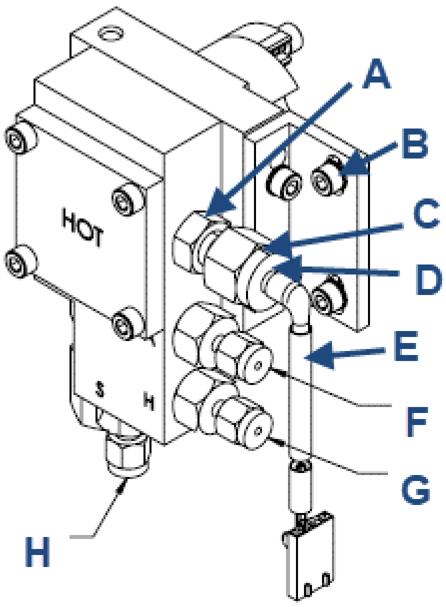
5.4.11 Replace igniter/thermocouple assembly

Figure 5-10: Igniter/Thermocouple Assembly Front View



A. *Bulkhead nut*
B. *Screws and washers*
C. *Fitting*
D. *Bulkhead nut*
E. *Igniter/thermocouple assembly*
F. *Igniter connector*

Figure 5-11: Igniter Side View



A. *Fitting*
B. *Screws and washers*
C. *Bulkhead nut*
D. *Black plastic edge*
E. *Igniter/thermocouple assembly*
F. *Port A*
G. *Port H*
H. *Port S*

Procedure

1. Loosen the bulkhead nut (Figure 5-10, A).
2. Detach the igniter connector (Figure 5-10, F).
3. Remove the screws and washers (B) from the plastic bracket.
4. Rotate the micro flame photometric detector (μFPD) burner around the bulkhead nut (Figure 5-10, A) until there is enough room to remove the igniter/thermocouple assembly.
5. Loosen the nut (Figure 5-10, D); then slide the igniter/thermocouple assembly and ferrule (not shown here) out of the μFPD burner through the fitting.
6. Slide the bulkhead nut (Figure 5-10, D) and a new ferrule on the new igniter/ thermocouple assembly. Then slide the μFPD burner through the fitting (Figure 5-10, C).
7. Align the black plastic edge of the igniter (Figure 5-11, D) with the end of the nut (Figure 5-10, D) and gradually tighten the nut (Figure 5-10, D) to the fitting (Figure 5-10, C). Keep pushing the ignitor toward the burner while tightening the nut

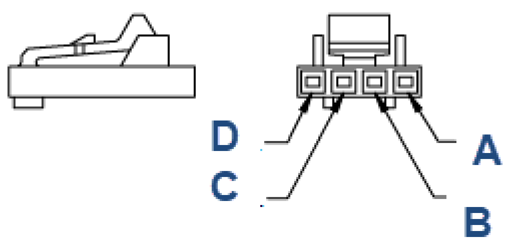
(Figure 5-10, D). The back edge has to be flush with the end of nut (Figure 5-10, D) when secured. Tighten the nut (Figure 5-10, D) to 4 in.-lb.

Do not overtighten the nut (Figure 5-10, D).

8. Rotate the µFPD burner back to its original position. Finger tighten the screws and washers (B).
9. Tighten the bulkhead nut (Figure 5-10, A) to 20-in. lb.
10. Secure the screws and washers (B).
11. Reconnect the ignitor connector (Figure 5-10, C).

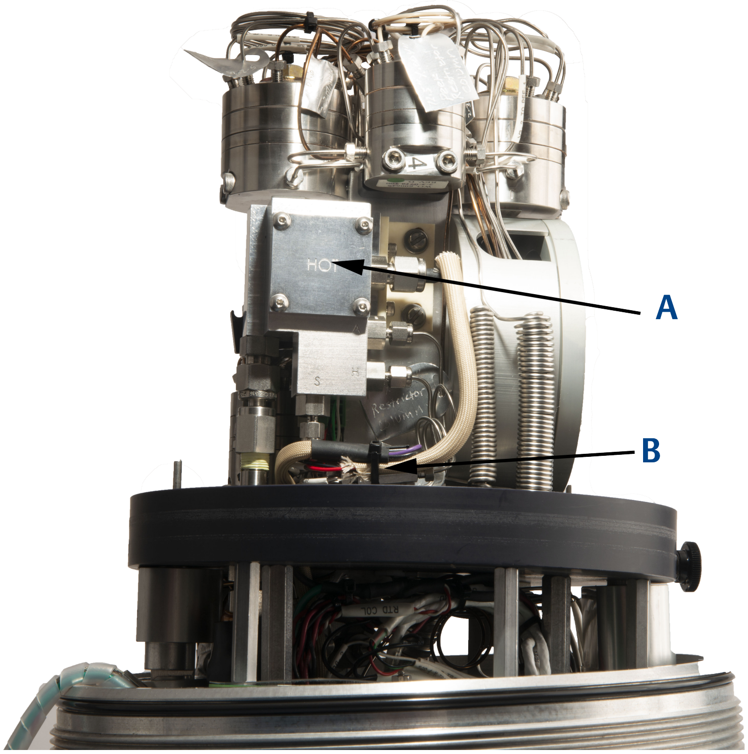
5.4.12 Troubleshoot igniter/thermocouple assembly

Figure 5-12: Igniter/Thermocouple Assembly Drawing



A. *Purple, igniter*
B. *Black, igniter*
C. *White, thermocouple*
D. *Red, thermocouple*

Figure 5-13: Igniter/Thermocouple Assembly Photo



A. Back plate
B. Connectors

- Resistances measured between pins 1 and 2 shall be 0.5 - 1.2 ohms.
- Resistances measured between pins 3 and 4 shall be less than 4 ohms.

Recommended actions

1. Detach connectors.

   Voltage between pins 1 and 2 on extension cable end shall measure 3.0 to 3.3 Vdc while igniting. You can manually ignite with the ***Detectors*** pop-up window.

   If no voltage is measured, you may need to replace the photomultiplier tube (PMT) module or extension cable.

2. Remove black plate.

   Igniter shall glow red while igniting or if you apply 3 Vdc to pins 1 and 2 on burner end. Do not apply more than 3.3. Vdc to igniter. Do not apply voltage to igniter for more than 20 seconds.

5.4.13 Remove the flame photometric detector (µFPD) burner

Use this procedure and refer to assembly drawing DE-22143 to replace the µFPD burner.

⚠ WARNING

EXPLOSION HAZARD

Failure to de-energize the analyzer may cause serious injury or death to personnel.

Do not open when energized or when an explosive atmosphere may be present.

Keep cover tight while circuits are live.

⚠ WARNING

BURN HAZARD

Internal components may be hot. Failure to allow the GC to cool down may result in injury to personnel.

Allow the GC to cool down before disassembling any components.

Always wear proper personal protective equipment (PPE) when disassembling the analyzer.

Tools required

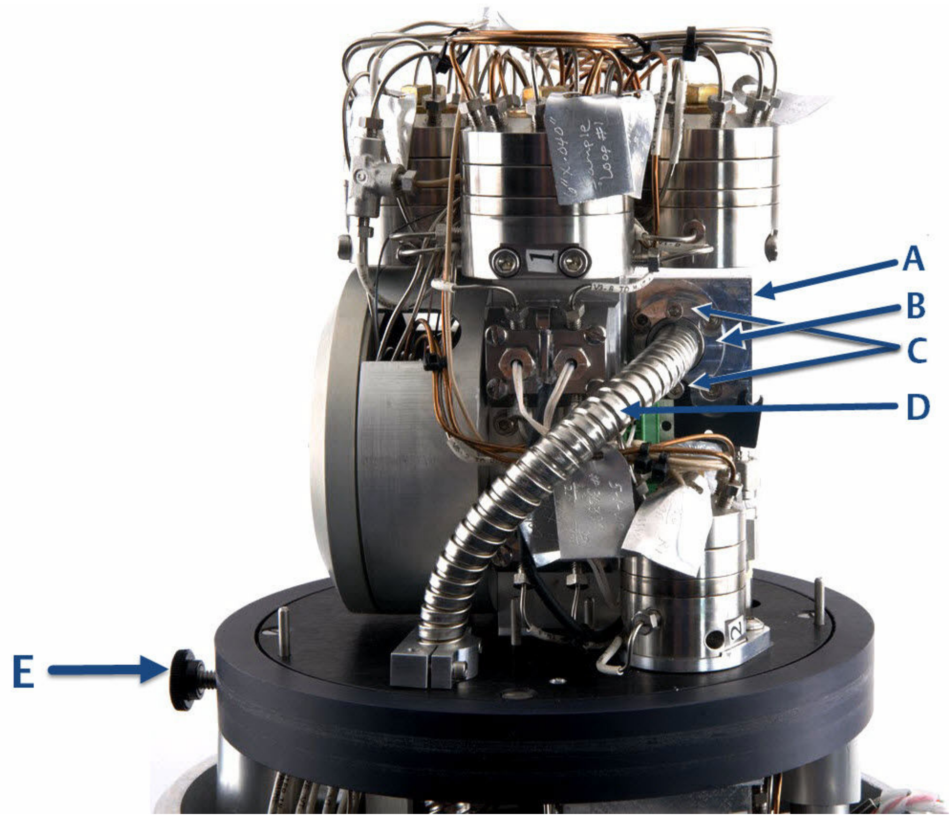
- 7⁄64-in. Allen wrench
- Phillips screwdriver
- Flathead screwdriver

Procedure

1. Disconnect all power to the unit. Allow at least 10 minutes for the components to cool-down.
2. Remove the explosion-proof dome and the thermal hood.

3. Use a 7⁄64-in. Allen wrench and remove the fiber cable screws from the µFPD burner mounting plate to disconnect the cable.

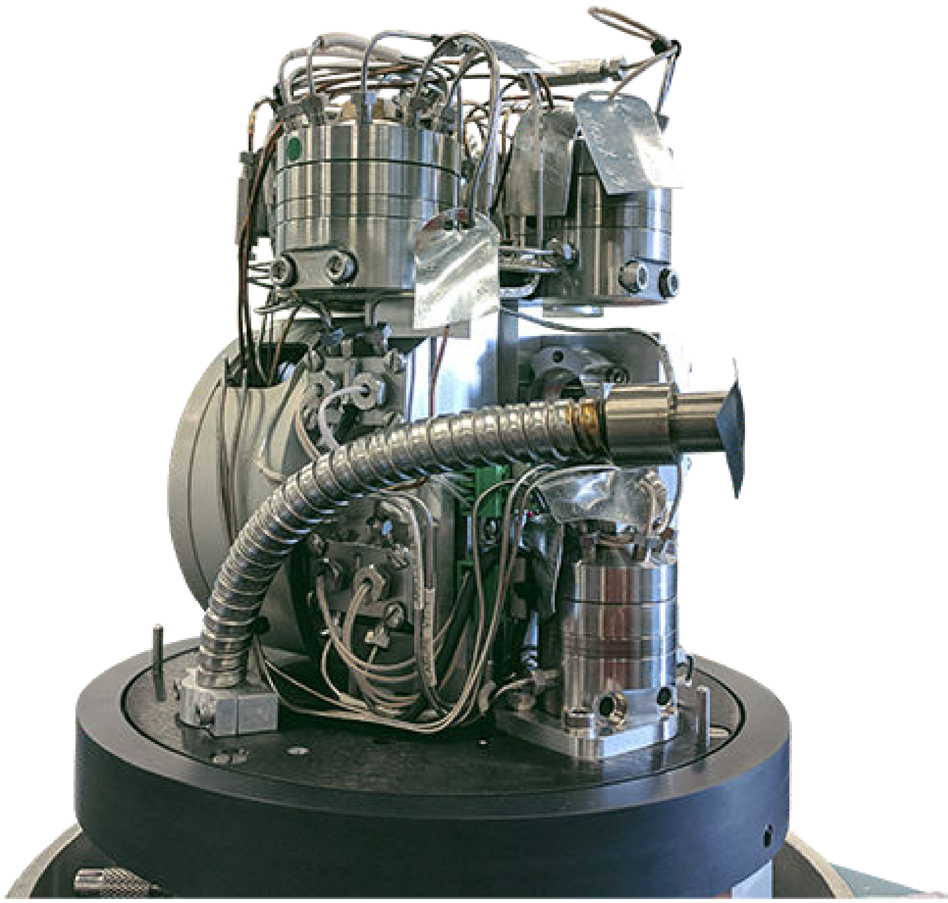
Figure 5-14: µFPD Burner Disassembly Back View



A. µFPD burner
B. µFPD fiber cable clamp
C. Screws µFPD burner
D. µFPD fiber cable
E. Thumb screw

4. Affix electrical tape to the end of the disconnected fiber cable to prevent debris or moisture contamination.

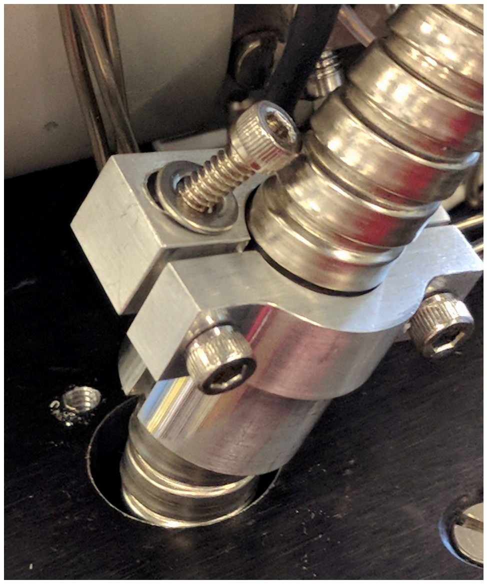
Figure 5-15: µFPD Fiber Cable Disassembled



5. Remove the two screws from the µFPD burner housing.

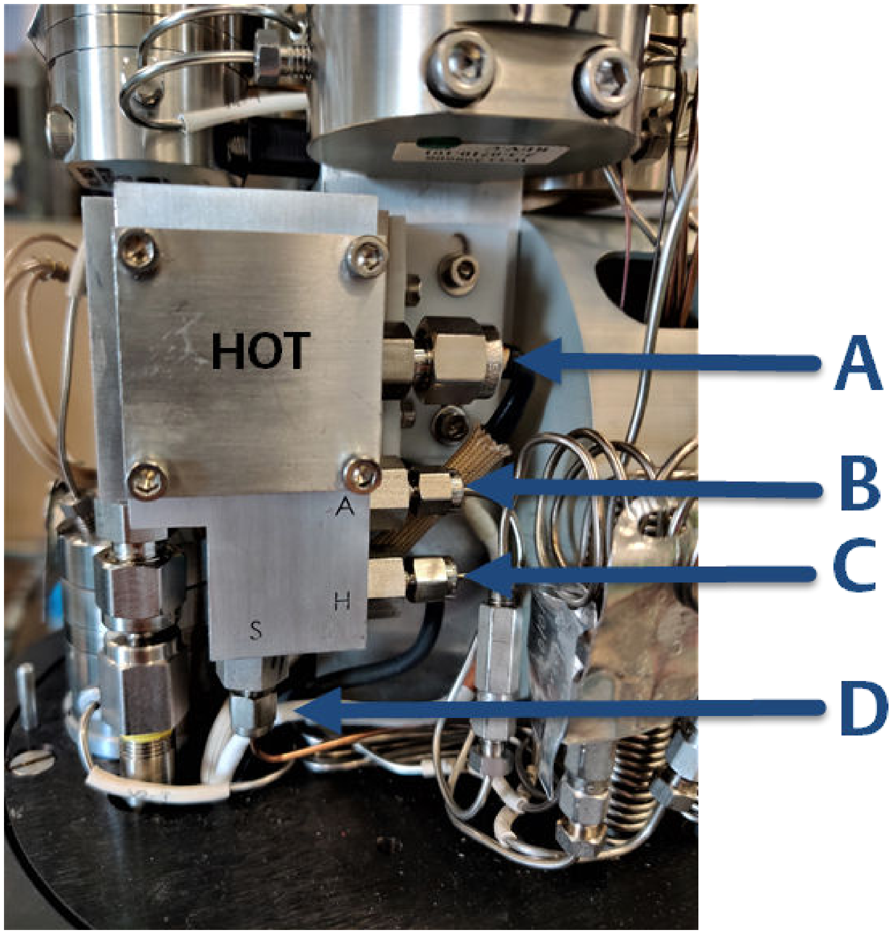
6. Remove the fiber cable clamp screws and O-ring. Set aside for reassembly.

Figure 5-16: μFPD Fiber Cable Clamp Dissassembly



7. Disconnect the air intake, helium intake, and sample lines.

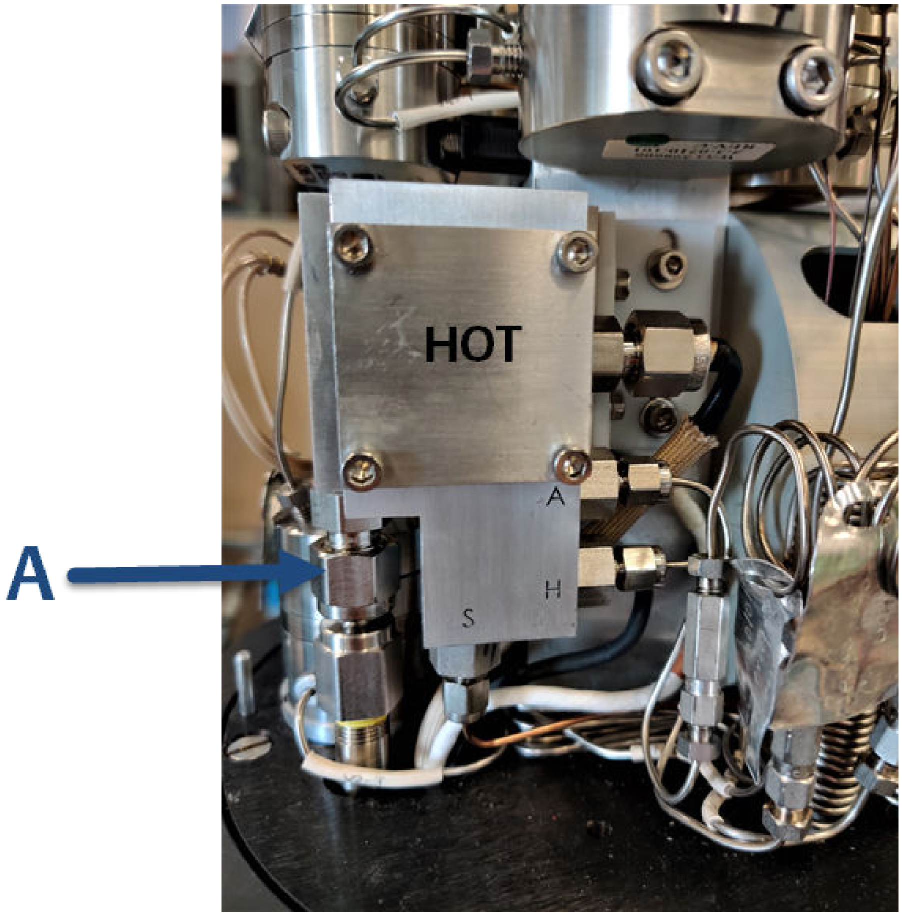
Figure 5-17: µFPD Ignitor and Intake Lines



A. *Igniter/thermocouple (TC)*
B. *Air intake port*
C. *Helium intake port*
D. *Sample intake port*

8. Loosen the top bulkhead nut and remove the µFPD burner assembly.

Figure 5-18: µFPD Burner Bulkhead



A. Bulkhead nut

5.4.14 Install the micro flame photometric detector (µFPD) burner

Use this procedure and refer to assembly drawing DE-22143 to install the µFPD burner.

⚠ WARNING

EXPLOSION HAZARD

Failure to de-energize the analyzer may cause serious injury or death to personnel.

Do not open when energized or when an explosive atmosphere may be present. Keep cover tight while circuits are live.

⚠ WARNING

BURN HAZARD

Internal components may be hot. Failure to allow the gas chromatograph (GC) to cool down may result in injury to personnel.

Allow the GC to cool down before disassembling any components.
Always wear proper personal protective equipment (PPE) when disassembling the analyzer.

Tools required

- 7⁄64-in. Allen wrench
- Phillips screwdriver
- Flathead screwdriver

Procedure

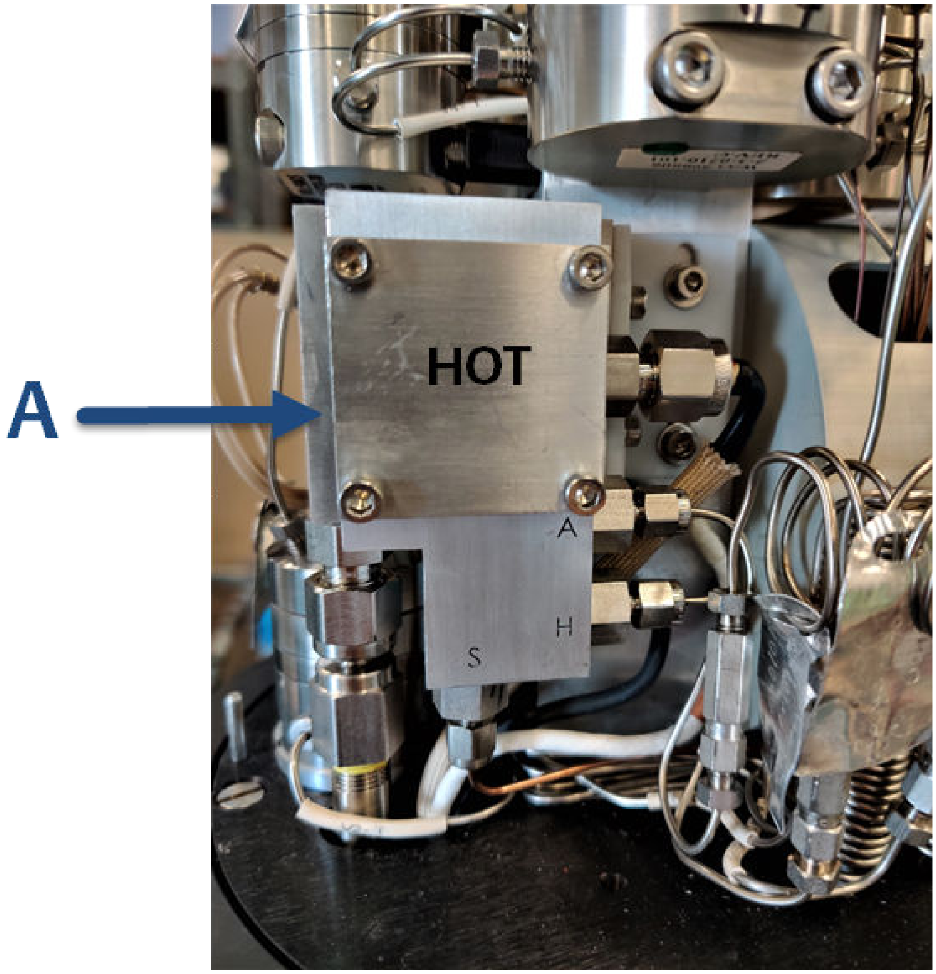
1. Disconnect all power to the unit.

   Allow at least 10 minutes for the components to cool-down.

2. Remove the explosion-proof dome and the thermal hood.

3. Attach the male fitting of the μFPD burner to the bulkhead nut on the GC. Finger tighten the bulkhead nut.

Figure 5-19: μFPD Burner Installation

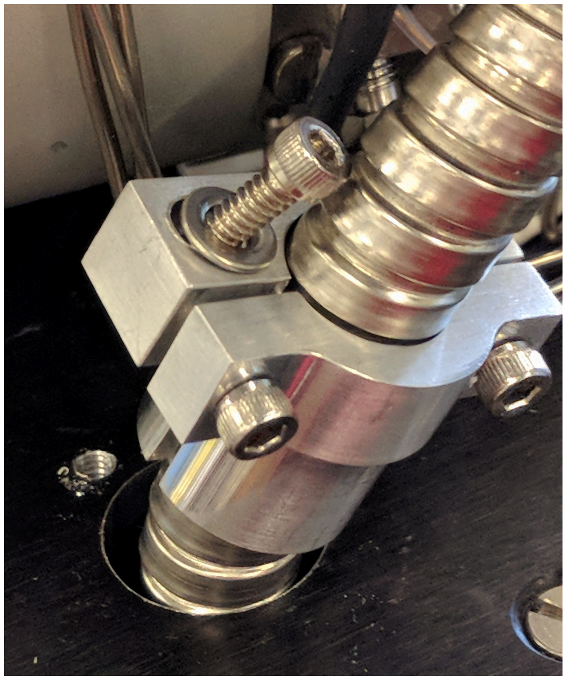


A. μFPD burner

4. Attach and finger tighten two screws/washers on the plastic bracket to center post.

5. Tighen the bulkhead connector with torque of 20 in. lb.

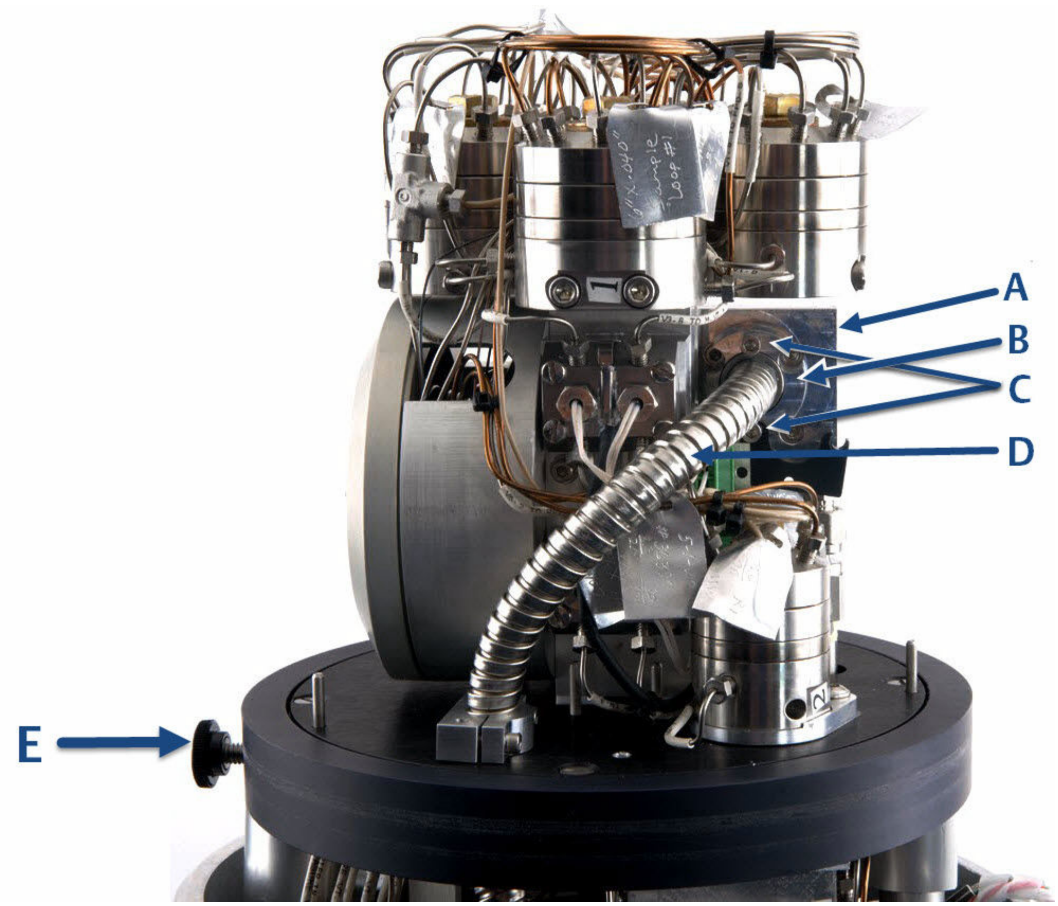
Figure 5-20: µFPD Fiber Cable Clamp Assembly



6. Install the fiber cable to the µFPD burner connector and secure with cable clamp.

7. Install the two screws in the rear of the µFPD burner housing.

Figure 5-21: µFPD Burner Assembly



A. µFPD burner
B. µFPD cable clamp
C. Screws µFPD burner
D. µFPD fiber cable
E. Thumb screw

8. Connect the ignitor, air intake, helium intake, and sample lines.

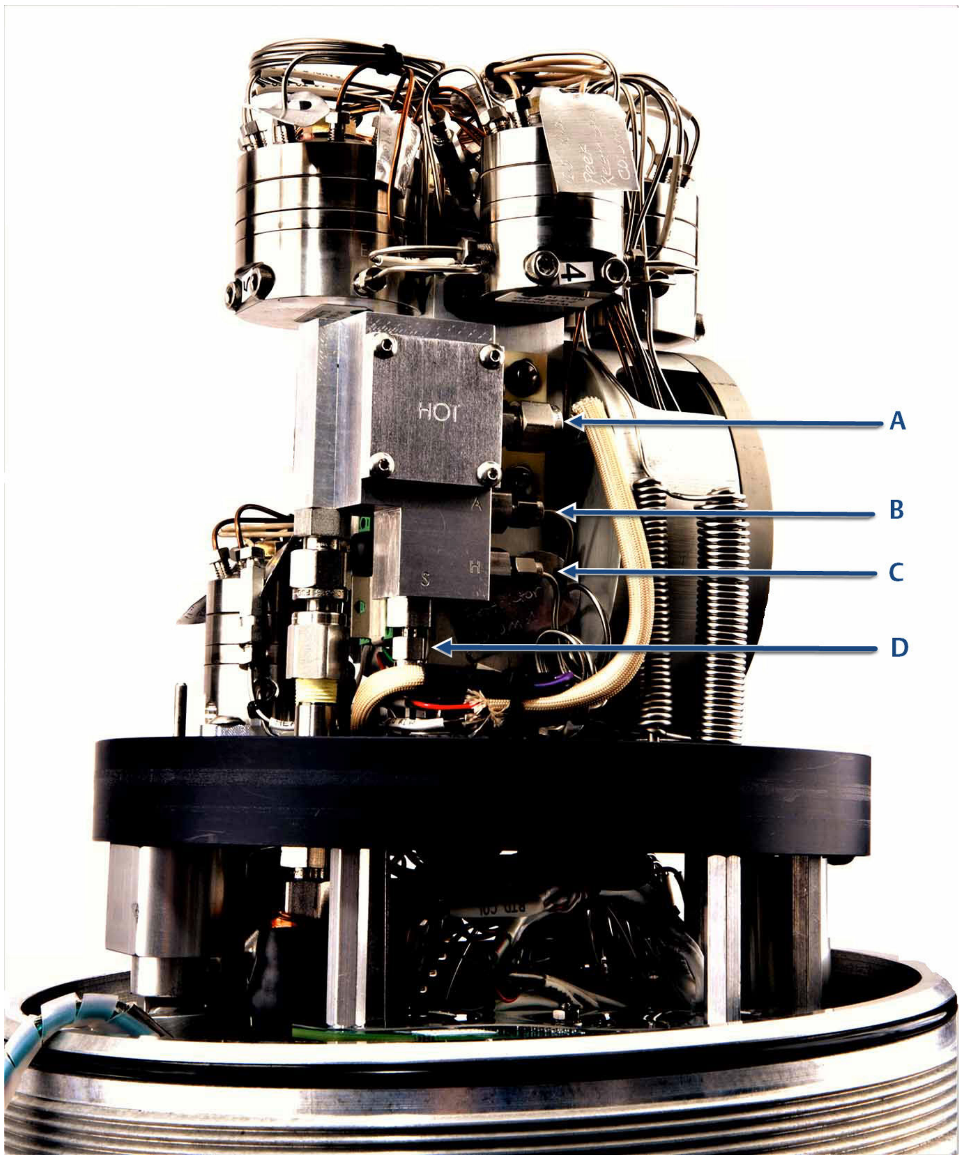
⚠ WARNING

BURN HAZARD

Internal components may be hot. Failure to allow the GC to cool down may result in injury to personnel.

Allow the GC to cool down before disassembling any components.
Always wear proper personal protective equipment (PPE) when disassembling the analyzer.

Figure 5-22: µFPD Ignitor and Intake Lines



A. *Igniter/TC*

B. Air intake port
C. Helium intake port
D. Sample intake port

9. Replace the thermal hood and the explosion-proof dome.
10. Apply power to the GC.

5.4.15 Remove the micro flame photometric detector photomultiplier tube (µFPD PMT) module

⚠ WARNING

EXPLOSION HAZARD

Failure to de-energize the analyzer may cause serious injury or death to personnel.

Do not open when energized or when an explosive atmosphere may be present.
Keep cover tight while circuits are live.

⚠ WARNING

BURN HAZARD

Internal components may be hot. Failure to allow the GC to cool down may result in injury to personnel.

Allow the GC to cool down before disassembling any components.
Always wear proper personal protective equipment (PPE) when disassembling the analyzer.

Tools required

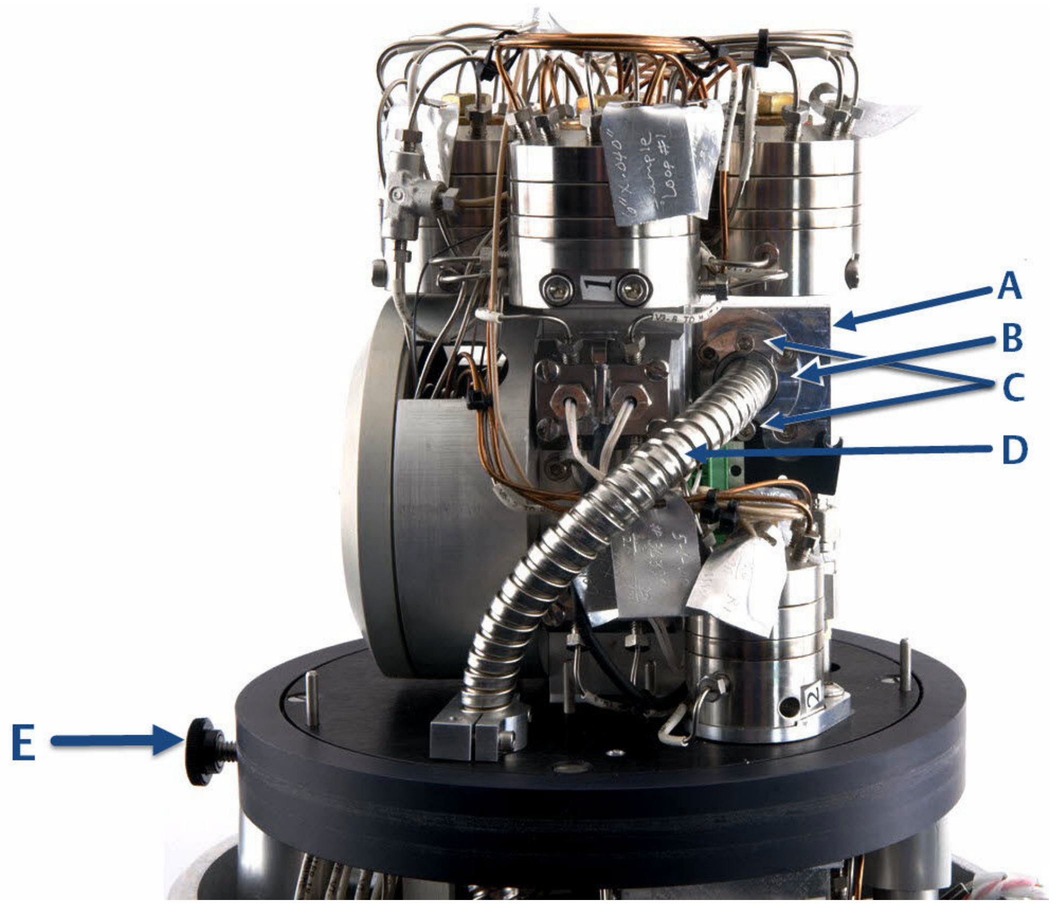
- 7⁄64-in. Allen wrench
- Phillips screwdriver
- Flathead screwdriver

Procedure

1. Disconnect all power to the unit. Allow at least 10 minutes for the components to cool-down.
2. Remove the explosion-proof dome and the thermal hood.

3. Use a 7⁄64-in. Allen wrench and loosen the fiber cable screws from the µFPD burner mounting plate to disconnect the cable.

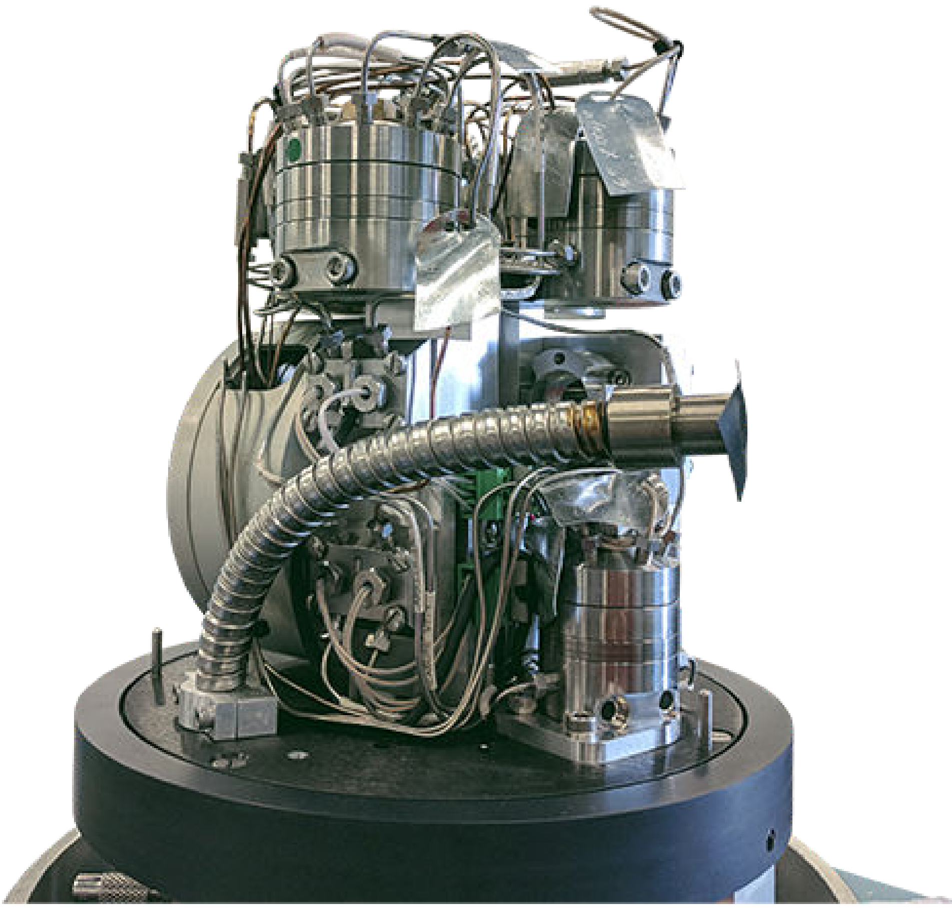
Figure 5-23: µFPD Burner Disassembly



A. µFPD burner
B. Fiber cable clamp
C. Screws µFPD burner
D. µFPD fiber cable
E. Thumb screw

4. Affix electrical tape to the end of the disconnected fiber cable to prevent debris or moisture contamination.

Figure 5-24: µFPD Fiber Cable Disassembled



5. Loosen the screws holding the fiber cable bottom clamp. Slide the bottom clamp up.

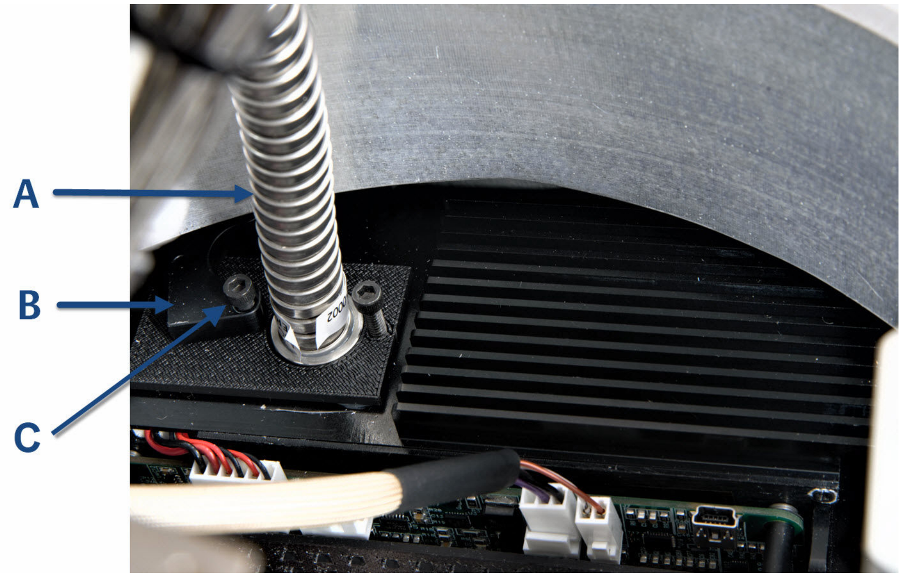
Figure 5-25: μFPD Fiber Cable Clamp Dissassembly

6. Loosen the thumb screw and carefully lift and tilt the Ultem plate and upper assembly.

Figure 5-26: Upper Assembly Tilted

7. Loosen the fiber cable clamp screws and disconnect the fiber cable from the PMT.

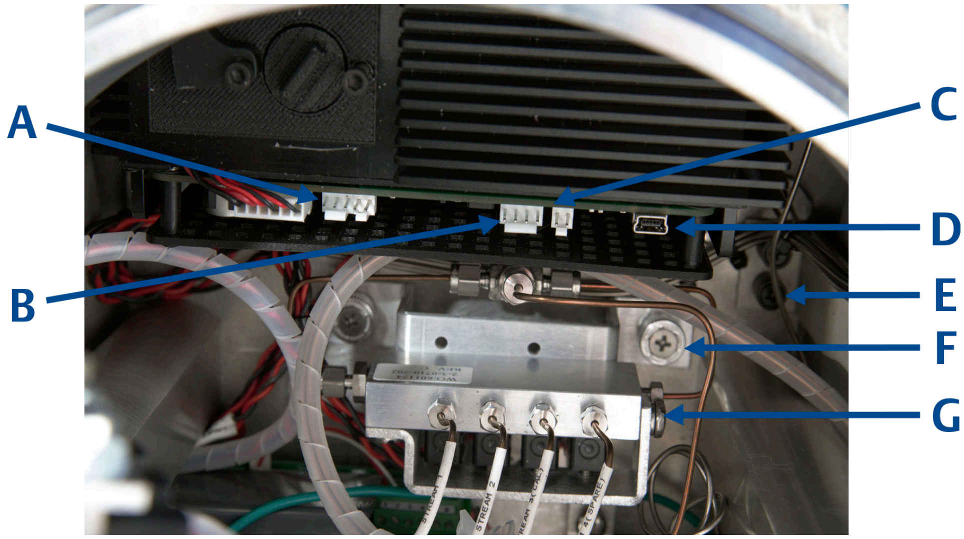
Figure 5-27: Fiber Cable Disconnected from the µFPD PMT Module



A. Fiber cable
B. Cable clamp
C. Cable clamp screws

8. Disconnect the wire terminals for J6, J10, and J2.

Figure 5-28: µFPD PMT Module Connections



A. J6 - CAN and power signals
B. J10 - igniter
C. J2 - thermocouple
D. USB connector
E. PMT module bracket screws
F. Stream manifold screws
G. Stream manifold

9. Loosen the two Phillips screws from the stream solenoid manifold.
10. Move the entire manifold away from the µFPD PMT module.
11. Use a large flat head screwdriver to loosen the two µFPD PMT module bracket screws.
12. Move the 1/16-in. stainless steel tubing away and pull the µFPD PMT module out of the enclosure.

5.4.16 Install the micro flame photometric detector (µFPD) photo multiplier tube (PMT) module

Tools required

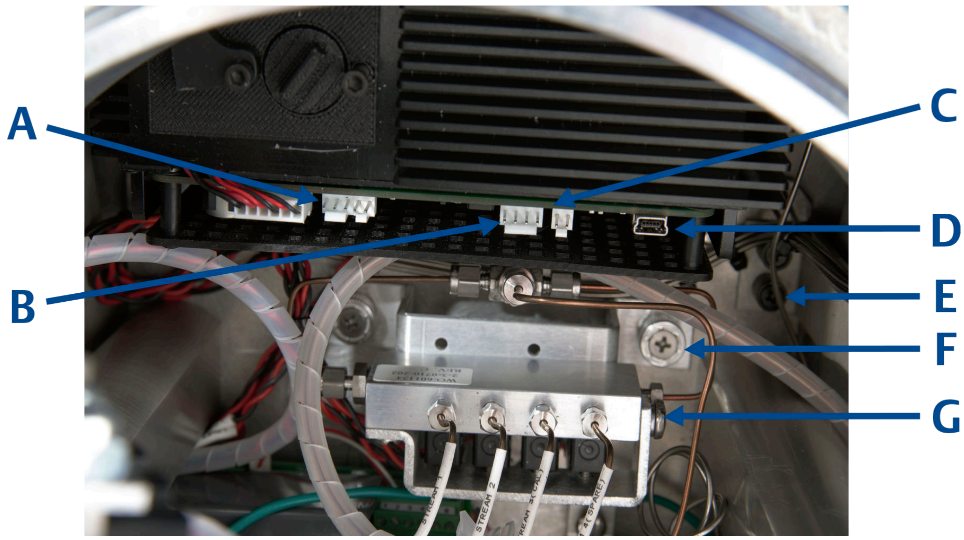
- 7⁄64-in. Allen wrench
- Phillips screwdriver
- Flathead screwdriver

Procedure

1. Lower the µFPD PMT module into the enclosure.

2. Use a large flathead screwdriver to tighten the two µFPD PMT module bracket screws.
3. Use a Phillips head screwdriver and tighten the two screws to attach the stream solenoid manifold.
4. Attach the J6, J10, and J2 wire terminals to the µFPD PMT module.

Figure 5-29: µFPD PMT Module Connections

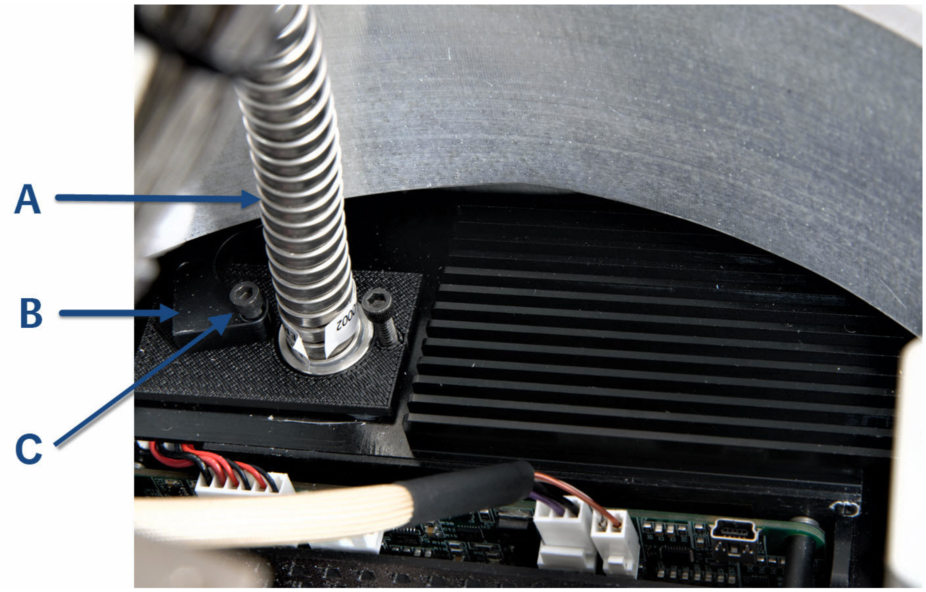


A. J6 - CAN and power signals
B. J10 - igniter
C. J2 - thermocouple
D. USB connector
E. PMT module bracket screws
F. Stream manifold screws
G. Stream manifold

5. Connect the fiber cable to the µFPD PMT module and tighten the two cable clamp Allen screws.

   The shoulder of fiber cable shall be flush with clamp surface to ensure fiber cable is fully inserted into PMT module.

Figure 5-30: Fiber Cable Connected to the µFPD PMT Module



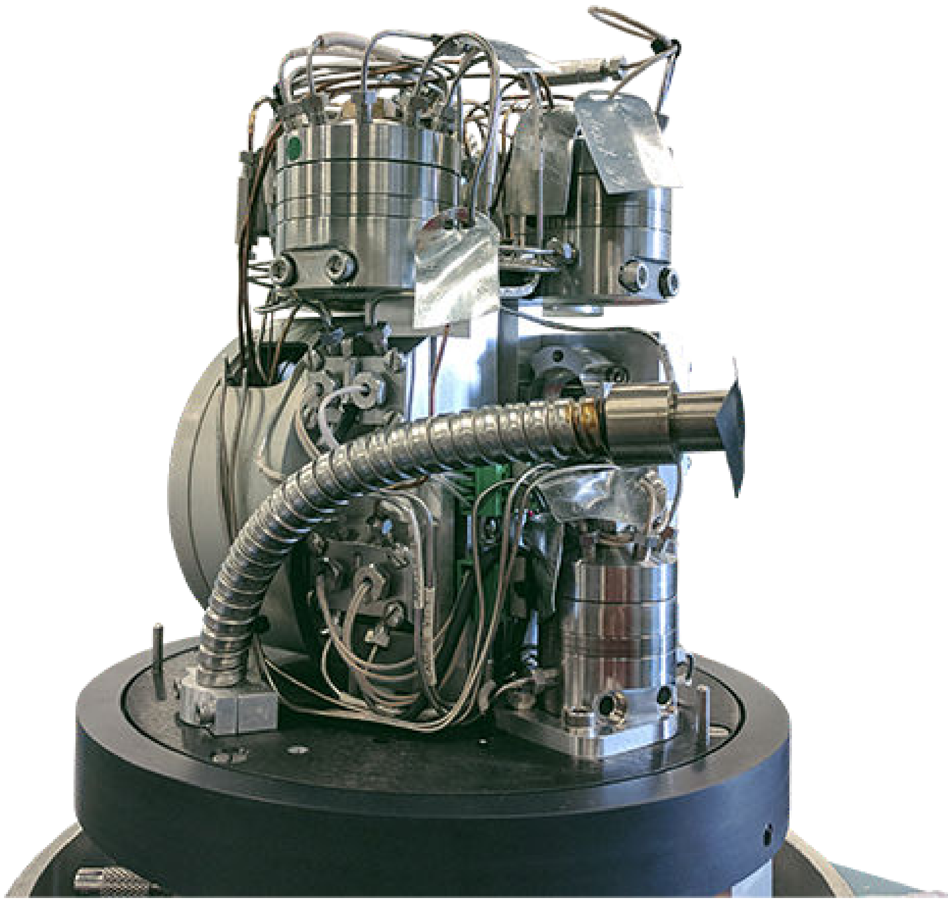
A. Fiber cable
B. Cable clamp
C. Cable clamp screws

6. Carefully tilt and lower the Ultem plate and upper assembly. Tighten the thumb screw.

Figure 5-31: Upper Assembly Tilted

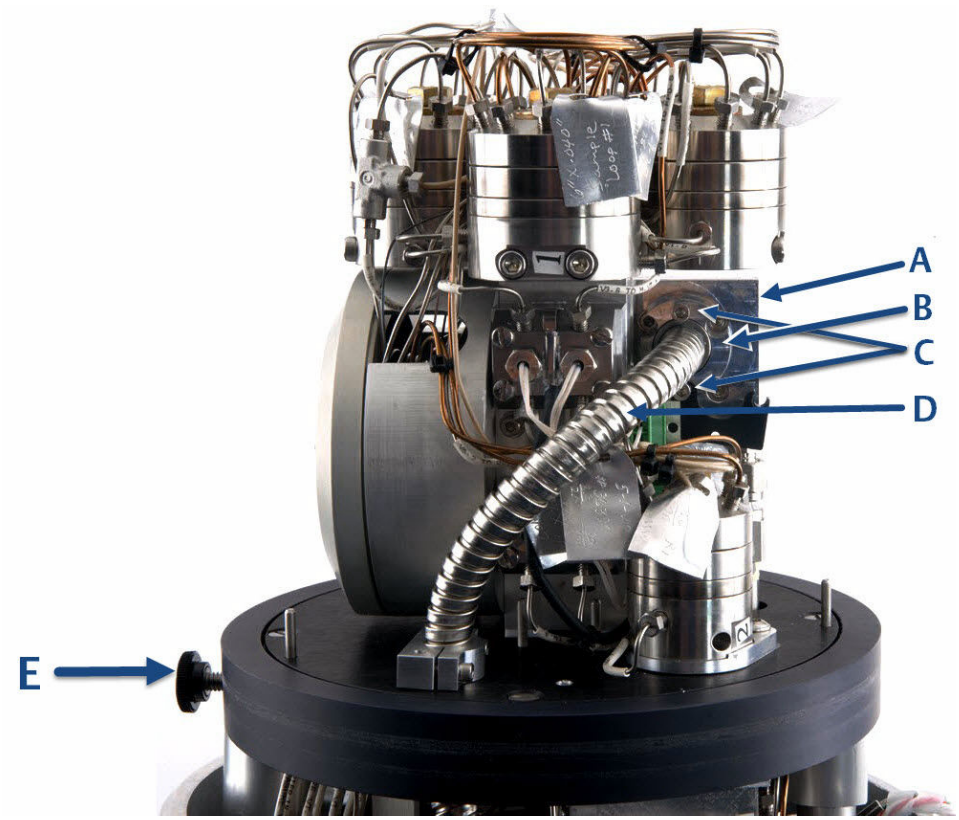
7. Remove electrical tape on the end of the fiber cable.

Figure 5-32: μFPD Fiber Cable Assembly



8. Insert the fiber cable into the µFPD burner.

Figure 5-33: µFPD Fiber Cable Assembly

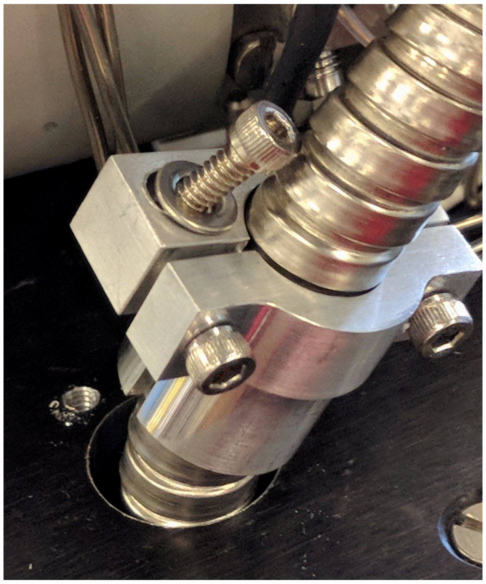


A. µFPD burner
B. Fiber cable clamp
C. Screws µFPD burner
D. µFPD fiber cable
E. Thumb screw

9. Tighten the burner fiber cable clamp screws.

10. Tighten the fiber cable upper clamp screws.

Figure 5-34: µFPD Fiber Cable Clamp Assembly



11. Replace the insulated cover and the explosion-proof dome.
12. Apply power to the gas chromatograph (GC).

5.4.17 Liquid sample injection valve (LSIV) maintenance

The following procedures detail how to remove and install an LSIV, as well as how to replace an LSIV's seals.

Install a MAT liquid sample injection valve (LSIV)

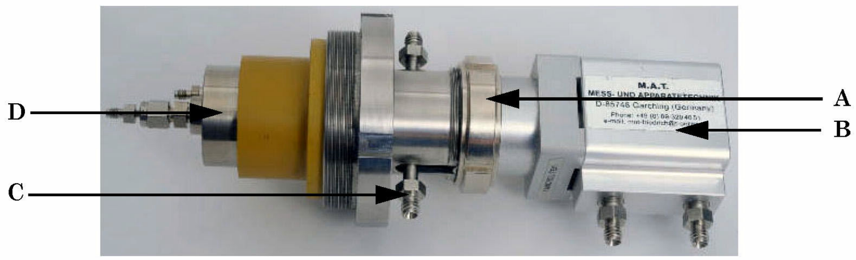
You can maintain the LSIV while it is attached to the enclosure. However, it may be easier to perform maintenance with the LSIV removed from the upper enclosure.

⚠ WARNING

This unit operates at high temperature. Failure to follow this precaution may result in injury or death to personnel.

Allow a cool down period of at least ten minutes after shutting down the gas chromatograph (GC) and handle it carefully.

Figure 5-35: MAT LSIV Components



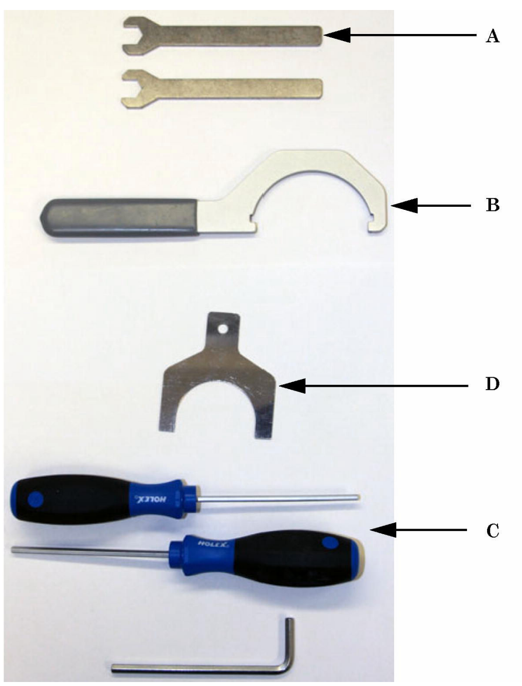
A. *Union coupling*
B. *Actuation section*
C. *Liquid sample connector*
D. *Thermal barrier adapter*

For a detailed view of the MAT LSIV's components, see Figure 5-38.

Prerequisites

Although, for the most part, you can remove and disassemble the LSIV with traditional tools, such as a wrench or pliers, the following tools ar eshipped with your LSIV-mounted gas chromatograph (GC).

Figure 5-36: LSIV Tools



A. *Two 10 mm wrenches*
B. *Union coupling wrench*
C. *Two 3 mm Allen wrenches*
D. *Union coupling spacer*

Procedure

1. Install new MAT valve by doing the following:
    a) Attach the retaining ring to the MAT LSIV.
    b) Slide the MAT LSIV into the mounting hole in the gas chromatograph (GC). Refer to Drawing #DE-20990 in Engineering drawings.
    c) Tighten the retaining ring by twisting it clockwise to secure the MAT LSIV to the GC.
2. Connect the following internal GC gas lines to the MAT LSIV:
    a) Connect the carrier gas line to the MAT LSIV.
    b) Connect the sample gas line to the MAT LSIV.
3. Place the insulation sleeve around the flash chamber as shown in Drawing #DE-20990.
4. Connect the following external GC gas lines to the MAT LSIV:
    a) Liquid Sample IN
    b) Liquid Sample Out
    c) Air Actuator Inject
    d) Air Actuator Retract
5. Install air solenoid items.

   Refer to Drawing #DE-20990.
6. Perform a standard system leak test.
7. Restart the sample flow.

You can now return the GC to service.

Remove the MAT liquid sample injection valve

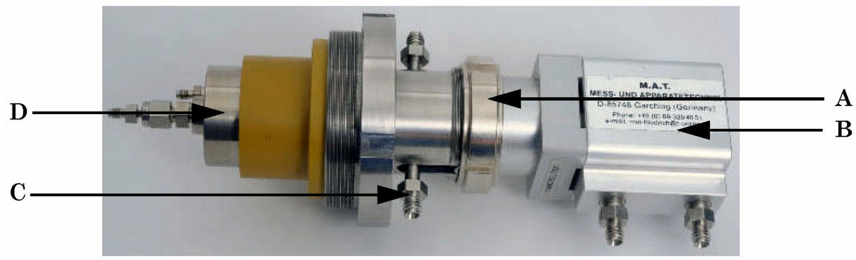
Inside the upper compartment of the gas chromatograph (GC), there are two insulation covers, which open like clam shells that slide off of the end of the LSIV, to be removed.

Procedure

1. Disconnect the carrier and sample tubing from the LSIV.
2. Remove the heater and resistance temperature device (RTD) from the heater block.
3. Disconnect sample and air tubing from the outer portions of the LSIV.
4. Unscrew the retaining ring, using a pin spanner wrench or other tool.

   With the retaining ring loose, the LSIV assembly is free to be pulled out of the upper enclosure.

Figure 5-37: Rosemount 700XA after LSIV (A) has been eRmoved



A. Union coupling
B. Actuation section
C. Liquid sample connector
D. Thermal barrier adapter

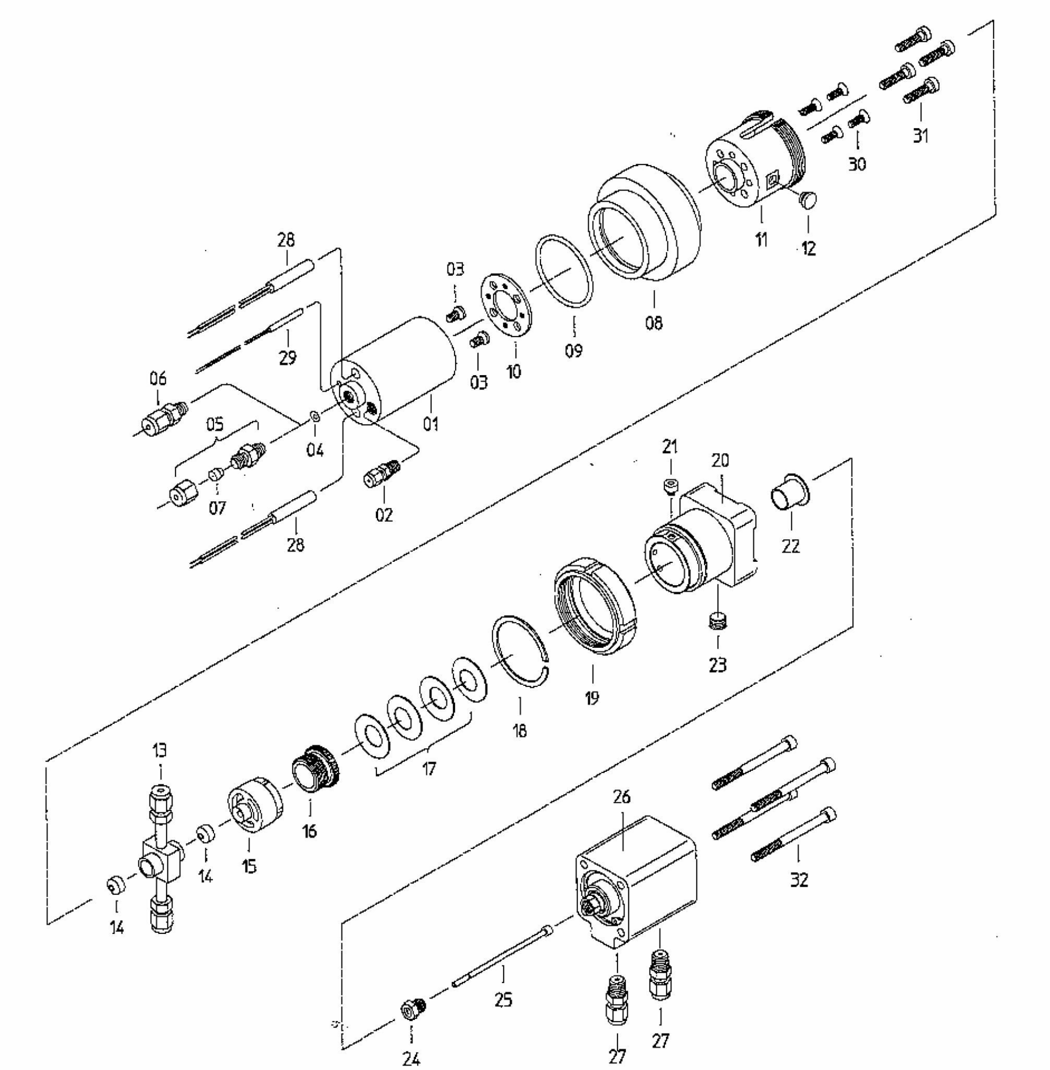
Replace liquid sample injection valve (LSIV) seals

Due to the possible damage caused by the presence of solids in the sample stream, combined with the regular, repeated motion of the injection valve stem, LSIV seals may require annual replacement.

Note
Specific application conditions should dictate the frequency of the seals replacement; monitor analytical performance to determine appropriate replacement intervals.

Note
ID numbers listed in parentheses refer to "LSIV - Exploded View" in Figure 5-38.

Figure 5-38: LSIV Exploded View



Procedure

1. Halt sample flow and allow time for the LSIV to cool.
2. Remove the actuation portion (26) of the valve by unscrewing the union coupling (19) from the heater section (11), which should remain attached to the gas chromatograph (GC).

   Emerson has provided a union coupling wrench for this purpose.

   This will expose the sample flow chamber and the old seals that ride the metering rod (25), which should be treated with great care to prevent bending or scratching.
3. Pull the sample flow chamber assembly (13) off the metering rod. Remove the two seals (14).

   To do this, you may need to push from the opposite sidw with a rod smaller than ⅛ in. (9.5 mm).

4. Place new seals on the sample flow chamber assembly. Press the chamber and seals back over the metering rod.
5. Place the actuation section in position on the heater section's headpiece.
6. Use the union coupling spacer to ensure that the union coupling is properly aligned with the heater section's headpiece.
7. Use the union coupling wrench to retighten the union coupling over the heater section.
8. Restart the sample flow.

Postrequisites

Return the GC to service.

5.4.18 Maintain the methanator

The optional methanator, which is a catalytic converter, converts otherwise undetectable CO_2 and/or CO into methane by adding hydrogen and heat to the sample. The methanator requires little maintenance.

Order Rosemount Kit PN 2-3-0710-265 for the methanator replacement parts.

⚠ WARNING

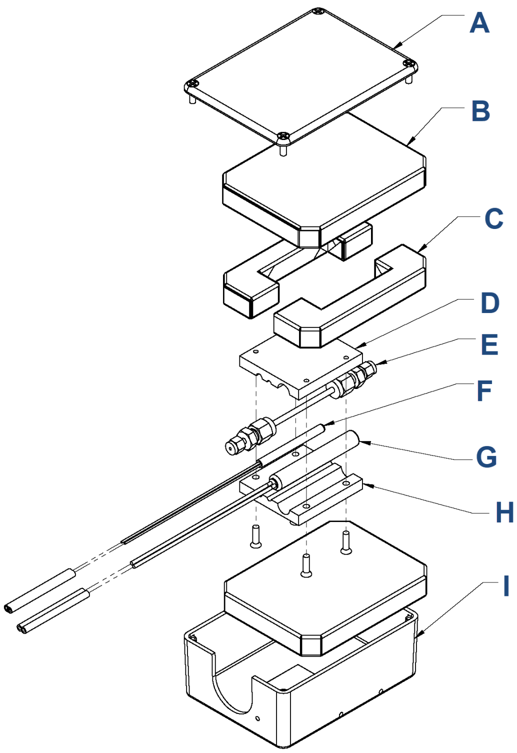
BURN HAZARD

Enclosure contains hot internal parts. Failure to allow the components to cool down may cause thermal injuries to personnel.

Do not open the enclosure unless the area atmosphere is known to below the ignitable concentration of combustible materials or unless all equipment has been de-energized for 35 minutes.

Note
Insulate the methanator assembly to prevent heat loss.

Figure 5-39: Methanator Assembly



A. *Methanator housing cover*
B. *Heater insulator (2)*
C. *Heater insulator, split*
D. *Heater block, methanator bottom*
E. *Methanator column*
F. *Resistance temperature device (RTD)*
G. *Cartridge heater*
H. *Heater block, methanator top*
I. *Methanator housing*

The RTD is replaceable. When replacing it, take care to anchor the RTD cable to the tubing to prevent loosening over time.

To replace the RTD, consult drawing #CE-22715 (see Engineering drawings).

5.4.19 Measure vent flow

Prerequisites

You will need an accurate flow meter for this measurement.

Procedure

1. Consult the parameter list that was provided with the gas chromatograph (GC) to learn the appropriate flow rate.
2. Attach a flow meter to each measurement vent output on the side of the GC that is labeled *MVn*, where *n* is for each vent.

   The flow should match the value displayed in the parameter list.

5.4.20 Access electrical components

Emerson designed the gas chromatograph (GC) to operate for long periods of time without needing preventative or regularly scheduled maintenance.

The enclosure is explosion-proof, dust-proof, water-proof, and flame-proof.

⚠ WARNING

EXPLOSION HAZARD

Failure to de-energize the analyzer may cause an explosion and severly injure personnel.

Do not open the enclosure unless the area is known to be non-hazardous or unless all devices within the enclosure have been de-energized.

Prior to opening the GC, use MON2020 to ensure that there are no configuration or parameter errors.

Procedure

1. Ensure electrical power is disconnected from the GC and the environment is safe.
2. Allow the GC to cool.
3. Unscrew and remove the front panel.
4. Note the location and direction of any board removed. Release the catch(es) and remove/replace the circuit board(s) as necessary.
5. Close and latch the electronics enclosure door.
6. Apply power to the GC.

Replace AC/DC power supply

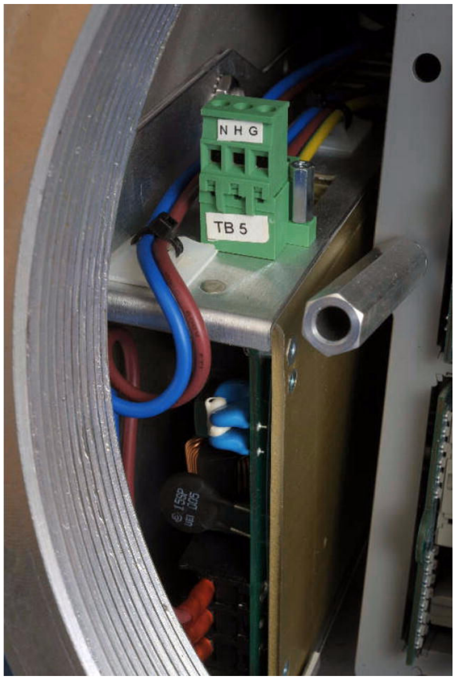
The AC/DC power supply is mounted on the left wall of the lower enclosure adjacent to the card cage. To access it, remove the front panel and the switch panel or local operator interface (LOI) from the lower enclosure.

⚠ WARNING

Failure to follow this warning may result in injury or death to personnel or cause damage to equipment.

Disconnect all electrical power to the gas chromatograph (GC) and ensure the area is free of explosive gases.

Figure 5-40: AC/DC Power Supply in Lower Compartment



Prerequisites

A Cross point #2 Phillips screw driver is required to remove and replace the AC/DC power supply.

Procedure

1. Remove power to the GC.

2. Unscrew and remove the front panel.

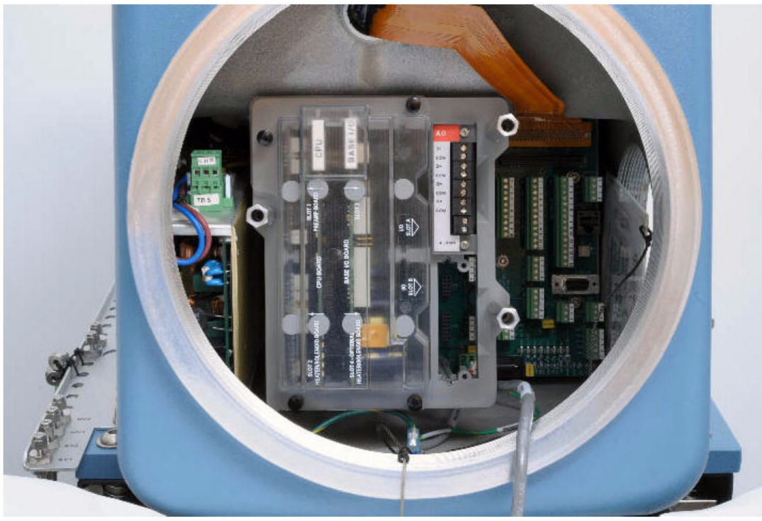
Figure 5-41: Removing the Front Panel

3. Unscrew and remove the switch panel or LOI to allow access to the card cage.

Figure 5-42: Removing the Switch Panel or LOI

4. If present, remove the clear cover from the card cage.

Figure 5-43: Card Cage



5. Unplug all the cards in the card cage but do not remove them.
6. Unscrew the three switch panel connector posts. Remove the washers as well.
7. Lift the card cage with the boards and remove it from the lower enclosure.
8. Unscrew and remove the post closest to the power supply.
9. Unplug the connector at the top of the power supply on the left.
10. Unplug the low voltage cable connected along the lower edge of the backplane.
11. Disconnect the ground lead from the power supply at the chassis ground immediately inside the lower enclosure opening.
12. Remove the nut just above the power supply. Twist the power supply free of the attaching stud and lift it from its cradle. Remove the power supply carefully to avoid damage due to wire interferences.
13. Maneuver the new power supply into the cradle, ensuring that the wires are free to be connected.

5.4.21 Communications

The Rosemount 700XA has four serial communication ports: Port 0, Port 1, Port 2, and Port 3, which is a dedicated personal computer (PC) to gas chromatograph (GC) port.

You can set the mode for each of the first three ports to RS232, RS422, or RS485. Normally, the customer specifies these port configurations at the time of order, and Emerson sets them at the factory. However, the customer can use MON2020 to change them at any time.

Note

The backplane has two switches located at **SW1**. The first switch is used for starting the DHCP server. See Connect directly to a personal computer (PC) using the gas chromatograph's (GC's) Ethernet1 port for more information. The second switch is reserved for future use.

The backplane has two Ethernet ports:

Name	Location	Connector type
ETHERNET1	J22	RJ45 (DHCP-enabled)
ETHERNET2	TB11	4-wire terminal block

Maximum distance by communication type

Communication Type	Maximum length
RS-232	50 ft. (15.2 m)
RS-422/RS-485	4000 ft. (1219.2 m)
Ethernet (CAT5)	300 ft. (91.4 m)

Change the line drivers

The following table lists the relevant traits of the gas chromatograph's (GC's) serial ports.

Port name	Port mode	Terminal block location on the backplane	Communication modes supported	
Port 0	RS232	TB1		
	RS422, RS485	TB2		
Port 1	RS232	TB5		
	Port 2	RS232	Modbus® ASCII/RTU	TB8
RS422, RS485		TB9		
Port 3 (DB9 connector)	RS232	J23 (Laptop-PC)		Modbus ASCII/RTU Direct Connection through MON2020

Note
You can use Port 3 to connect directly to the personal computer (PC).

⚠ WARNING

EXPLOSION HAZARD

Failure to de-energize the analyzer may cause an explosion and severely injure personnel.

Do not open the enclosure unless the area is known to be non-hazardous or unless all devices within the enclosure have been de-energized.

⚠ WARNING

HOT SURFACES

Failure to allow the analyzer to cool may cause burns from hot surfaces in the enclosure.

Power down the GC and allow it to cool for at least five minutes.

The factory setting for each port is RS232. To change the setting of a serial portL

Procedure

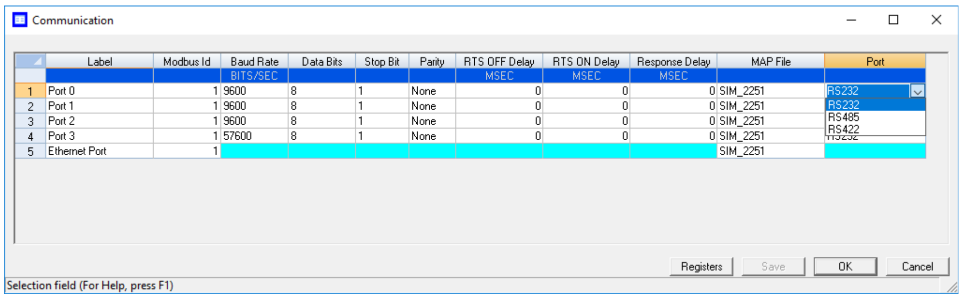
1. Start MON2020 and connect to the GC.
2. Select **Applications** → **Communication**.
   The *Communication* window displays.

3. Select the appropriate mode from the *Port* drop-down list for the appropriate serial port.

   The options are:

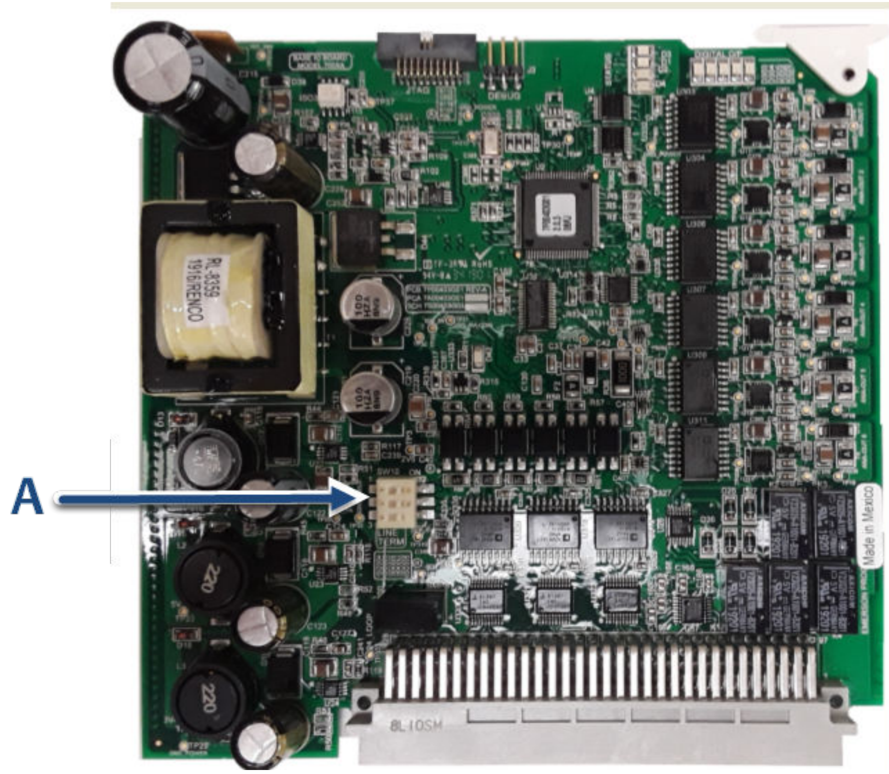
   - RS232
   - RS485
   - RS422

Figure 5-44: MON2020 Communication Settings



4. Click **OK**.
5. Close MON2020.
6. Locate and remove the base in/out (I/O) board, which is located in the card cage in the GC's lower enclosure.
7. Consult Figure 5-45, which shows the correct switch settings.

Figure 5-45: Base I/O Board (PN 7A00403G01/G02)



A. SW10 - ON position - factory setting

8. To enable line termination for a serial port, set the appropriate port switch on **SW10** to the bottom position.
9. Replace the Base I/O board in the card cage.
10. Consult Table 5-1, which shows the correct termination block wiring for each mode and port.

Table 5-1: Port Configurations

The first column lists the port number; the first row lists the communications mode. The table cell at which the desired port and the desired mode intersect contains the appropriate wiring for that configuration.

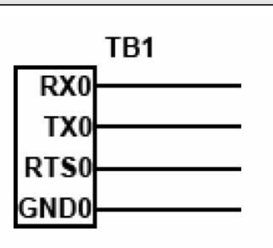
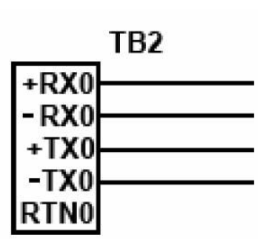
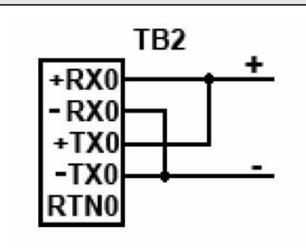
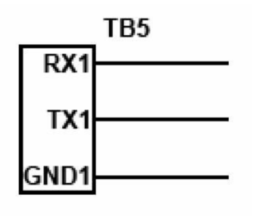
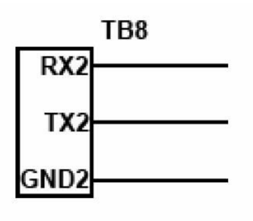
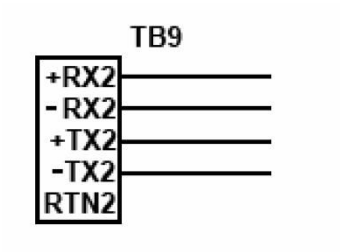
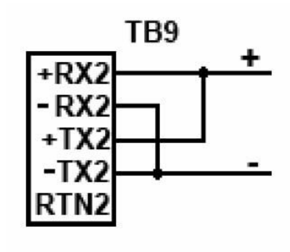
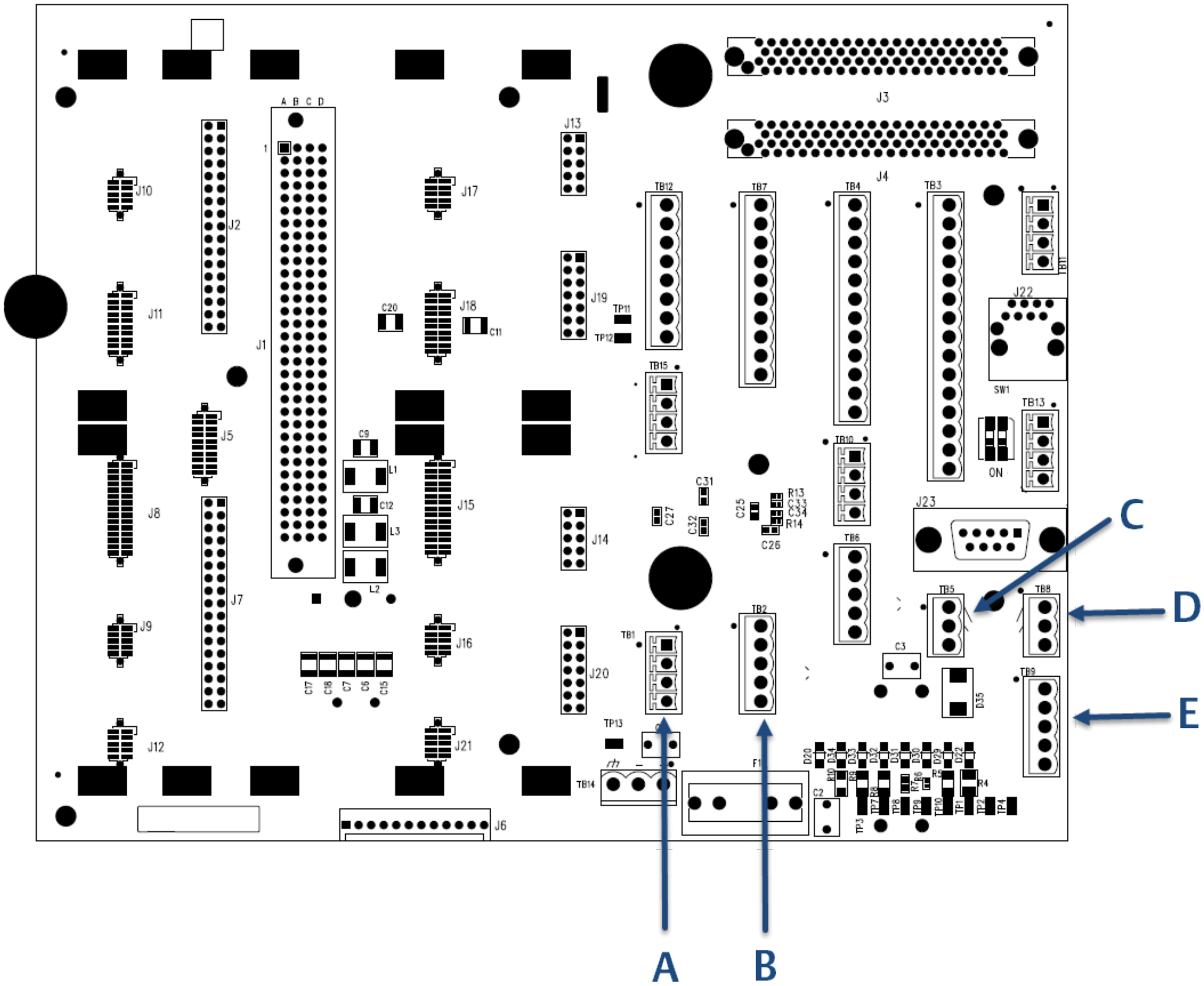
	RS232	RS422 (full duplex/4-wire)	RS485 (half duplex/2-wire)
Port 0			

Table 5-1: Port Configurations *(continued)*

	RS232	RS422 (full duplex/4-wire)	RS485 (half duplex/2-wire)
Port 1		N/A	N/A
Port 2			

11. Access the backplane and see Figure 5-46 to locate the appropriate terminal blocks:

Figure 5-46: RS232 and RS485, TB1 and TB2 on the Backplane



A. TB1, Serial Port 0, RS232
B. TB2, Serial Port 0, RS422/485
C. TB5, Serial Port 1, RS232
D. TB8, Serial Port 2, RS232
E. TB9, Serial Port 2, RS422/485

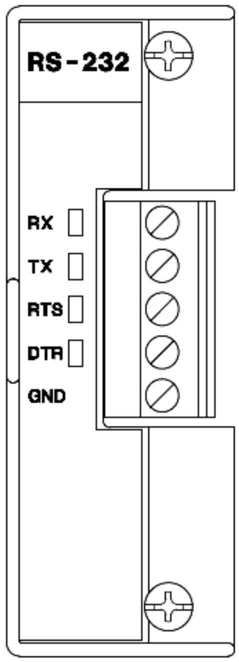
12. Once the appropriate termination blocks are wired correctly, close and secure the electronics enclosure door, and apply power to the GC.

Install optional RS232 serial ports

You can install an optional RS232 board in one or both of the expansion in/out (I/O) slots provided on the gas chromatograph's (GC's) card cage in the electronics enclosure.

You can use this extra port for Modbus® ASCII/RTU communications or to connect directly to a computer installed with MON2020.

Figure 5-47: RS232 Connections



Terminal	Label	Definition
1	RX	Receive
2	TX	Transmit
3	RTS	Request to send
4	DTR	Data termininal ready
5	GND	Ground

Procedure

1. Start MON2020 and connect to the GC.
2. Select **Tools** → **I/O Cards**.
3. Identify the appropriate card slot under the *Label* column and then select **Communications module - RS232** from the appropriate *Card Type* drop-down list.
4. Click **OK**.
5. Turn off the GC.
6. Install the RS232 board into the appropriate I/O card slot in the GC's card cage.
7. Close and secure the electronics enclosure door.
8. Apply power to start the GC.

Install an optional RS485/RS422 serial port card

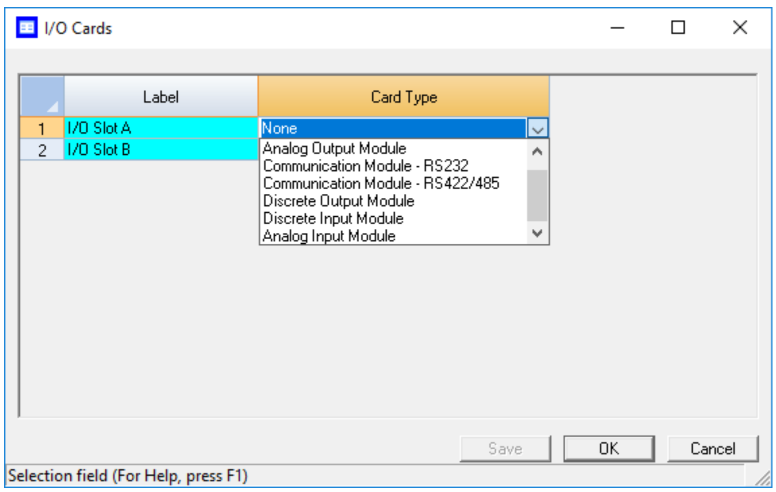
You can install an optional RS485 board in one or both of the expansion in/out (I/O) slots provided with the gas chromatograph's (GC's) card cage in the electronics enclosure. You can configure this card to RS422 (four-wire) or RS485 (two-wire) mode.

RS485 mode is the default setting; to configure the card for RS422 mode, see Configuring the optional RS485 serial port to function as an RS422 serial port. Also see Emerson.com/ROC800-Series.

Procedure

1. Start MON2020 and connect to the GC.
2. Select **I/O Cards** from the *Tools* menu.
   The *I/O Cards* window displays.
3. Identify the appropriate card slot under the Label column and then select **Communications module - RS422/485** from the appropriate *Card Type* drop-down list.

Figure 5-48: MON2020 I/O Cards



4. Click **OK**.
5. Turn off the GC.
6. Install the RS485/RS422 serial port card into the appropriate expansion slot in the GC's card cage.
7. Replace the card cage cover, local operator interface (LOI) board, and enclosure cover. Start the GC.

Configuring the optional RS485 serial port to function as an RS422 serial port

See Table 5-2 for the correct jumper settings to configure the optional RS485 serial port to function as an RS422 serial port:

Table 5-2: Configuring the Serial Connections for RS485/RS422 Serial Communications

Jumpers	RS485 (half duplex/2-wire)	RS422 (full duplex/4-wire)
J3	Half	Full
J5	Half	Full
	Termination IN	**Termination OUT**
J4	In	Out
J6	In	Out
TB1 wire terminals	**RS485 (half duplex/2-wire)**	**RS422 (full duplex/4-wire)**
A	RxTx+	Rx+
B	RxTx-	Rx-
Y	NC	Tx+
Z	NC	Tx-

5.4.22 Analog inputs and outputs

Use MON2020 to calibrate or adjust the analog outputs.

However, make sure to measure these outputs with a calibrated digital meter upon initial installation at zero scale and full scale. Then use MON2020 to set the sapn so that it represents values from 0 to 100 percent of the user-defined units in use.

Nominally, calibration is made within a range of 4-20 milliamperes (mA) output from each analog channel. To set a reference point to trigger an alarm condition, configure zero scale calibration with a 0 mA output and full scale calibration set up to 22.5 mA output.

If there is reason to suspect that the span on any particular channel might be off after a period of time and heavy use, then recalibrate the analog output for that channel.

Analog output adjustment

Emerson sets the initial analog output adjustments at the factory before shipment at standard values (4-20 mA). You many need to check and/or adjust these values depending on output cabling/impedance.

The adjustment may require two people if the units are some distance apart. It requires a calibrated digital meter to check the zero and full scale values at the receiving end. You can use MON2020 to adjust the scale or span value.

You can use different engineering units, volts, and percentages to calibrate the analog outputs.

5.4.23 Upgrading the embedded software

The base GC firmware performs functions similar to operating systems such as DOS, Windows™, or Linux®. The base GC firmware provides the basic resources and interfaces to run the customer's applications. There is no direct user-level interface to the firmware.

If you need to upgrade the firmware to your system, refer to the MON2020 Software for Gas Chromatographs Reference Manual for additional information.

The GC's applications use the tools provided by firmware to perform the desired gas chromatograph applications for the user. There are different applications to facilitate different gas chromatographic needs. To load a new application or to upgrade an existing application, refer to the MON2020 Software for Gas Chromatographs Reference Manual for details.

6 Troubleshooting

The information is arranged either by major subsystems or by major functions of the gas chromatograph (GC).

Note
Correct **all** alarms before recalibrating.

6.1 Hardware alarms

Use LTLOI Failure through Flame Photometric Detector Board 1 Comm Failure to identify the alarm, potential cause, and solution for the problem.

6.1.1 LTLOI Failure

Recommended actions

1. Power the gas chromatograph (GC) down completely.
2. Check that the local operator interface (LOI) is connected to the backplane board at one end and the LOI board at the other end.
3. Power up the GC.
4. If the message appears again, replace the board.

6.1.2 Maintenance Mode

A technician has put the gas chromatograph (GC) into Maintenance mode for servicing.

Recommended action

To disable Maintenance mode, deselect the **Maintenance Mode** check box in the *System* dialog.

6.1.3 Power Failure

Potential cause

The gas chromatograph (GC) has experienced a restart, caused by a power failure, since alarms were last cleared.

Recommended action

Allow the GC to automatically restart in Warm Start mode.

During Warm Start mode, the GC does the following:

a. Waits for the heaters to stabilize.
b. Purges the sample loop.
c. Actuates the valves for two cycles.

After completing these actions, the GC switches to auto-sequence mode.

6.1.4 User Calculation Failure

The gas chromatograph (GC) has detected one or more errors while parsing a user-defined calculation.

Potential cause

This usually happens when a user-defined calculation attempts to use a system variable that does not exist.

Recommended action

Fix the calculation that is referring to the undefined system variable.

6.1.5 Low Battery Voltage

The gas chromatograph (GC) has detected a low battery voltage on the central processing unit (CPU) board.

Recommended actions

Replace the CPU board immediately to avoid losing GC configuration data.

a) Save the diagnostic data file. In MON2020, go to **Tools** → **Save Diagnostic Data**.

b) Power down the GC.

c) Ensure that **SW7** on the CPU board is in the **On** position.

d) Replace the CPU board.

e) Restore configuration back to the GC. In MON2020, go to **File** → **Restore Configuration to GC.**.

6.1.6 Preamp Board 1 or Preamp Board 2 Comm Failure

The gas chromatograph (GC) cannot detect the preamp board.

Recommended actions

1. Power the GC down completely.
2. Check that the board is properly seated in the correct slot (Preamp1 or Preamp2) on the backplane.

   In MON2020, select **Hardware** → **Installed Hardware** for hardware slot locations.
3. Power up the GC.
4. If the message appears again, replace the preamp board.

6.1.7 Flame ionization detector (FID), flame photometric detector (FPD), or µFPDG2 (FPDG2) Failure

Alert message identifies FID/FPD or FPD G2 hardware. The FID/FPD or µFPD is not detected.

Recommended actions

1. Power the gas chromatograph (GC) down completely.
2. Check that the board is properly seated in the correct slot (Preamp 2) on the backplane.
3. Power up the GC.
4. If the message appears again, for the FID, replace the electrometer. For the µFPD, replace the photomultiplier tube (PMT) module.

6.1.8 Heater Solenoid Board (1 or 2) Comm Failure

Heater/solenoid board not detected.

Recommended actions

1. Power the gas chromatograph (GC) down completely.
2. Check that the board is properly seated in the correct slot (Heater Solenoid 1 or Heater Solenoid 2) on the backplane.
3. Power up the GC.
4. If message appears again, replace the heater/solenoid board.

6.1.9 Base in/out (IO) Board Comm Failure

Base I/O (multifunction I/O) board not detected.

Recommended actions

1. Power the gas chromatograph (GC) down completely.
2. Check that the board is properly seated in the correct slot on the backplane.
3. Power up the GC.
4. If message appears again, replace the base I/O board.

6.1.10 Stream Skipped

One or more streams in the stream sequence cannot be analyzed, because their Usage option is set to **Unused**.

Recommended actions

In MON2020, do one of the following:

- Remove the unused stream(s) from the stream sequence.
- Change the Usage option of the stream(s) in the ***Streams*** dialog to something other than **Unused**.

6.1.11 GC Idle

Potential cause

The gas chromatograph (GC) has been placed in Idle mode and is not running an analysis.

6.1.12 Heater (1-8) Out of Range

The gas chromatograph (GC) has failed to regulate heater zone temperatures for the indicated heater to within preset limits.

Recommended actions

1. Check temperatures within the GC, using MON2020 or the local operator interface (LOI).

   Be aware that the GC may generate this alarm following start-up or if the set point has been changed.
2. Check wiring, looking for splits or loose connections at the termination board (for both the heaters and the resistance temperature devices [RTDs]).
3. If necessary, replace the defective heater and/or RTD.

6.1.13 Flame Out

Detector 1 Flame Out

The flame ionization detector (FID) or flame photometric detector (FPD) will not light or has extinguished.

Potential cause

The FID is out.

Recommended actions

1. Use the front switch panel or MON2020 to ignite the flame.
2. If unable to sustain the flame, confirm that both fuel and air cylinders are connected and contain sufficient pressure.
3. Confirm that the fuel and set points are set to achieve the factory-desired mixture.
4. Confirm that there is no blockage at the FID exhaust outlet, such as a cap or ice.
5. Check that the wiring connections are secure for the FID, both on the FID cap and at the termination board.
6. If necessary, replace the FID module.

To ignite the flame manually:

1. Connect the air to the inlet and slowly bring the pressure to 60 psig (413.7 kPa).
2. Connect hydrogen to the inlet and slowly bring the inlet pressure to 60 psig (413.7 kPa).

3. Remove tubing from the flame cell exhaust and use a digital flow meter to adjust the air control valve until you obtain a reading of 160 cc/min.
4. Turn off the air supply.
5. Set the auto relight switch (**S1**) on the electrometer PCB to the **OVERRIDE** position.
6. Use the digital flow meter to adjust the hydrogen control valve until you obtain a reading of 100 cc/min.
7. Turn on the air supply.
8. Set the auto relight switch (**S1**) on the electrometer PCB to the **RUN** position.
   The auto relight sequence begins as follows:
   a. The light-emitting diode (LED) on the electrometer comes on after 10 seconds, and the glow plug fitted to the side of the flame cell is supplied a voltage.
   b. After another five seconds, the hydrogen shut-off valve operates.
   c. The gas mixture ignites.
   d. If the flame does not light in five seconds, the electrometer de-energizes the hydrogen shut-off valve to stop the flow into the flame cell.
   e. The flame cell is purged with air and nitrogen carrier gas.
   f. The process starts again (up to 10 times) until the flame stays lit.
   g. If the flame does not stay let, the LED flashes. If the alarm output is linked to the 2350A controller discrete input, an alarm is present on the controller.
   h. Set the auto relight switch (**S1**) on the electrometer PCB to the **RESET** position and then back to the **RUN** position.
   i. The relight sequence restarts.

Potential cause

The FPD is out.

Recommended actions

1. In MON2020, click **Open H2 Valve**.
   The H2 Valve Cur State field changes to **Open**.
2. Click **Ignite**.
   The Flame Status field changes when the internal temperature exceeds the value set in the Flame On Sense Temp field.

   Note
   If the Flame Ignition field is set to **Auto**, the GC will automatically restart the flow if it goes out.

3. If the GC fails to light after resetting the electrometer, recheck the air and hydrogen flow.

For more information on the FPD, see Micro flame photometric detector (μFPD).

6.1.14 Flame Over Temperature

Detector 1 flame over temperature.

The flame ionization detector (FID) flame temperature is above safe limits set at the factory. The FID flame has been extinguished, the fuel supply valve closed, and automatic analyses halted.

Recommended actions

1. Confirm that both fuel and air cylinders are connected and contain sufficient pressure.
2. Confirm that fuel and air set points are set to achieve desired mixture.
3. Use the local operator interface (LOI) or MON2020 to ignite the FID.

6.1.15 Detector (1-3) Scaling Factor Failure

The gas chromatograph (GC) detected an excess scaling factor deviation for the detector.

Recommended action

Replace the preamp board.

The preamp boards for detectors 1 and 2 are located in Preamp 1.

The preamp board for detector 3 is located in Preamp 2.

6.1.16 No sample flow (1 or 2)

This alarm applies to the optional sample flow switch. The corresponding flow switch indicates that there is no sample flow in the gas chromatograph (GC).

Recommended actions

Check the sample gas rotameter in the sample conditioning system for flow.

- If no gas flow or no rotameter is present:
    a. Confirm that there is gas flow at the sample point location.
    b. Ensure that the sample valves in the sample conditioning system are open.
    c. Ensure that the bypass return vent path is free of obstruction.
    d. Confirm that the sample line is connected from the sample point to the GC's sample conditioning system and is free of obstructions.
    e. Close the valve at the sample tap, remove pressure from the line, and check the filters at the probe, the sample conditioning system, or both. If they are filled with liquids or particulates, replace the filtering elements.
- If automatic stream selection valves are present, confirm that they are operating properly.

- If a slight sample gas flow is present at the rotameter in the sample conditioning system, drain or replace all filters.
- If you observe flow in the rotameter, replace the sample flow switch.

6.1.17 Low Carrier Pressure (1-4)

Input carrier pressure for the detector is below the preset limit.

Recommended actions

1. Check that the carrier cylinder pressure is at least 10 psig (68.9 kPa) above the mechanical regulator set point.
2. If input carrier pressure is low, check the carrier cylinder pressure.
3. Replace the carrier gas cylinder if required.

6.1.18 Analog Input (1-10) High Signal

Measured value for the indicated analog input is greater than the user-defined full scale range.

6.1.19 Analog Input (1-10) Low Signal

Measured value for the indicated analog input is lower than the user-defined full scale range.

6.1.20 Analog Output (1-10) High Signal

Measured value for the indicated analog output is greater than the user-defined full scale range.

6.1.21 Analog Output (1-10) Low Signal

Measured value for the analog output is lower than the user-defined zero range.

6.1.22 Stream (1-20) Validation Failure

The most recent validation sequence for the indicated stream failed.

Recommended actions

1. Ensure that the validation gas cylinder isolation valves are open.
2. Ensure that the validation gas regulators are set properly.
3. If the validation gas regulator pressure is below the set point, replace the gas bottle with a full one.
4. If the gas used for validation is the same as the gas that is used for calibration, ensure that the cylinder gas composition value listed on the cylinder's tag or on

the certificate of analysis received from the supplier matches the value displayed in MON2020's ***Component Data*** table.

6.1.23 Stream (1-20) RF Deviation

The most recent calibration sequence failed.

Recommended actions

1. Ensure that the calibration gas cylinder isolation valves are open.
2. Ensure that the calibration gas regulators' pressures are set properly and that the cylinder is not below the set point. If the cylinder is below the set point, replace it with a full cylinder
3. Verify that the calibration cylinder gas composition value listed on the cylinder tag or on the certificate of analysis received from supplier matches the calibration cylinder gas composition value displayed in MON2020's ***Component Data*** table. If there is a mismatch, edit the ***Component Data*** table to reflect the correct value. Re-run the calibration sequence.
4. If the calibration is still unsuccessful, contact your Emerson representative.

6.1.24 Energy Value Invalid

For each configured analysis (*Analysis n* label added if it is a concurrent analysis configuration), perform a check of the analyzed energy value of the calibration gas against the known value as part of the warm start sequence.

The *Energy Value Invalid* alarm is raised to instruct the associated DCS that the analyzer has failed and all data should be ignored until a successful calibration run has been performed to verify the analysis of the gas chromatograph (GC).

On completing warm-up, the GC performs a single analysis of the calibration stream. Using results of the analysis, the GC calculates the energy value and compares it against the previously entered value stored in the tables.

If the calculated energy value is within the allowable limits set up by the operator, the *Energy Value Invalid* alarm is cleared, and the GC returns to normal operation; otherwise, the *Energy Value Invalid* alarm remains active.

Recommended actions

1. Ensure that correct Calibration Gas Energy Value and limits have been entered in the **Component Data Table** → **Edit Energy Value** dialog window.
2. Ensure the calibration gas bottle is open and not low or empty.
3. Check analyzed concentration results for each individual component versus calibration gas concentrations in the ***Component Data*** table.
4. Adjust timed events if necessary.

6.1.25 Calibration Energy Check Fail

After completing a calibration sequence, the gas chromatograph (GC) performs a calibration gas energy value check.

If the calculated energy value fails the check, the software automatically runs the calibration again.

If the second calibration also fails this check, the GC raises a system alarm, *Calibration Energy Value Check Fail*.

Recommended actions

1. Ensure the calibration gas bottle is open and not low or empty.
2. Check analyzed concentration results for each individual component versus calibration gas concentrations in the ***Component Data*** table.
3. Adjust timed events if necessary.

6.1.26 Stored Data Integrity Failure

Archived results, event logs, and alarm logs are stored as records in the instrument database along with a CRC16 checksum. When the data is retrieved, the gas chromatograph (GC) recomputes the checksum and checks the stored checksum against the calculated checksum. If they don't match, the GC raises a *Stored Data Integrity Failure* alarm.

Recommended actions

1. Reset archives using the dialog box under **MON2020** → **Logs/Reports Menu**.

   Note
   All archived data in the GC will be lost.

2. Replace the central processing unit (CPU) board.

6.1.27 ROM Checksum Failure

The gas chromatograph (GC) recomputes the firmware checksum at periodic intervals. If the calculated checksum varies from the original value, the GC raises a *ROM Checksum Failure* alarm.

Recommended actions

1. Re-flash the GC controller firmware in MON2020 **Tools** → **Upgrade Firmware**.

   Note
   All archived data in the GC will be lost.

2. Replace the central processing unit (CPU) board.

6.1.28 Sample Fluid Unavailable

The stream switching sequence defined in the Custom Logic configuration failed to successfully execute. <*Analysis n Label*> is added for concurrent analysis configurations.

Recommended action

Confirm proper operation of all sample system components and ability to provide adequate sample flow.

6.1.29 Flame Photometric Detector Board 1 Comm Failure

The gas chromatograph (GC) cannot detect the micro flame photometric detector (µFPD).

Recommended actions

1. Power the GC down completely.
2. Check that all cables are securely connected to the FPD interface module.
3. Power up the GC.
4. If the message appears again, replace the FPD photomultiplier tube (PMT) module.

6.2 No power to flame photometric detector (FPD)

Recommended actions

1. Check cable (7A00454G01), connectors, and terminals.
2. Check flex cable.
3. Check that the voltage from the lower terminal is 25 Vdc.

6.3 Can't ignite flame photometric detector (FPD)

Recommended actions

1. Check the flow.

   Gas flow rates are measured at exhaust while oven reaches to set temperature. The air flow should be 150 cc/min, and the H_2 flow should be 100 cc/min.
2. Check igniter resistance in ohms.

   The resistance should be 0.6 to 1 ohms.
3. Ensure that the flame temperature is > 493.1 °F (220 °C) when the ignitor is first turned on and then goes down to 413.1 °F (140 °C).
4. Ensure that there are no restrictions at the exhaust line.

6.4 No peaks showing

Recommended actions

1. Ensure that the flame is on.
2. Ensure that the sample gas has been injected.
3. Check carrier gas flow.
4. Check sample flow.
5. Check columns.

6.5 Small peaks

Recommended actions

1. Clean the burner windows with isopropyl alcohol (IPA).
2. Adjust the air to H_2 flow rate to between 1.3 and 1.7.
3. Ensure that the flame photometric detector (FPD) high voltage is 800 Vdc for side cart option of FPD.

6.6 No temperature readings

Recommended action

Check the thermocouple.

The thermocouple's resistance should be less than 3.5 ohms.

6.7 Noisy baseline

Recommended action

Click **Autozero** to adjust the baseline.

6.8 Peak clipping

Recommended action

Click **Autozero** to adjust the baseline.

6.9 Test points

The backplane has a set of test points that allow you to measure the voltage output of the base in/out (I/O) card.

Each test point is labeled with a voltage value that, when measured with a voltmeter, should give a measurement equal to what is displayed on the label. A reading that does not match this label may indicate a faulty base I/O card. Try swapping out the suspect card with a different one, and take another measurement. To get a measurement for a test point, touch the voltmeter’s negative probe to the **DGND** test point and touch the voltmeter’s positive probe to the desired test point.

The test points are associated with the following gas chromatograph (GC) components:

Table 6-1: Backplane Test Points and Associated GC Components

Test Point	GC Component	Tolerances
VIN	Voltage in	N/A
I RTN	Isolated return	N/A

Table 6-1: Backplane Test Points and Associated GC Components *(continued)*

Test Point	GC Component	Tolerances
I 24V (Regulated)	Isolated voltage (loop power)	24 V (±2.4 V)
24V (Regulated)	GC power	24 V (±2.4 V)
17V5	Preamp (input for the bridge circuit)	17.5 V ±0.5 V
12V	Optional I/O cards	12 V ±0.6 V
5V1	System chips	5.1 V ±0.25 V
3V4	System chips	3.4 V ±0.15 V
FVIN	Field voltage input	0 V ± 3 V
FVGND	Field voltage ground	21 V ± 30 V

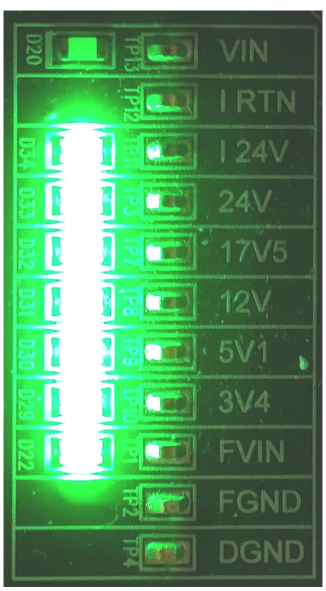
The input voltage range for the DC/DC power supply is between 21 and 30 volts. The input range for AC/DC power supply is 90 - 264 volts (auto-ranging).

6.10 Voltage light-emitting diodes (LEDs)

A set of LEDs can be found above the test points .

These LEDs are a quick way to visually inspect the voltage status of some of the gas chromatograph's (GC's) electrical components.

The following LEDs are associated with the following GC components:



VIN (fuse open) Glows red when the fuse has blown or been removed; otherwise, it is not lit.

1 RTN - 24 loop (Power) Glows green when the power supply for the analog outputs is functioning properly; otherwise it is not lit.

24V regulated (GC power) Glows green when the GC power is functioning properly; otherwise, it is not lit.

17V (Input for the preamp) Glows green when the power supply for the preamp is functioning properly; otherwise, it is not lit.

12V (Input for the I/O cards0 Glows green when thee optional ROC expansion card's power supply is functioning properly; otherwise, it is not lit.

5V1 Glows greeen when the system chip's 5.1 V power supply is functioning properly; otherwise, it is not lit.

3V4 Glows green when the 3.4 V power supply for the system chips is functioning properly; otherwise, it is not lit.

Note
Some boards have different shades of green for this LED.

Power ON Glows green when the GC is on; otherwise, it is not lit.

6.11 Monitoring the detector(s) and columns temperature

Use MON2020 to monitor the temperature of the detector(s) and columns to determine if the GC is thermally stable.

When connected to the GC via MON2020, select **Hardware** → **Heaters** to access this function.

When viewing the ***Heater*** window, the typical heater configuration is as follows:

The Temperature column on the ***Heaters*** window displays the current temperature; the Current PWM column displays the percentage of power being used to run the heater.

The settings and values shown in the ***Heaters*** window and described below, are preset at the factory and are based on the specific customer application. Do not change these values unless application engineering or or customer service personnel recommend it or as part of a factory application requirement.

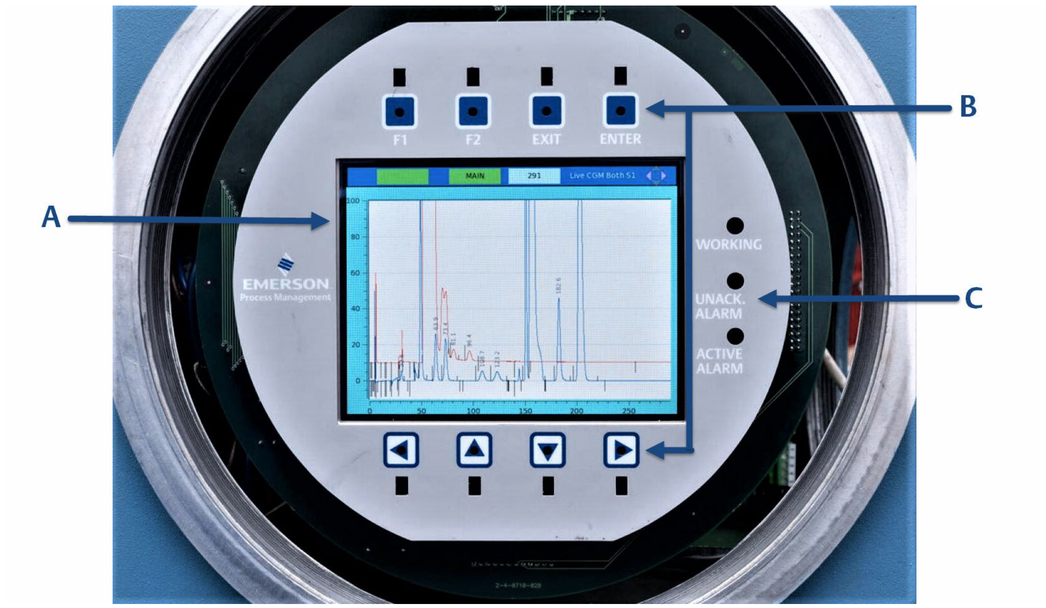
Function	Typical setting
Detector(s) or analytical block temperature	176 °F (80 °C)
Oven temperature	176 °F (80 °C)
Spare Or, Methanator Or, LSIV	N/A 572 °F (300 °C) 302 °F (150 °C)

A Local operator interface (LOI)

A.1 Local operator interface (LOI) for displaying and entering data

The LOI has multiple components that you can use to interact with the unit.

Figure A-1: LOI Components



A. LCD display screen
B. Keypads
C. Light emitting diode (LED) indicators

A.1.1 Light emitting diode (LED) indicators

There are three LED status indicators on the local operator interface (LOI) that show the overall status of the gas chromatograph (GC). These LEDs are positioned to the right of the display screen. Each LED, when lit, indicates a specific condition.

	The GC is currently running an analysis.
	The GC has at least one unacknowledged alarm.
	The GC has an out-of-tolerance or alarm condition that requires an operator action.

A.1.2 LCD display screen

The LCD display screen measures 4.4 by 3.3 in. (111.4 x 83.5 mm) and is capable of 640 by 480 VGA pixel resolution, supporting both text and full graphics.

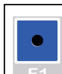
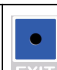
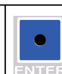
The backlighting, boost, and brightness are all under software control. The boost and brightness levels are user-adjustable.

A.1.3 Keypad

The keypad consists of eight infrared keys.

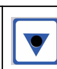
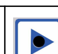
Command keys

The four keys located above the LCD display screen are command keys. See Navigating the screens for more information.

Arrow keys

The four keys below the LCD display screen are arrow keys that allow you to navigate within the screen by scrolling or moving the cursor from field to field. These keys function in the same way as a computer keyboard's arrow keys.

			
Left	Up	Down	Right

Pressing a key

To press a key, place a finger on the glass over the associated key hole and then remove the finger.

Holding a finger over the key hole will cause that key to repeat until the finger is removed.

A.2 Using the local operator interface (LOI)

A.2.1 Start-up

When the gas chromatograph (GC) starts, the local operator interface (LOI) automatically runs in Status Display mode. Each analyzer's information is displayed in rows. The GC may have from one to four analyzers.

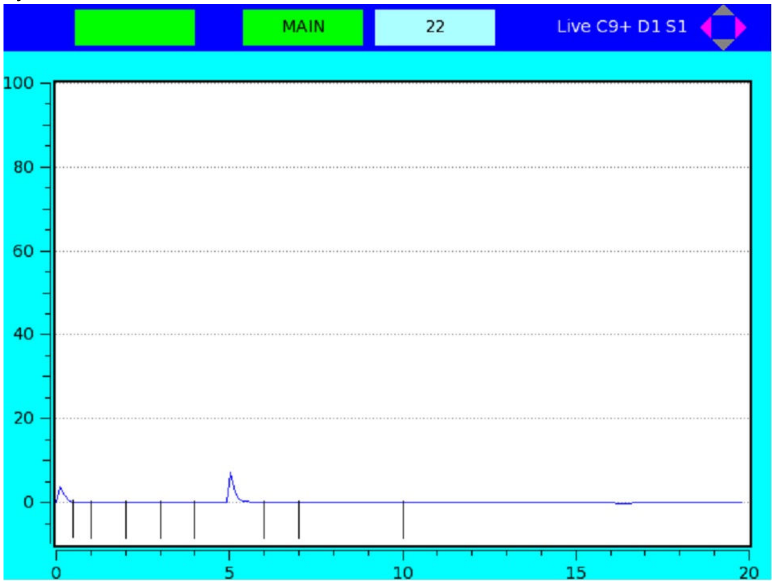
Only the description and values section of the LOI status variables are scrolled manually between the configured analyzers for the GC.

Screen	Description
Status	Displays information about the operational state of the analyzer, including a manually-scrolling list of up to 25 user-selectable parameters that can be defined or modified using the MON2020 software. **Note** There is more than one ***Live Chromatogram*** screen if the GC is configured with more than one analysis/cycle clock.

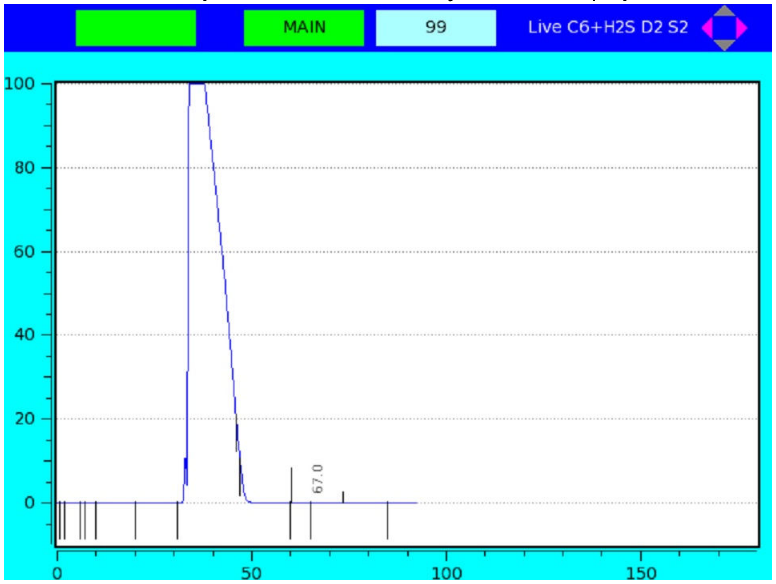
<table>
<tr><th>Screen</th><th>Description</th></tr>
<tr><td>Live Chromatogram</td><td>Displays the chromatogram for the current analysis in real time.

Note
There is more than one Live Chromatogram screen if the GC is configured with more than one analysis/cycle clock. Four detectors are supported for a single analysis.

If there is more than one detector for one analysis (ex. Det 1, Det 3, Det 5), D1/3/5 displays on the title bar.



If there are four live analyses for the GC, the Analysis screen displays for each clock.

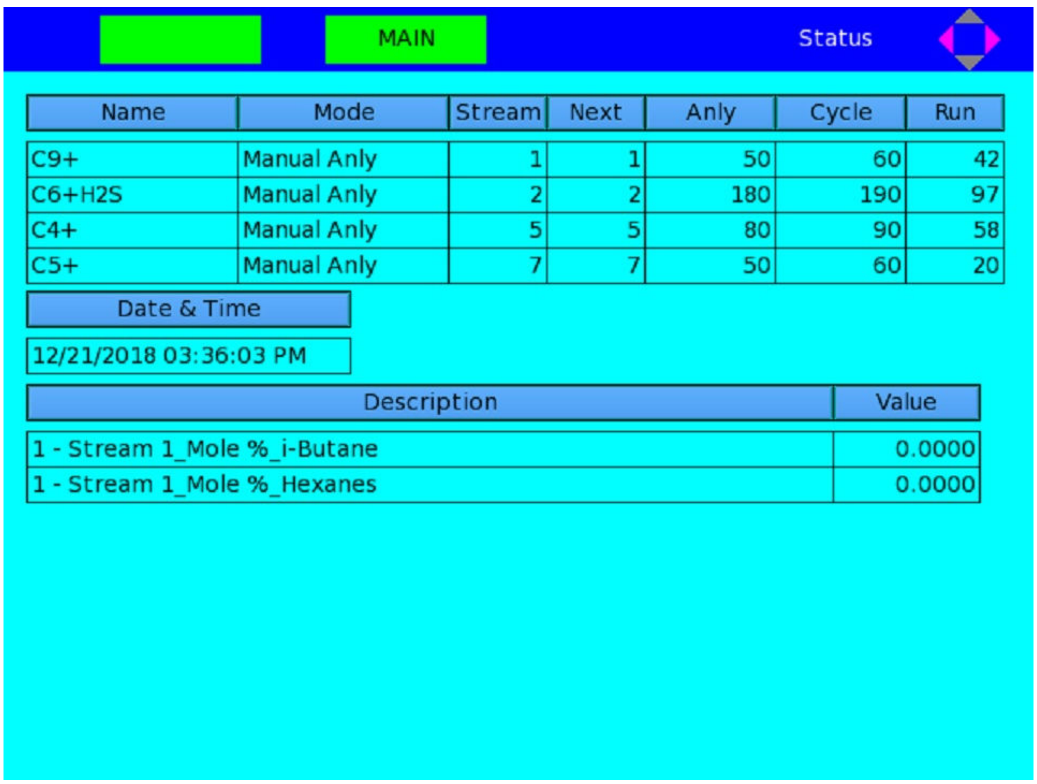


Note
This screen does not display if the GC is not currently analyzing a sample.</td></tr>
<tr><td>Active Alarms</td><td>Lists active alarms, if any.</td></tr>
</table>

Screen	Description
Heater	Displays information about the PID temperature control loops.
Valves	Displays the settings and states of the stream and analyzer valves.

In Status Display mode, pressing the **RIGHT** key takes you to the next available non-idle analysis live CGM screen. If all the cycle clocks are idle, then press **RIGHT** on the ***Status*** screen to go to the ***Alarm*** screen. Press **LEFT** on the ***Alarm*** screen to go to the ***Status*** screen. When you press **RIGHT**, the LOI displays each screen in succession and then loops back to the ***Status*** screen.

Figure A-2: LOI Status Screen



This screen displays the Analysis names and all the four cycle clocks in the ***Status*** table. The LOI status variables are shown for one cycle clock every 15 seconds as depicted in Figure A-2. For the next 15 seconds, the LOI automatically scrolls and displays the next cycle clock's variables.

Press **F1** when *MOVE* is displayed in the green box below to foucs inside the screen, so that you can navigate through the controls of the screen using the **LEFT**, **RIGHT**, **UP**, and **DOWN** keys. Press **EXIT** to return focus to the top level (outside of the screen). Press **LEFT** or **RIGHT** at the top level to resume automatic scrolling in addition to moving to the previous or next screen.

At any time, while in Status Display mode, you can press **ENTER** or **F2** to enter the ***Main Menu***. Use the **EXIT** key to leave the ***Main Menu*** and return the LOI to Status Display mode.

If you log onto the GC from the *Main Menu* to perform operations or edit data, when you exit the menu you will automatically be logged off the LOI.

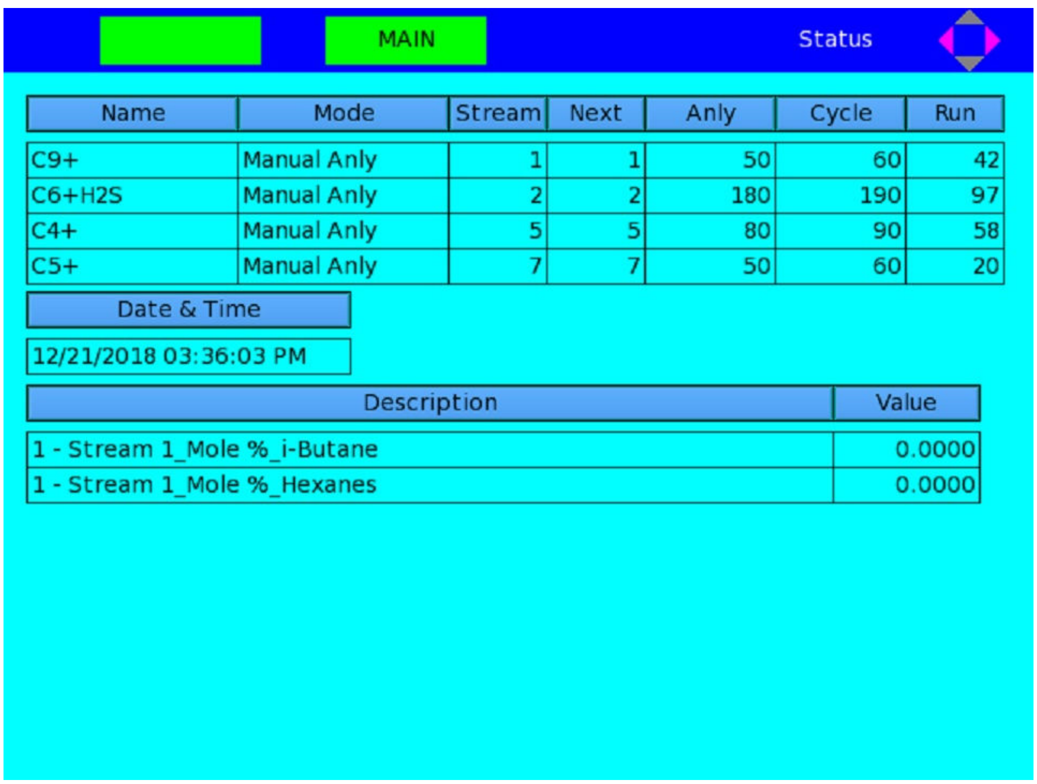
A.2.2 Navigating menus

The *Status* screen is now the default home screen. This screen lists information from the four analyzers as well as the local operator interface (LOI) variables.

You can also access the *Status* screen from the *Application* menu. This *Status* screen displays the same list of items as the *Home Status* screen but, the **F1** key has works differently here. The **Move** label displays as soon as you select the *Status* screen from the *Application* menu.

When the user presses **F1** then, the **Move** label changes to **Next**, indicating that the LOI status variables for the next analyzer are displayed at the bottom of the page. If you press **F1** again, the status variables for next analyzer displays. These LOI status variables keep revolving between the analyzers in order every time you press **F1**.

Figure A-3: Local Operator Interface - Home Screen (Status)



At any time while in Status Display mode, you can press **ENTER** or **F2** to enter the *Main Menu*.

Use the **UP** or **DOWN** keys to navigate between fields or controls within each drop-down menu. Pressing **DOWN** while focus is on the last field of a drop-down menu moves the focus to the first field on a screen. Alternatively, pressing **UP** while focus is on the first field of the drop down menu causes the focus to move to the last field.

Use the **ENTER** key from the ***Main Menu*** to activate submenus and individual menu items.

Press **EXIT** to leave the ***Main Menu*** and return the LOI to Status Display mode if no menu is dropped down. If a menu is dropped down, then pressing **EXIT** closes that menu.

If you log in to the gas chromatograph (GC) from the ***Main Menu*** to perform operations or edit data, when you exit the menu you will automatically be logged off the LOI.

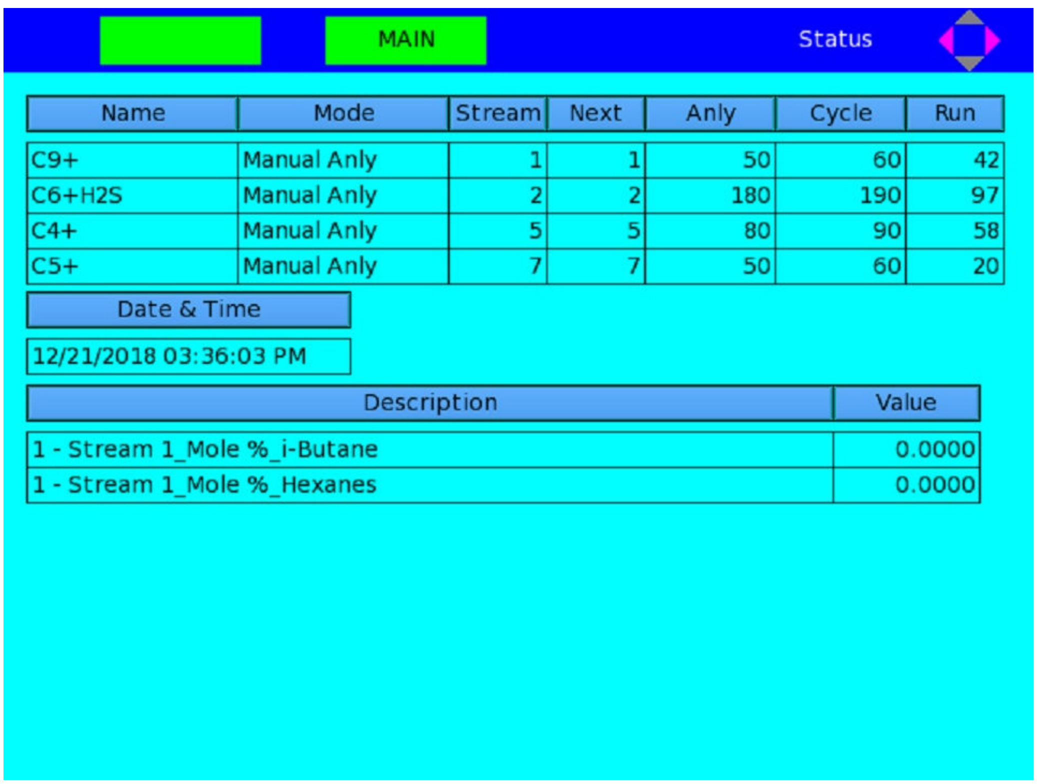
The ***Main Menu*** allows you access to all of the available LOI screens; however, you must be logged on to make changes. If you are not logged on and you attempt to edit a field, the ***Login*** screen will appear first.

After a period of fifteen minutes of inactivity, the LOI automatically logs you off.

A.2.3 Navigating the screens

Local operator interface (LOI) screen have several functions. They can display data for review or edit and initiate activities.

Figure A-4: Local Operator Interface - Home Screen



Name	Mode	Stream	Next	Anly	Cycle	Run
C9+	Manual Anly	1	1	50	60	42
C6+H2S	Manual Anly	2	2	180	190	97
C4+	Manual Anly	5	5	80	90	58
C5+	Manual Anly	7	7	50	60	20

Date & Time
12/21/2018 03:36:03 PM

Description	Value
1 - Stream 1_Mole %_i-Butane	0.0000
1 - Stream 1_Mole %_Hexanes	0.0000

Within any given screen, the function of the **ENTER** key depends upon the context. You can use it to validate and save changes or to initiate an action.

If the gas chromatograph (GC) finds a validation error after you press **ENTER**, an *Invalid Entry* message displays. Press **ENTER** again to close the message and then re-enter your data.

Press **EXIT** to close the currently open screen. If you have made changes to the screen, the LOI will display a confirmation message asking if you want to save your changes. Use the arrow keys to select the appropriate button and press **ENTER**. If you select **No**, your changes will be discarded and the *Main Menu* will display; if you select **Cancel**, the message window will close and you will be returned to the current screen; if you select **Yes**, your changes will be validated and saved and then you will be returned to the *Main Menu*.

The **F1** and **F2** keys are context dependent. A one-word description of the function of each of these keys displays in a green prompt box directly under the key in the title bar of the top-level full-sized screen.

In some cases, **F1** acts as a toggle between scrolling either a line or a page at a time. When this is true, the currently selected option (**LN** or **PG**) displays with a green background and black text, while the non-selected option displays with a black background and green text. The table below lists the possible functions of the **F1** key:

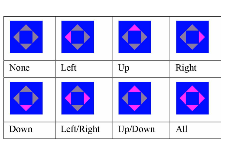
MOVE	Press **F1** to move the cursor around within the boundary of the screen.
EDIT	Press **F1** to open the edit dialog for the field that contains the cursor. The type of dialog that displays depends upon the type of field to be edited. See Editing numeric fields and Editing non-numeric fields for more information.
SELECT	Press **F1** to select the field to be edited.
BACKSP	Press **F1** to delete the character to the left of the cursor.
LN PG	Press **F1** to scroll line by line within a screen.
LN PG	Press **F1** to scroll page by page within a screen.
EXECUTE	Press **F1** to click the button and execute the command

Note

Throughout this appendix, when referring to the **F1** key, the key's current valid function will be indicated in parenthesis—for instance, **F1 (MOVE)** or **F1 (SELECT)**.

The **F2** key, when *MAIN* is displayed in the prompt box, closes all screens and goes back to the *Main Menu*.

There is a navigation icon in the upper right corner of the screen that indicates which navigation keys are active for the currently displayed screen.



When you press a key, a green check will flash in the upper left corner if the key is valid; if the key is not valid, a red cross (*X*) will flash in the upper left corner.

A.2.4 Editing numeric fields

When the focus is on an editable field, pressing **F1 (EDIT)** will display the *Edit* dialog containing the field's original text.

Use the **LEFT** or **RIGHT** keys to move through the individual characters within the field and to select the character to be changed. Use the **UP** or **DOWN** keys to select the value of each digit. The possible values are **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **0**, "**-**" (minus), "**.**" (period), and **E**.

Special characters supported are: @, **!**, **#**, **$**, **%**, ▯, **&**, *, _, = , and **?**

The "**-**" value is available for signed numbers.

The "**.**" and the **E** values are available for floating-point numbers, except for retention times and timed event values.

The following rules apply when entering a floating-point value:

- More than one **E** is not allowed.
- More than one "**.**" is not allowed.
- If the previous position is an **E**, then a "**.**" and a **0** are not allowed.
- A "**-**" is allowed only after an **E** or at the first position.
- If the previous position is "**.**", then an **E** is not allowed.
- If the first character is a "**-**" and the current index is **1**, then a "**.**" is not allowed.
- If the previous position is a "**-**", then a **0** is not allowed.
- If the next character is an **E**, then a "**.**" is not allowed at the previous location.

The **DOWN** key moves backward in the list from the current value of the selected digit.

The **UP** key moves forward in the list from the current value of the selected digit.

The **F1 (BACKSP)** key acts as a backspace and deletes the digit immediately to the left of the current position.

The **ENTER** key validates and saves the entry and then closes the *Edit* dialog. The new entry will display in the field.

The **EXIT** key cancels any changes that were entered and closes the *Edit* dialog, restoring the previous value to the field.

A.2.5 Editing non-numeric fields

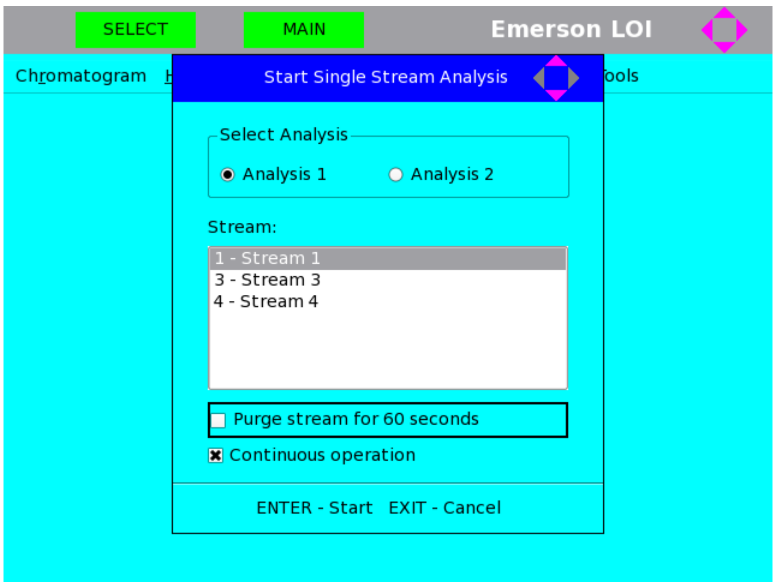
The function of the keys when editing non-numeric data is context-dependent.

Editing alphanumeric fields

Alphanumeric fields take numbers (**0 - 9**) and letters (**a - z**, **A - Z**).

Select check boxes

Figure A-5: Selecting a Check Box



Procedure

Press **F1 (SELECT)** to select or deselect a check box.

Click buttons

Procedure

Press **F1 (EXECUTE)** to click a button and execute a command.

Select radio buttons

Procedure

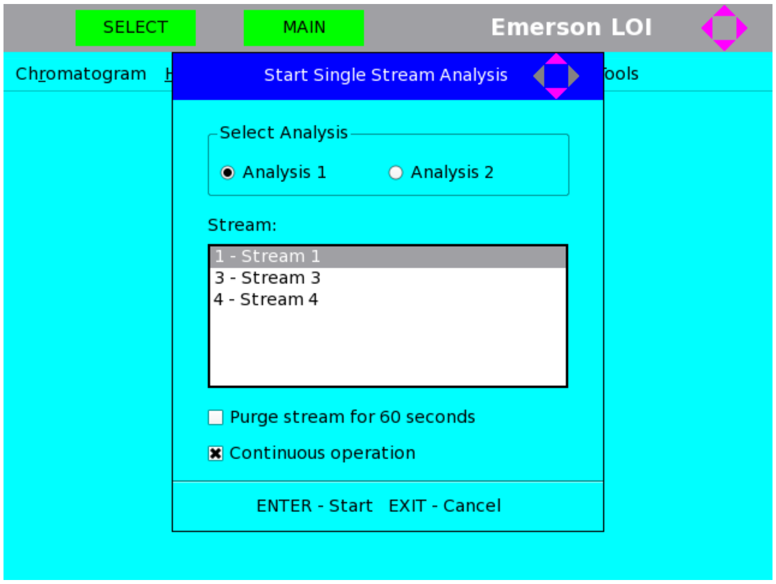
1. Press **F1 (SELECT)** to select a group of radio buttons.
2. Use the **UP/DOWN** or **LEFT/RIGHT** keys to move through the various radio buttons within the group.
3. Press **ENTER** to accept the current selection or press **EXIT** to abort any changes and to restore the previous selection.

Select an item from a list box

Procedure

1. Press **F1 (SELECT)** while focused on the list box to switch it to Edit mode.

Figure A-6: Selecting a List Box



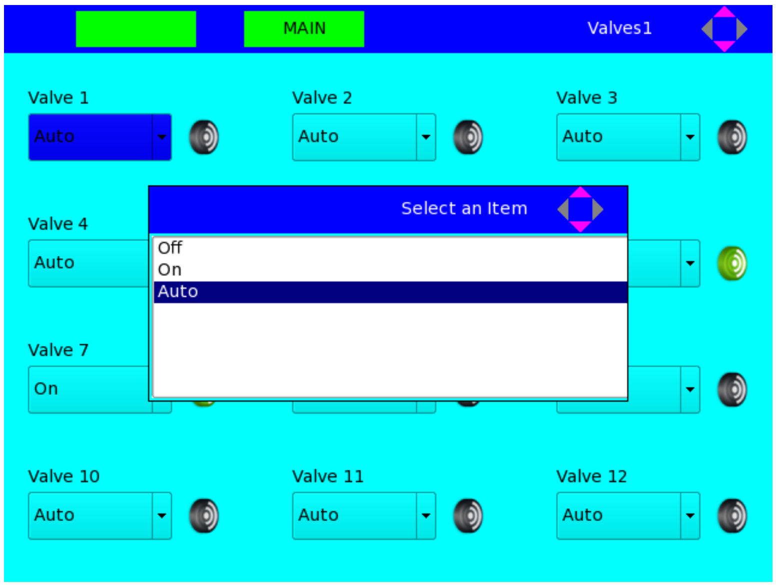
2. Use the **UP** and **DOWN** keys to move between the values within the list box.
3. Press **ENTER** to accept the current selection or press **EXIT** to abort the new selection, and the list box will revert to the previous selection.

Select an item from a combo box

Procedure

1. Press **F1 (SELECT)** while focused on the combo field.
   A *Combo* dialog opens and displays a list of available selections.

Figure A-7: Selecting a Combo Box



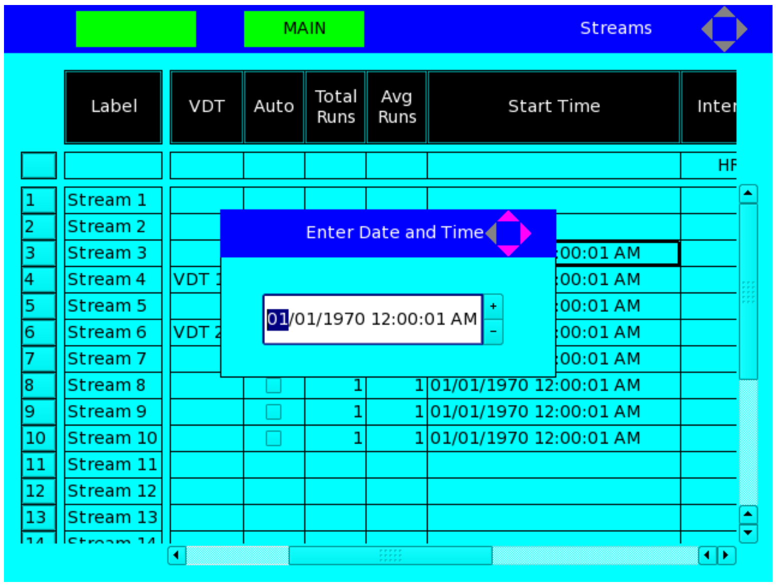
2. Use the **UP** and **DOWN** keys to move between the selections.
3. Press **ENTER** to select the desired value or press **EXIT** to restore the combo box's initial value.

Enter a date and time

Procedure

1. Press **F1 (SELECT)** while focused on the **Date and Time** field
   The *Enter the Date and Time* dialog displays. By default, the focus is set on the **Month** unit.

Figure A-8: Entering a Date and Time



2. Use the **UP** and **DOWN** keys to change the value of the unit—that is, to go from **January** to **February**, or from **1** to **2**.
3. Use the **LEFT** and **RIGHT** arrow keys to change units—that is, to go from months to years or hours to minutes.

Note
If the focus is on the leftmost section, the **LEFT** key will be inactive, and similarly if the focus is on the rightmost section, the **RIGHT** key will be inactive.

4. Press **ENTER** to save the change or press **EXIT** to discard the change and restore the original value.

Set the time

Procedure

1. Press **F1 (SELECT)** while focused on the **Time** field
   The *Enter the Time* dialog displays. By default, the focus is set on the **Hour** unit.
2. Use the **UP** and **DOWN** keys to change the value of the unit.
3. Use the **LEFT** and **RIGHT** arrow keys to change units—to go from hours to minutes, for example.

Note
If the focus is on the leftmost section, the **LEFT** key will be inactive, and similarly if the focus is on the rightmost section, the **RIGHT** key will be inactive.

4. Press **ENTER** to save the change or press **EXIT** to discard the change and restore the original value.

A.3 Navigate and interact with the screen

This tutorial, which guides you through the procedure for editing data on a screen, will incorporate all of the preceding information to demonstrate the typical method of navigating and interacting with the local operator interface (LOI).

You will learn how to perform the following actions:

- Open and close screens.
- Navigate through tables.
- Select fields for editing.
- Save data.

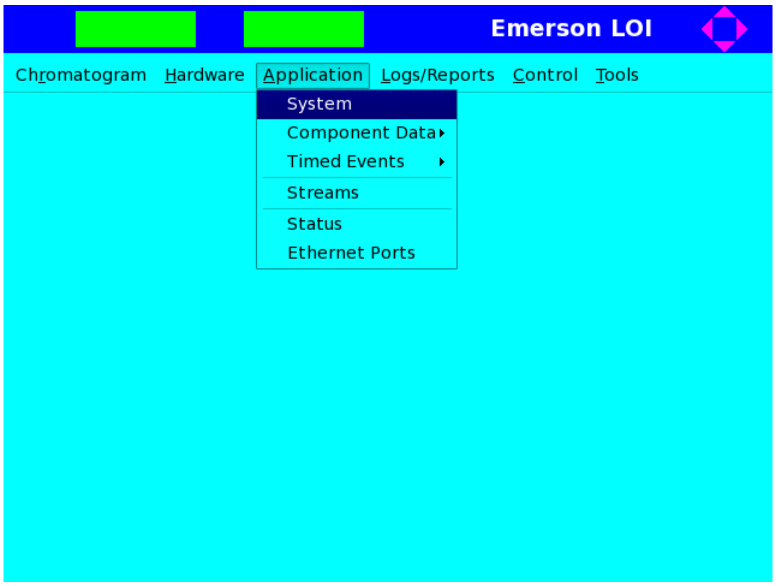
Procedure

1. From the ***Main Menu***, click the **RIGHT** key enough times to navigate to the ***Application*** menu.

   The ***System*** submenu, as it is the first item in the list, is already selected.

Note
In this instance, the term click means to tap the glass on the spot directly above the arrow's keyhole.

Figure A-9: Navigate to the Application Menu



Note

Notice the navigation icon in the upper right corner, which indicates that all four arrow keys are active. This allows you to navigate to all of the menu items and sub menu items.

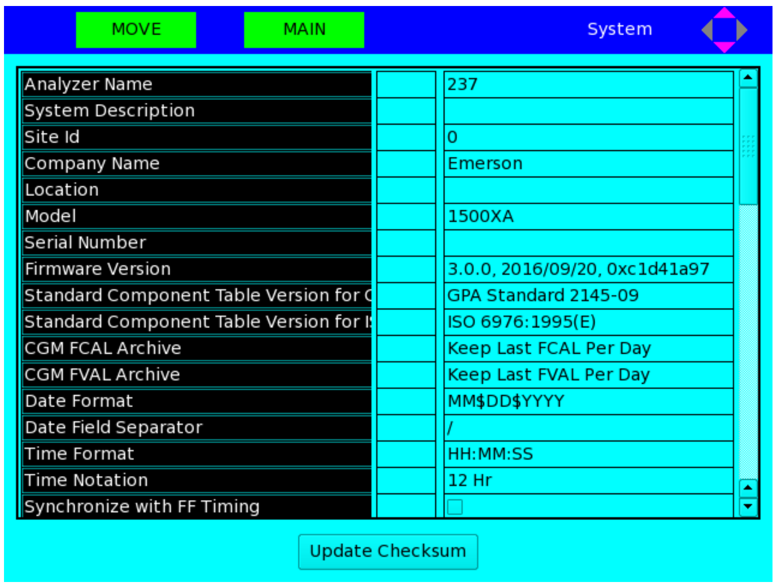
Note

Notice that the green prompt boxes are empty. This means that the **F1** and **F2** keys are inactive from the *Main Menu*.

---

2. Click **ENTER**.
   The *System* screen displays.

Figure A-10: System Screen



Note

Notice the navigation icon in the upper right corner, which indicates that no arrow keys are active.

Notice that the green prompt boxes now display function keywords. *MAIN* means that if you click **F2**, the LOI will close the current screen and return you to the *Main Menu*. *MOVE* means that if you click **F1**, the arrow keys are enabled for navigation within the *System* screen.

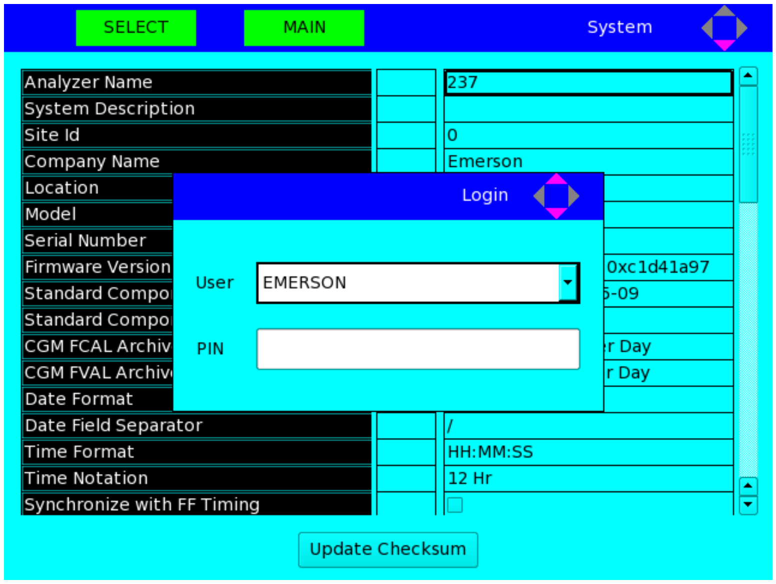
---

3. Click **F1**.
   The LOI switches to Edit mode. Notice that the navigation icon in the upper right corner of the screen indicates that the **DOWN** key is active.
4. Click the **DOWN** key once.
   Now the navigation icon indicates that both the **UP** and **DOWN** keys are active.
5. Click the **UP** arrow once to return to the previous cell.
   The navigation icon again indicates that only the **DOWN** key is active.

   Notice that the green *F1* prompt box reads *EDIT*.

6. Click **F1**.
   You must be logged in to the gas chromatograph (GC) to make a change to any screen. If you try to edit a field before logging in—as you just did, the LOI displays the *Login* dialog to prompt you to log in.

Figure A-11: Login Screen (Edit Mode Prompt)



Note
Notice that there is also a navigation icon on the *Login* dialog.

7. Click **F1 (SELECT)** and navigate up or down the list to highlight your user name.

Note
For the remainder of this tutorial, when referring to the **F1** key, the key's current valid function will be indicated in parenthesis—for instance, **F1 (MOVE)** or **F1 (SELECT)**.

8. Click **ENTER**.
9. Navigate to the **Password** field, press **F1 (EDIT)**, and enter your password.

Important
The password security policy requires a login name and password. Security levels include:

- High **-** password policy level includes following parameters:
  — Ensure minimum eight characters length and maximum of 12 characters.
  — Ensure at least one upper case character.
  — Ensure at least one lower case character.
  — Ensure at least one digit.
  — Ensure at least one special character:

  - At symbol, exclamation mark, percent symbol, Caret symbol, Ampersand symbol, Asterisk symbol, underscore, equals, plus, question mark, colon, or dash
  - @, !, #, $, %, ^, &, *, _, =, +, ?, :, -,
  - Immediate reuse of a password will not be allowed. This will avoid setting same password as new password repetitively
  - Ensure password doesn't contain user name
  - There will not be any kind of password expiration after certain time
- Medium password policy level includes the following parameters:
  — Ensure minimum eight characters length and maximum of 12 characters.
  — Ensure at least one upper case character.
  — Ensure at least one digit.
  — Ensure password doesn't contain user name.
  — There will not be any kind of password expiration after certain time.

  :
- Low password policy level include the following rules:
  — Ensure minimum eight characters length and maximum of 12 characters
  — Password should contain any alphanumeric character combination (i.e., numbers, small letters, capital letters, special characters).
  — There will not be any kind of password expiration after certain time

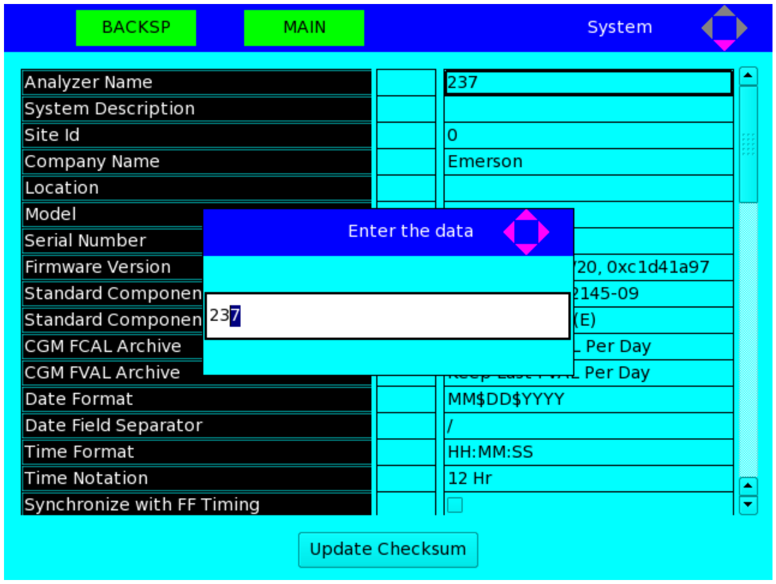
---

10. Click **ENTER** twice.
    Now that you are logged in, you can edit the fields on the screen.

11. Click **F1 (EDIT)**.
    The *Enter the data* dialog displays.

    The *Enter the data* dialog allows you to edit the selected field.

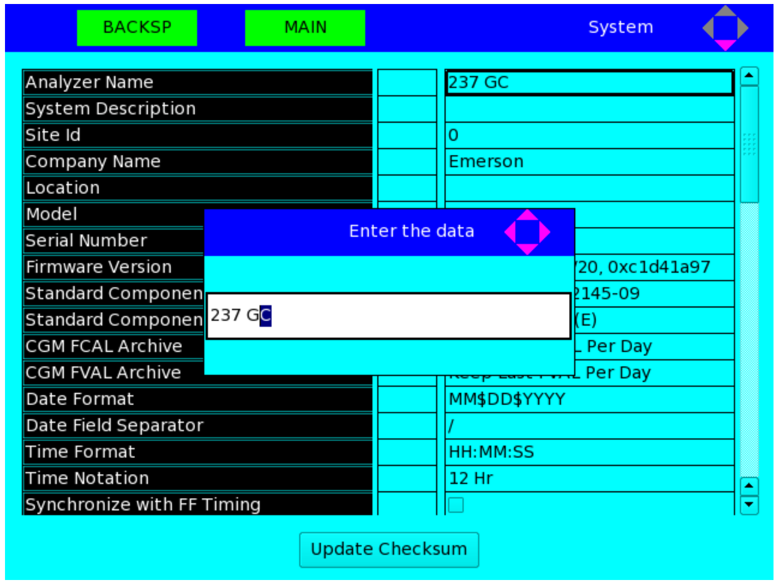
Figure A-12: Enter the Data Dialog



12. To delete a character, press **F1 (BACKSP)**. To enter new data, use the **UP** and **DOWN** keys to cycle through the available characters, and use the **RIGHT** key to add a new character to the field.

13. When you are finished entering data, press **ENTER** to validate and save the new information. To discard the information, press **EXIT**.

Figure A-13: New Data Displayed

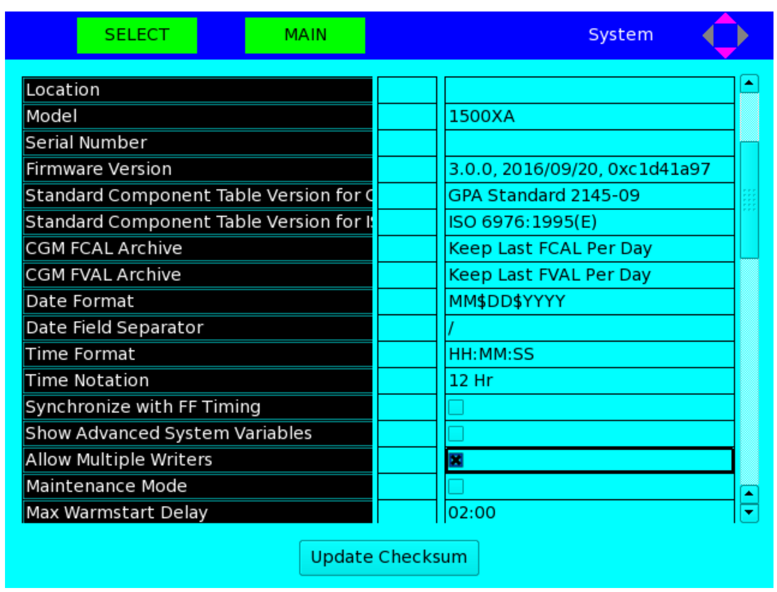


Note

If a validation error is found after pressing **ENTER**, an *Invalid Entry* message displays. Press **ENTER** to close the message and then re-enter your data.

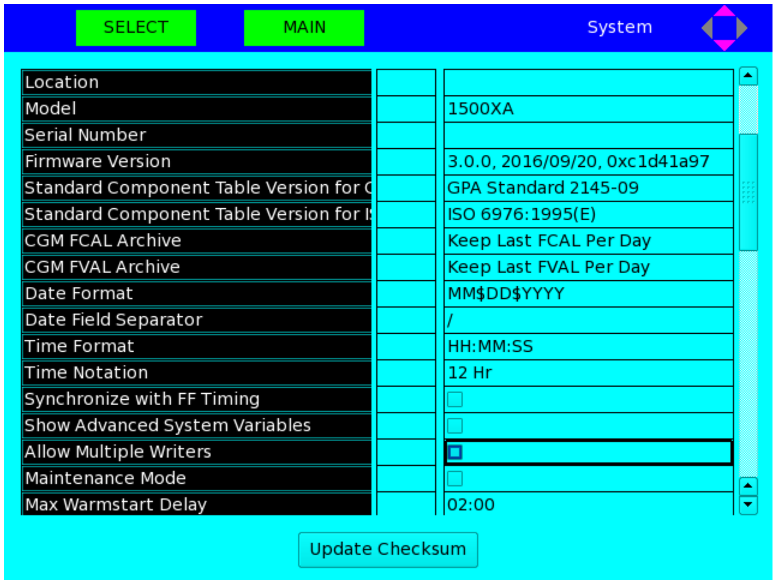
14. Use the **DOWN** arrow to move to the **Allow Multiple Writers** check box.

Figure A-14: Allow Multiple Writers Check Box Selected



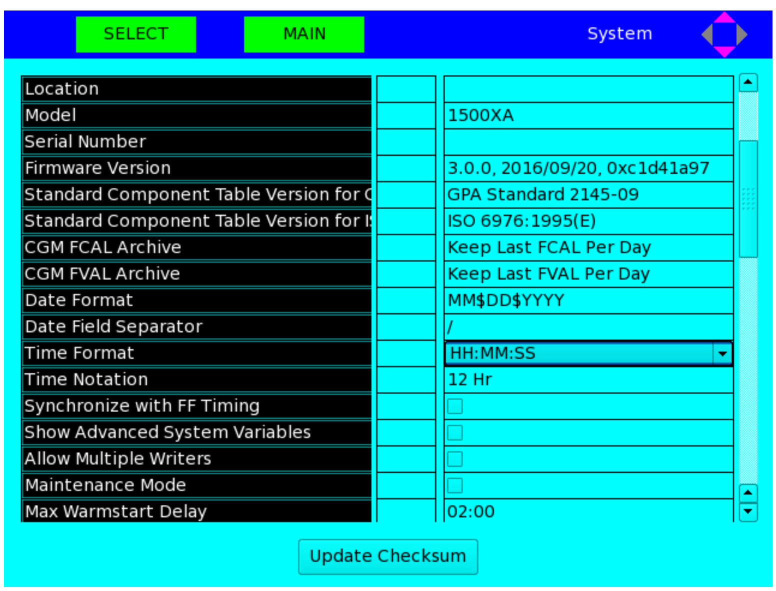
15. Press **F1 (SELECT)**.
    This clears the check box.

Figure A-15: Allow Multiple Writers Checkbox Unselected



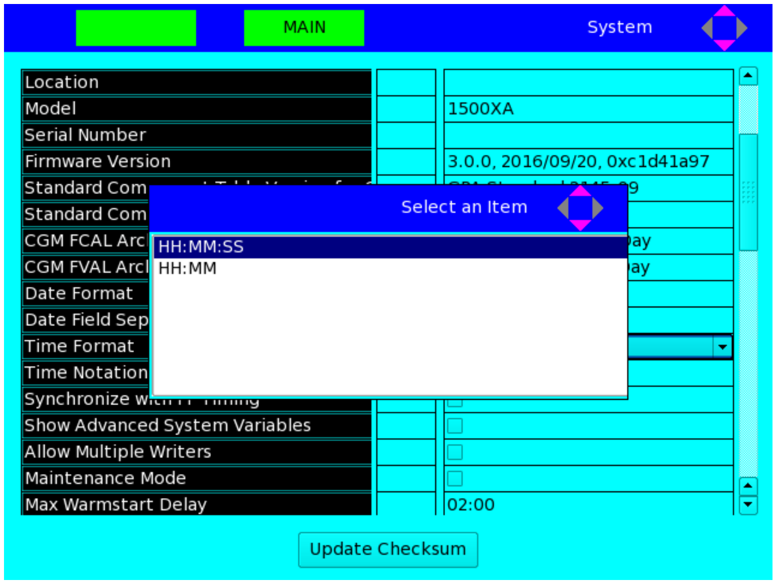
16. Click **F1 (SELECT)** again to reselect the check box.
17. Navigate to the Time Format field.

Figure A-16: Time Format Field



18. Press **F1 (SELECT)**.
    The *Select an Item* combo box displays.

Figure A-17: Select an Item Combo Box



19. Use the **DOWN** key to scroll down to the last item in the combo box. Press **ENTER**.
20. Press **ENTER** a second time to save all the changes that were made to the table.

Note
If you neglect to press **ENTER** at this point, all of your changes will be lost.

21. Press **F2 (MAIN)** to return to the *Main Menu*.

A.4 Local operator interface (LOI) screens

The *Main Menu* has six top-level submenus: *Chromatogram*, *Hardware*, *Application*, *Control*, *Logs/Reports*, and *Tools*.

Refer to the MON2020 Software for Gas Chromatographs Reference Manual for detailed information regarding the commands in Table A-1 through Table A-4.

Table A-1 through Table A-4 list the submenus and commands that are available from the *Main Menu*.

Table A-1: Chromatogram Menu

Submenu	Command	Subcommands	Reference
Chromatogram			Chromatogram menu
	View	N/A	Chromatogram menu
		Live Chromatogram View screen (Status Mode)	Figure A-20
		Live Chromatogram screen (Advanced Mode)	Figure A-21
		Archived Chromatogram screen (Advanced Mode)	Figure A-26
		Live & Archived Chromatogram Viewer Options menu	Figure A-27
		CGM Scaling screen	Figure A-28
		Select Detector screen	Figure A-29
		Chromatogram TEV table	Figure A-30
		Chromatogram CDT table	Figure A-31
		Chromatogram Raw Data table	Figure A-32

Table A-2: Hardware and Application Menus

Submenu	Command	Subcommands	Reference
Hardware			Hardware menu
	Heaters	N/A	Figure A-34
	Valves	N/A	Figure A-35
	Detectors	N/A	Figure A-33
	Discrete Inputs	N/A	Figure A-38
	Discrete Outputs	N/A	Figure A-39
	Analog Inputs	N/A	Figure A-40
	Analog Outputs	N/A	Figure A-41
	Installed Hardware	N/A	Figure A-42
Application			Application menu
	System	N/A	Figure A-44
	Component		Figure A-45

Table A-2: Hardware and Application Menus *(continued)*

Submenu	Command	Subcommands	Reference
	Data	CDT 1	
		CDT 2	
		CDT 3	
		CDT 4	
	Timed Events		Figure A-46
		TEV 1	
		TEV 2	
		TEV 3	
		TEV 4	
	Streams	N/A	#unique_78/unique_78_Connect_42_c_TheApplicationMenu-figA-42
	Status	N/A	Figure A-53
	Ethernet Ports	N/A	Figure A-54

Table A-3: Logs/Reports and Control Menus

Submenu	Command	Reference
Logs/Reports		Logs/Reports menu
	Maintenance Log	Figure A-57
	Event Log	Figure A-58
	Alarm Log	Figure A-59
	Unack Alarms	Figure A-60
	Active Alarms	Figure A-62
	Report Display	Figure A-64
Control		Control menu
	Auto Sequence	Figure A-66
	Single Stream	Figure A-68
	Halt	Figure A-69
	Calibration	Figure A-70
	Validation	Figure A-71
	Stop Now	Figure A-72

Table A-4: Tools Menu

Submenu	Command	Reference
Tools		Tools menu

Table A-4: Tools Menu *(continued)*

Submenu	Command	Reference
	Screen Control	Figure A-74
	Diagnostics	Figure A-75
	Logout	No screen

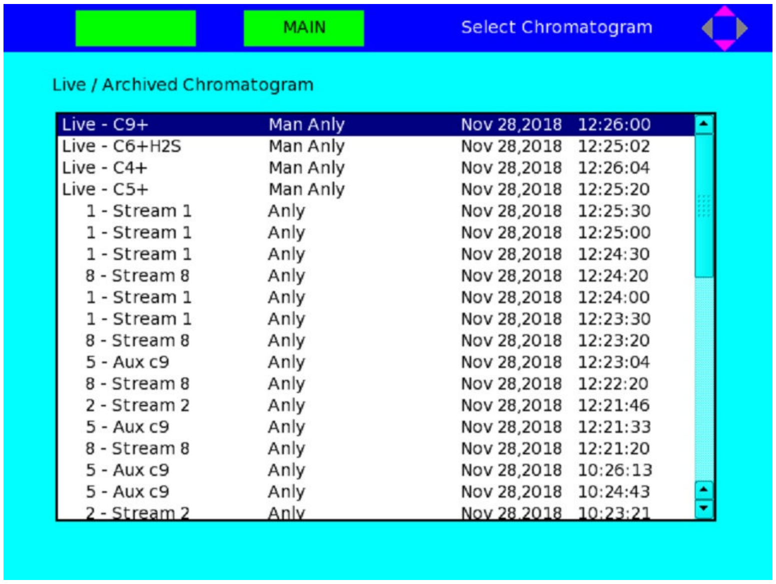
A.4.1 Chromatogram menu

The ***Chromatogram*** menu enables you to view live and archived chromatograms and their associated component data tables (CDTs) and timed event (TEV) tables, as well as to edit the display properties if the chromatogram screens.

Refer to the *Using the chromatograph functions* section of the MON2020 Software for Gas Chromatographs Reference Manual for detailed information regarding the ***Chromatogram*** menu screens.

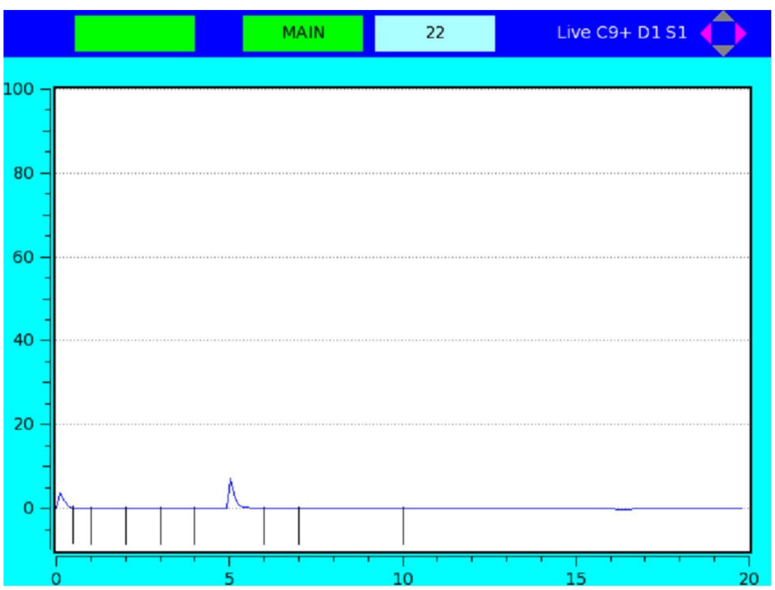
Figure A-18: Chromatogram Menu

Figure A-19: Select Chromatogram Screen



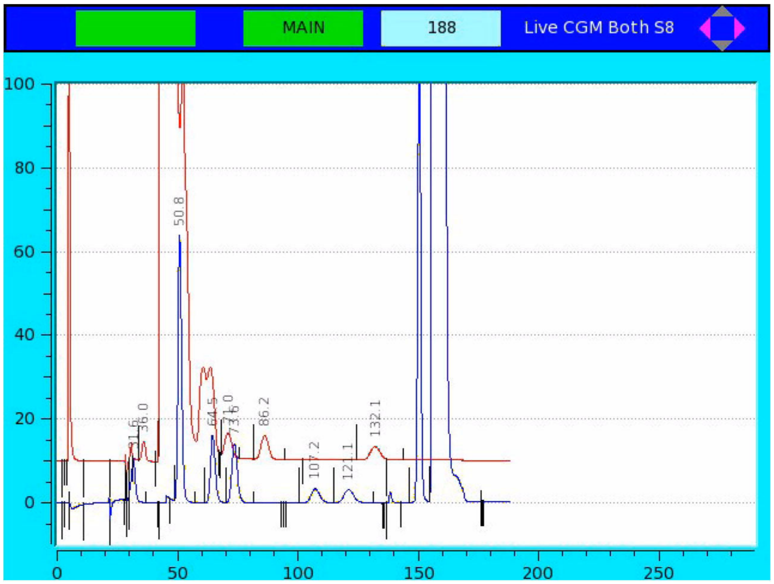
- After selecting the live chromatogram, select **Options** and view and select the detectors associated with that cycle clock.
- All the detectors that are associated with a cycle clock are shown with a radio button. The other detectors that are not associated with that cycle clock are grayed out as shown in Figure A-20

Figure A-20: Live Chromatogram View (Status Mode) Screen



Note
The blue box displays the current analysis time.

Figure A-21: Live Chromatogram View (Advanced Mode) Screen



Note
The blue box displays the current analysis time.

Figure A-22: Live Chromatogram - Analysis 1

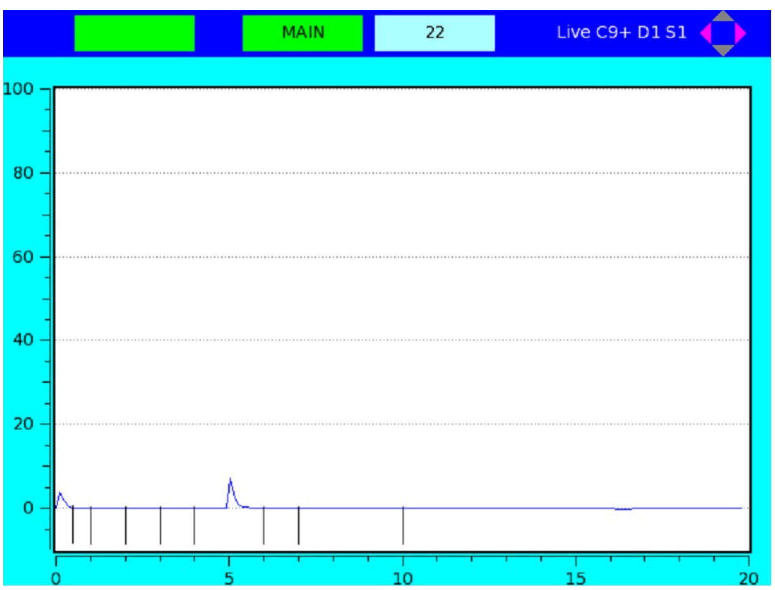


Figure A-23: Live Chromatogram - Analysis 2

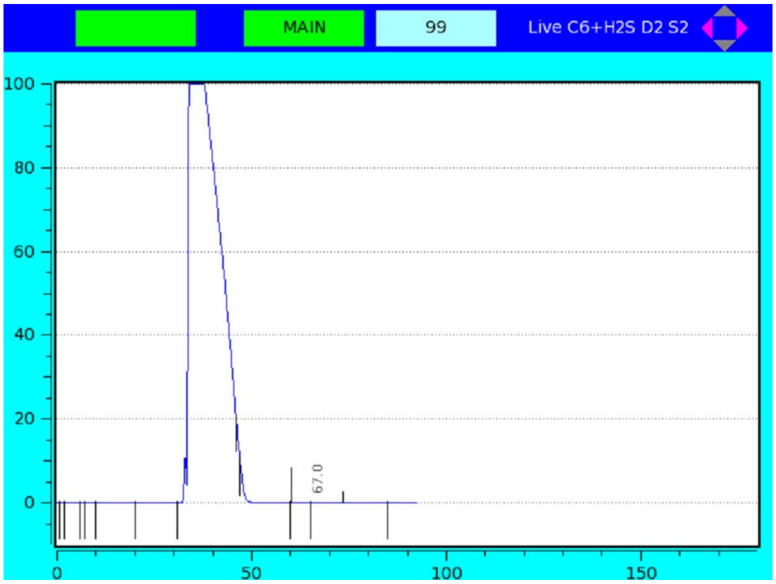


Figure A-24: Live Chromatogram - Analysis 3

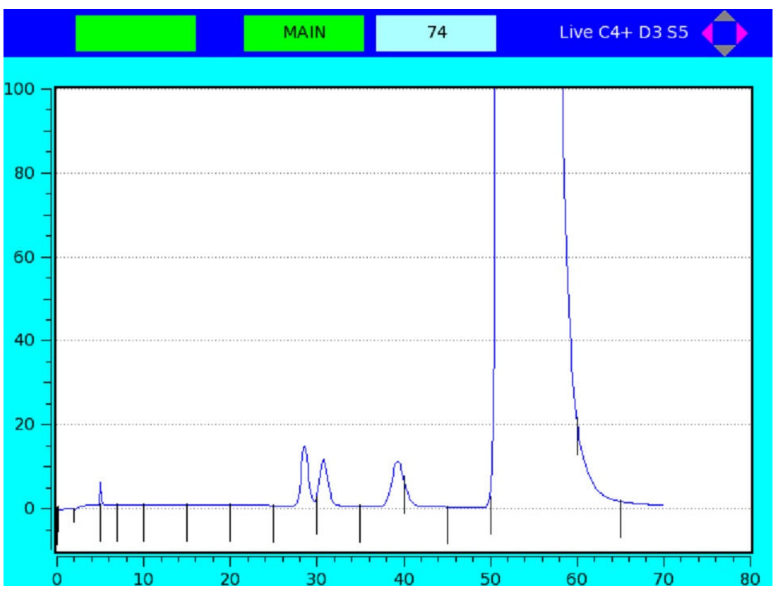


Figure A-25: Live Chromatogram - Analysis 4

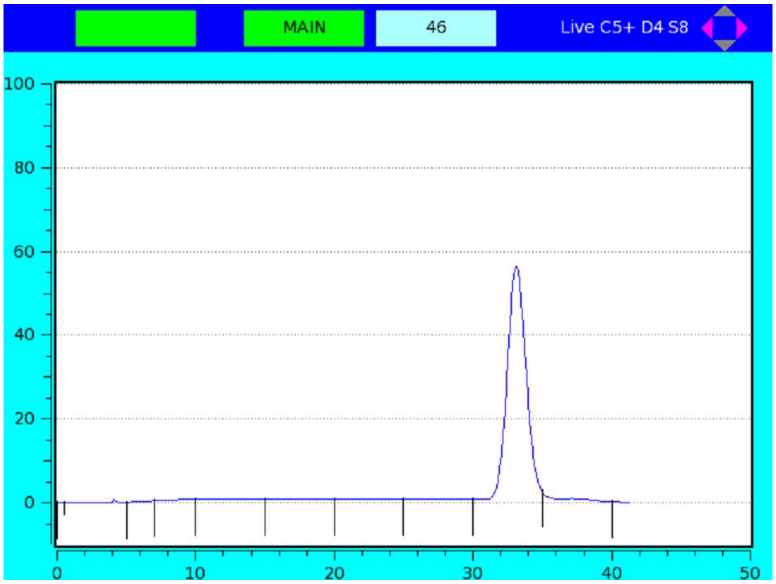


Figure A-26: Archived Chromatogram (Advanced Mode) Screen

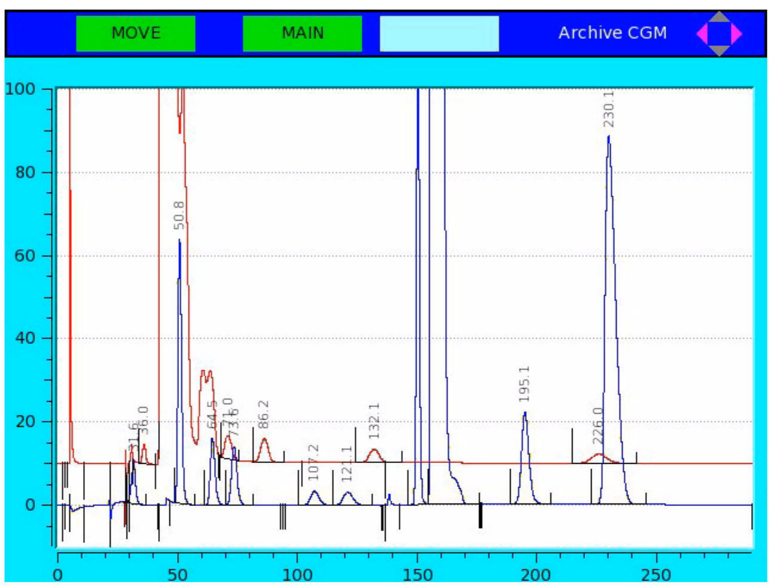
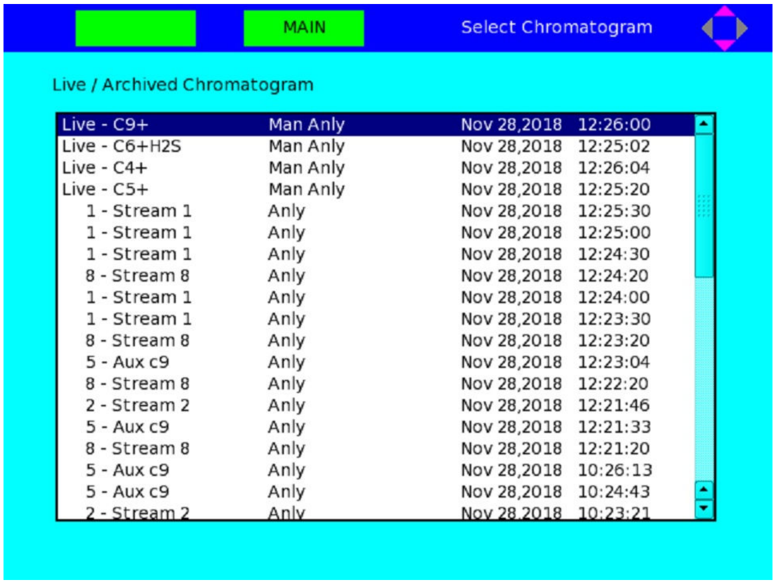
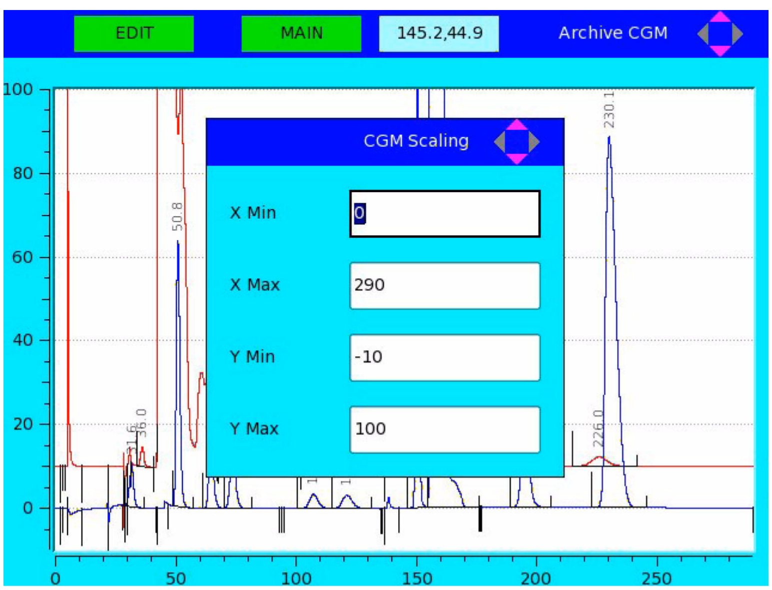


Figure A-27: Live and Archived Chromatogram Viewer Options Screen



Note
The blue box displays the cursor's X- (analysis time) and Y- (amplitude) coordinates.

Figure A-28: CGM Scaling Screen



After selecting the live CGM, select the *Options* menu to view and select the detectors associated with that cycle clock.

Figure A-29: Detector Selection Via Options Menu

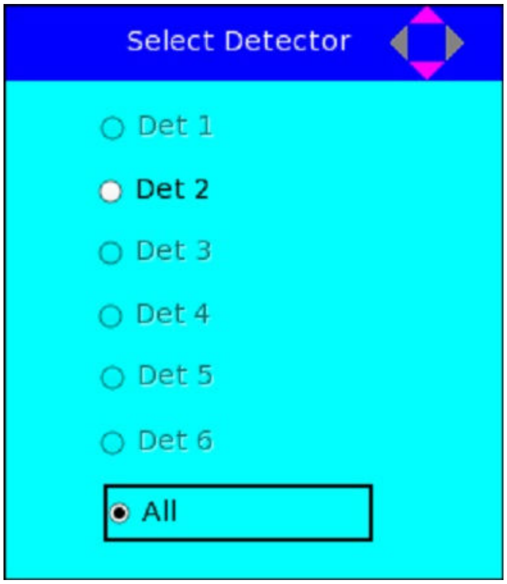
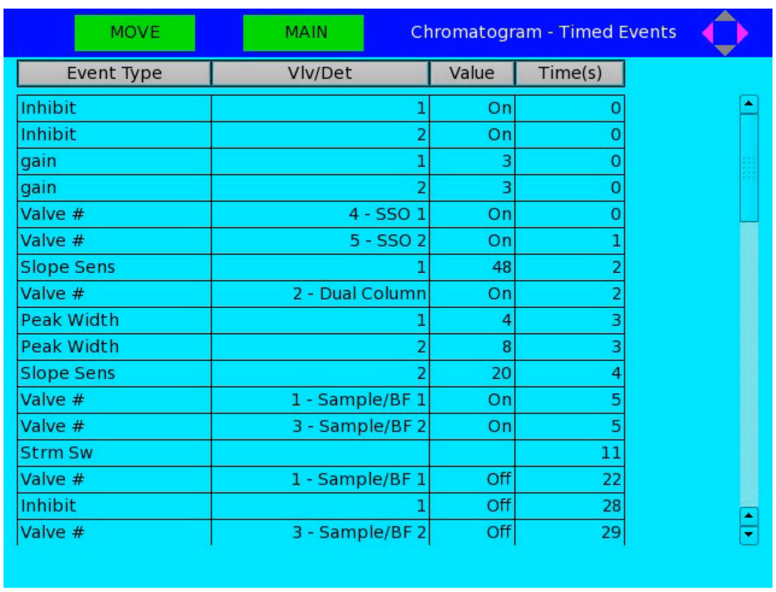
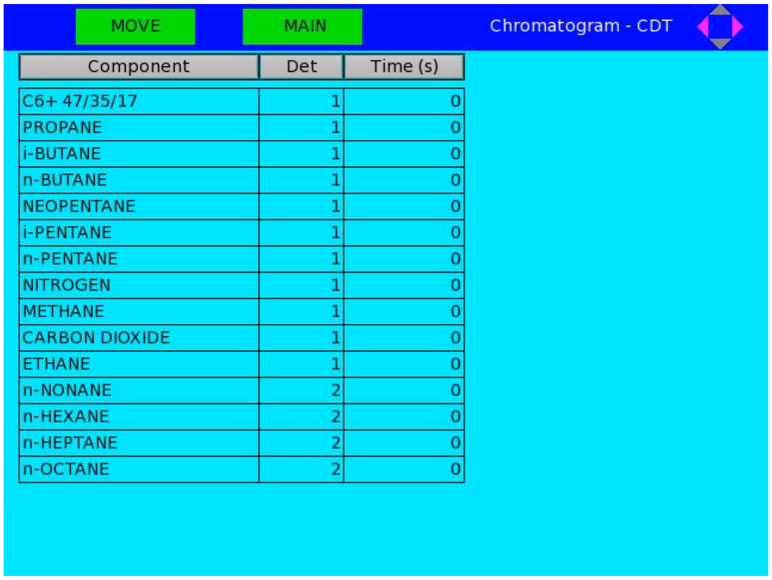


Figure A-30: Chromatogram TEV Table Screen



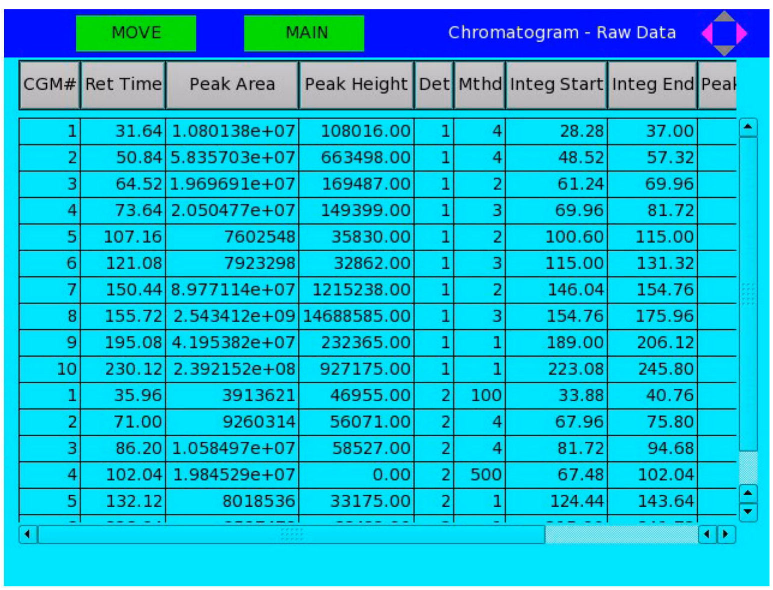
Event Type	Vlv/Det	Value	Time(s)
Inhibit	1	On	0
Inhibit	2	On	0
gain	1	3	0
gain	2	3	0
Valve #	4 - SSO 1	On	0
Valve #	5 - SSO 2	On	1
Slope Sens	1	48	2
Valve #	2 - Dual Column	On	2
Peak Width	1	4	3
Peak Width	2	8	3
Slope Sens	2	20	4
Valve #	1 - Sample/BF 1	On	5
Valve #	3 - Sample/BF 2	On	5
Strm Sw			11
Valve #	1 - Sample/BF 1	Off	22
Inhibit	1	Off	28
Valve #	3 - Sample/BF 2	Off	29

Figure A-31: Chromatogram CDT Screen



Component	Det	Time (s)
C6+ 47/35/17	1	0
PROPANE	1	0
i-BUTANE	1	0
n-BUTANE	1	0
NEOPENTANE	1	0
i-PENTANE	1	0
n-PENTANE	1	0
NITROGEN	1	0
METHANE	1	0
CARBON DIOXIDE	1	0
ETHANE	1	0
n-NONANE	2	0
n-HEXANE	2	0
n-HEPTANE	2	0
n-OCTANE	2	0

Figure A-32: Chromatogram Raw Data Table Screen



CGM#	Ret Time	Peak Area	Peak Height	Det	Mthd	Integ Start	Integ End	Peal
1	31.64	1.080138e+07	108016.00	1	4	28.28	37.00	
2	50.84	5.835703e+07	663498.00	1	4	48.52	57.32	
3	64.52	1.969691e+07	169487.00	1	2	61.24	69.96	
4	73.64	2.050477e+07	149399.00	1	3	69.96	81.72	
5	107.16	7602548	35830.00	1	2	100.60	115.00	
6	121.08	7923298	32862.00	1	3	115.00	131.32	
7	150.44	8.977114e+07	1215238.00	1	2	146.04	154.76	
8	155.72	2.543412e+09	14688585.00	1	3	154.76	175.96	
9	195.08	4.195382e+07	232365.00	1	1	189.00	206.12	
10	230.12	2.392152e+08	927175.00	1	1	223.08	245.80	
1	35.96	3913621	46955.00	2	100	33.88	40.76	
2	71.00	9260314	56071.00	2	4	67.96	75.80	
3	86.20	1.058497e+07	58527.00	2	4	81.72	94.68	
4	102.04	1.984529e+07	0.00	2	500	67.48	102.04	
5	132.12	8018536	33175.00	2	1	124.44	143.64	

A.4.2 Hardware menu

The ***Hardware*** menu enables you to view and manage the GC's hardware components.

Refer to the *Using the hardware functions* section of the MON2020 Software for Gas Chromatographs Reference Manual for detailed information regarding the **Hardware** menu screens.

Figure A-33: Hardware Menu

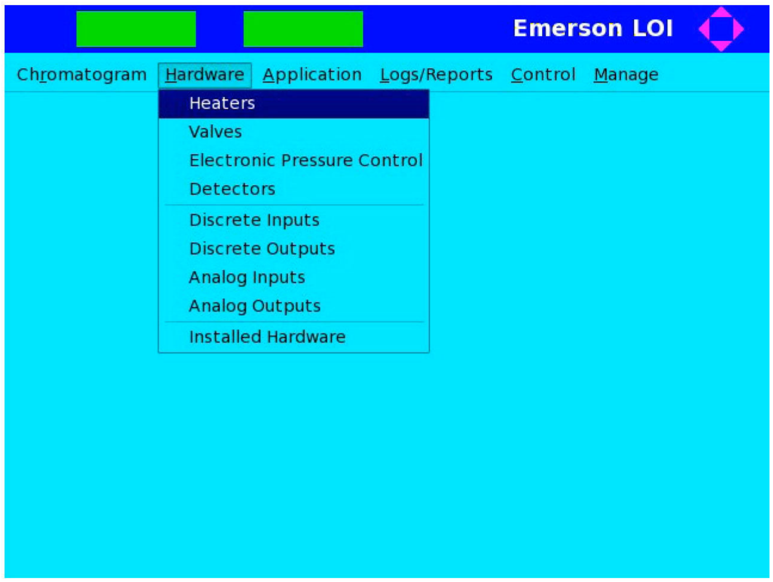


Figure A-34: Heaters Screen

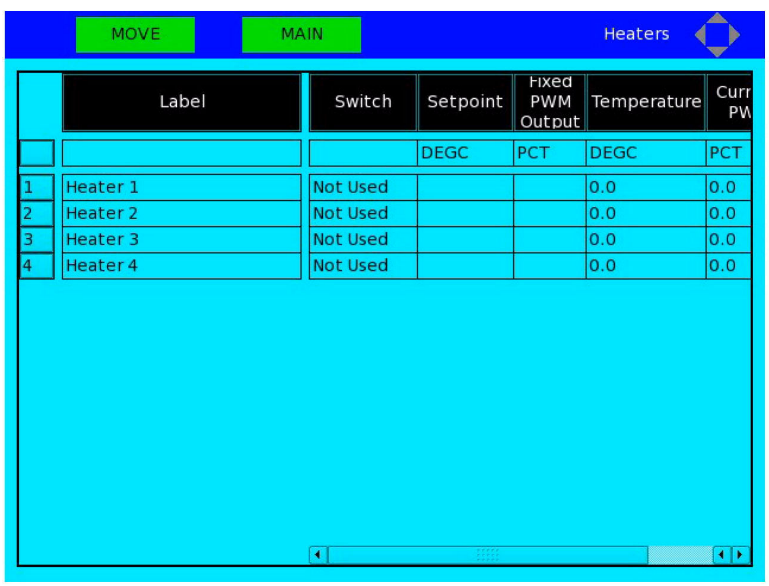


Figure A-35: Valves Screen

Note

The usage (Sample/BF1, Dual Column), mode (Auto, Off), and state (green = on, black = off, red = error) of each valve is displayed. See the *Configuring the valves* section of the MON2020 Software for Gas Chromatographs Reference Manual for more information.

Figure A-36: Detectors Screen

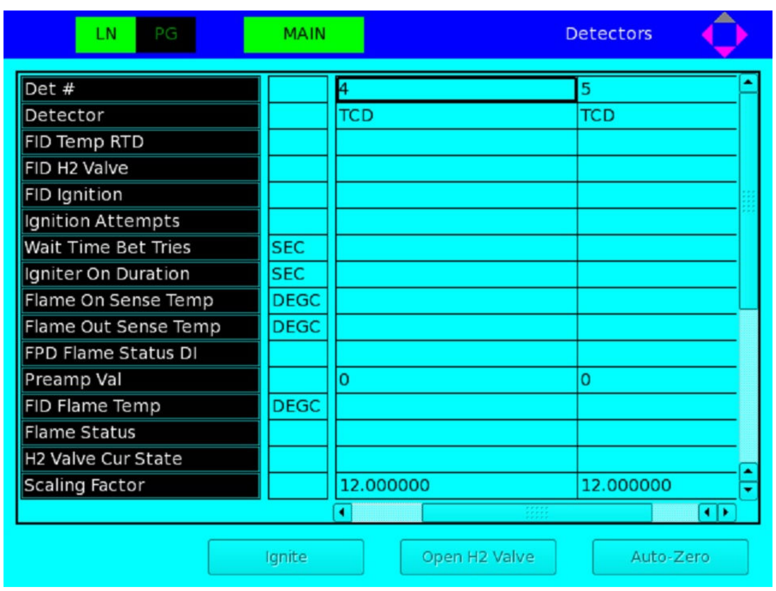


Figure A-37: Detectors Screen Continued

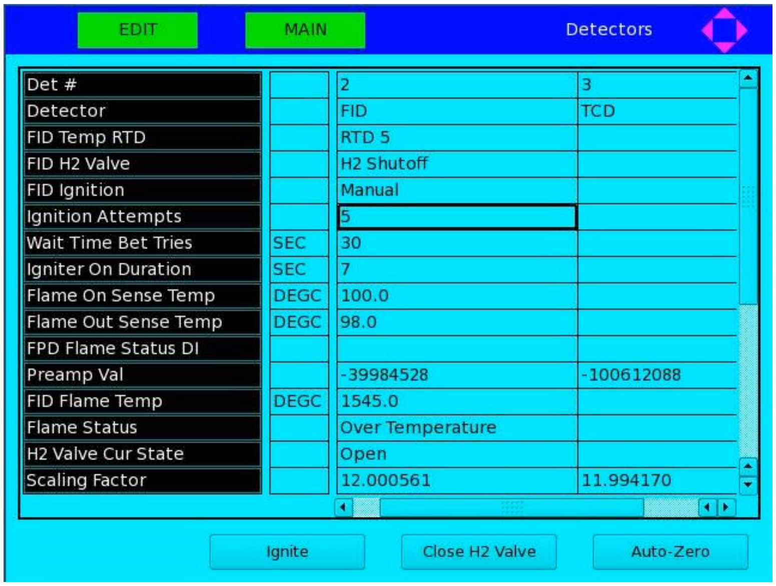


Table A-5: Detector Screen Field Labels

Detector Screen	G1 Board		G2 Board	
Field Names	**Flame ionization detector (FID)**	**Flame photometric detector (FPD)**	**FID**	**FPD**
FID Temp RTD	Selectable	Blank	Blank	Blank
H2 Valve	Selectable	Blank	Selectable	Selectable
Flame Ignition	Selectable	Blank	Selectable	Selectable
Ignition Attempts	Editable	Blank	Editable	Editable
Wait Time Bet Tries	Editable	Blank	Editable	Editable
Igniter On Duration	Editable	Blank	Editable	Editable
Flame On Sense Temp	Editable	Blank	Editable	Editable
Flame Out Sense Temp	Editable	Blank	Editable	Editable
FPD Flame Status DI	Blank	Selectable	Blank	Blank
Scaling Factor	Read only	Read only	Read only	Blank
Flame Temp	Read only	Blank	Read only	Read only

The *Detector* screen field label names and their respective field statuses are described as editable or non-editable depending on G1/G2 board types.

When you select one of the buttons on G1 boards (for example, **Auto-zero**), then since FID and µFPD are both enabled for Auto-zero, when that button is selected a combo box displays for you to select either FID or µFPD detector (if both detector types are configured with the gas chromatograph [GC]). After selecting one of the detectors, the Auto-zero event is triggered for that detector.

For G2 boards, since the µFPD is disabled for Auto-zero no combo box displays for you to select the detector. Only one detector is a valid selection for Auto-zero in the available detectors on that GC, so the **Auto-zero** selection triggers the event for the FID detector. If the button option is valid for more than one detector type, only then does the combo box display. If only one detector type is valid for that specific button, then the combo box does not display and the selection triggers that specific event on the only workable detector.

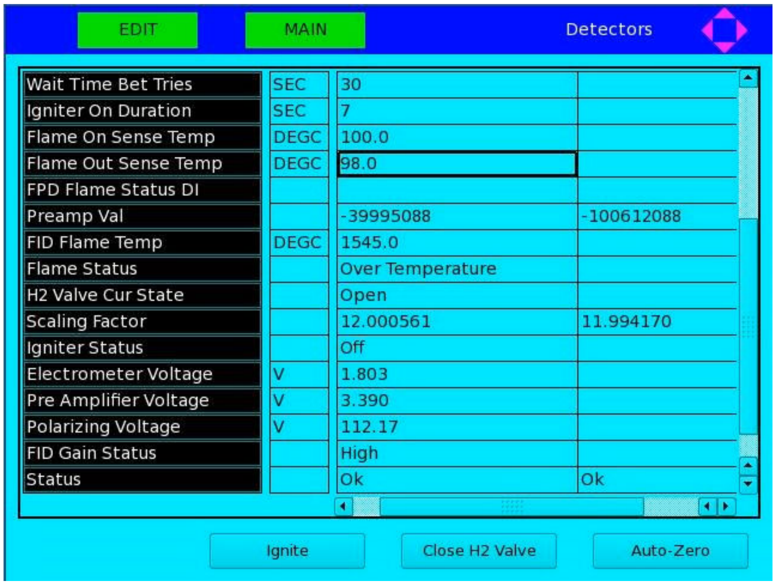


Table A-6: Detector Screen Auto-zero Buttons

Button Name	G1 Board		G2 Board	
	FID	**FPD**	**FID**	**FPD**
Auto-Zero	Enabled	Enabled	Enabled	Disabled

Figure A-38: Discrete Inputs Screen

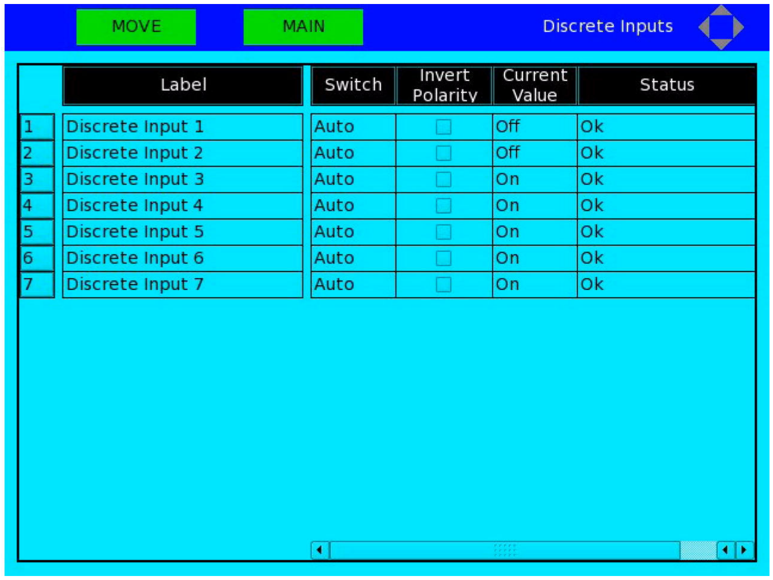


Figure A-39: Discrete Outputs Screen

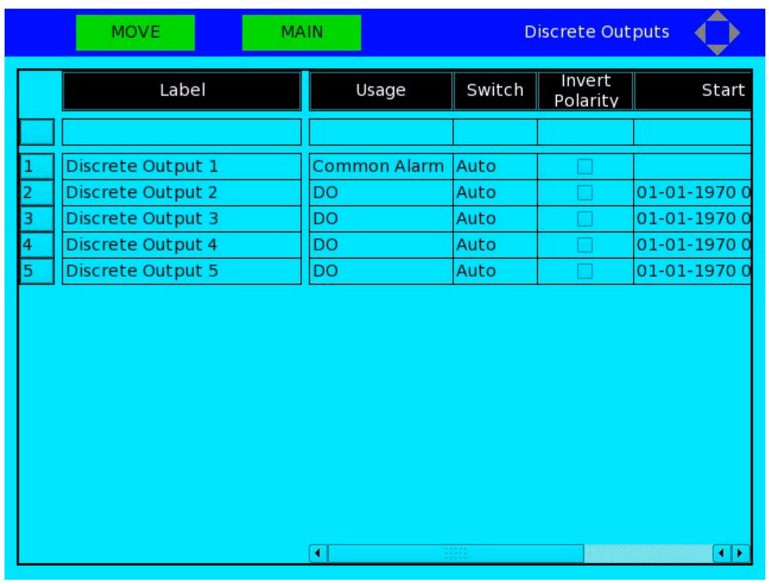


Figure A-40: Analog Inputs Screen

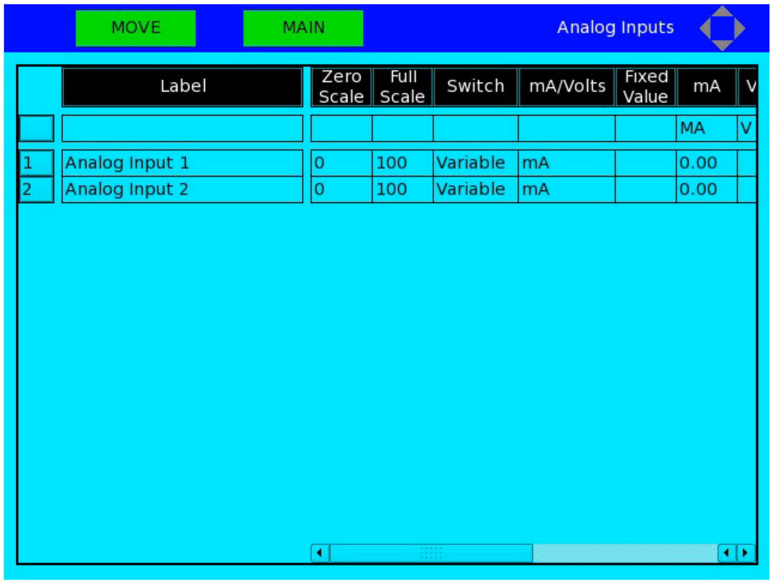


Figure A-41: Analog Outputs Screen

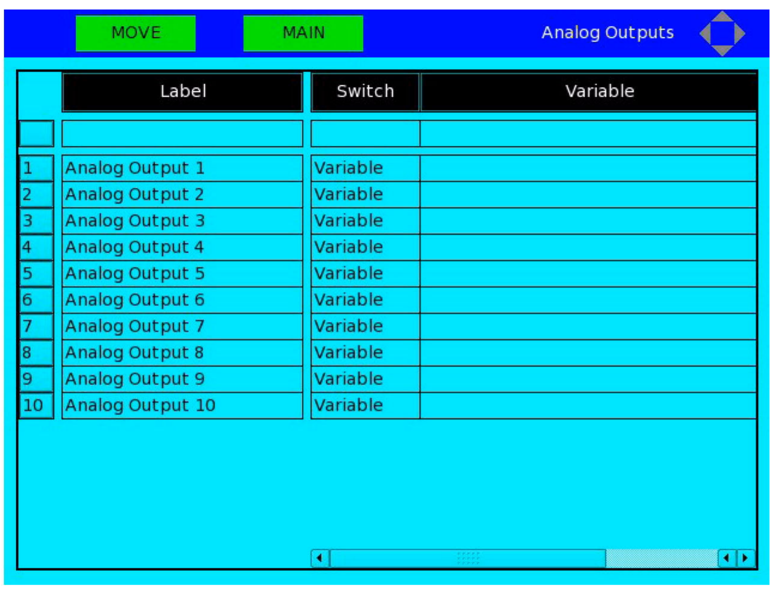
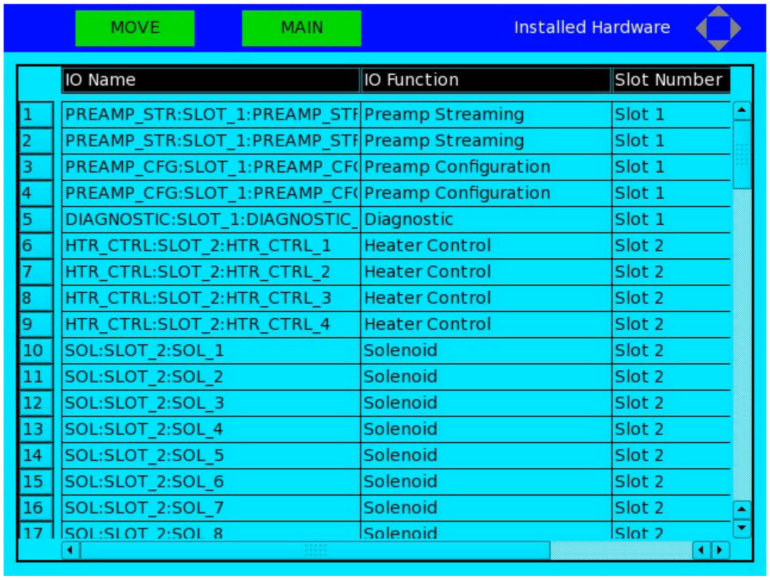


Figure A-42: Installed Hardware Screen



A.4.3 Application menu

The *Application* menu allows you to view the *Component Data*, *Timed Events*, and *Streams* tables for the GC. The *System*, *Status*, and *Ethernet Ports* screens are also accessible from this menu.

Refer to the *Using the application functions* section of the MON2020 Software for Gas Chromatographs Reference Manual for detailed information regarding the *Application* menu screens.

Figure A-43: Application Menu

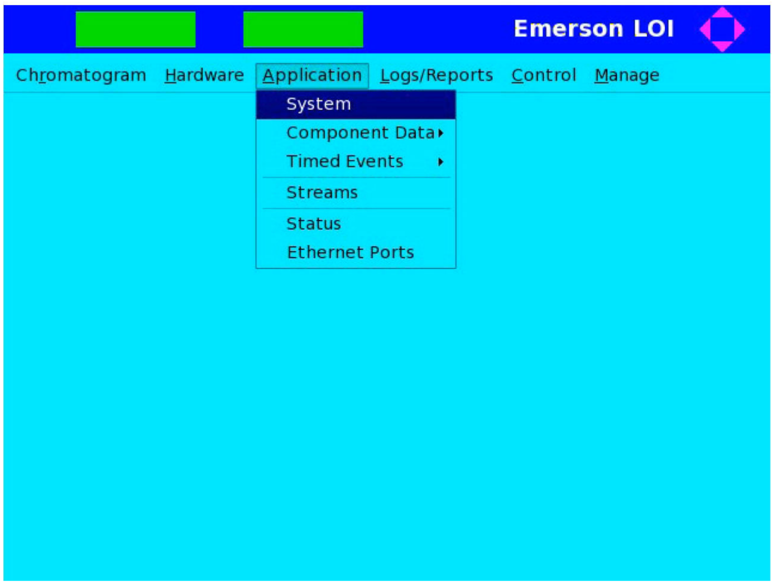


Figure A-44: System Screen

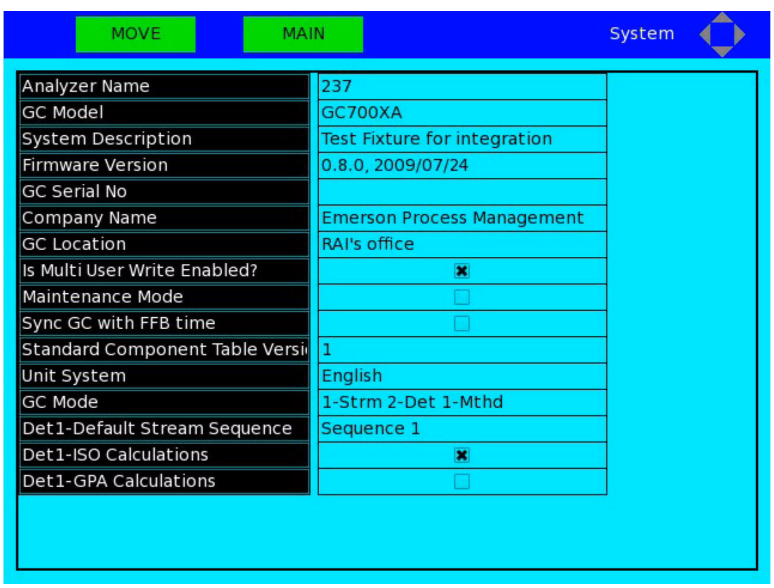
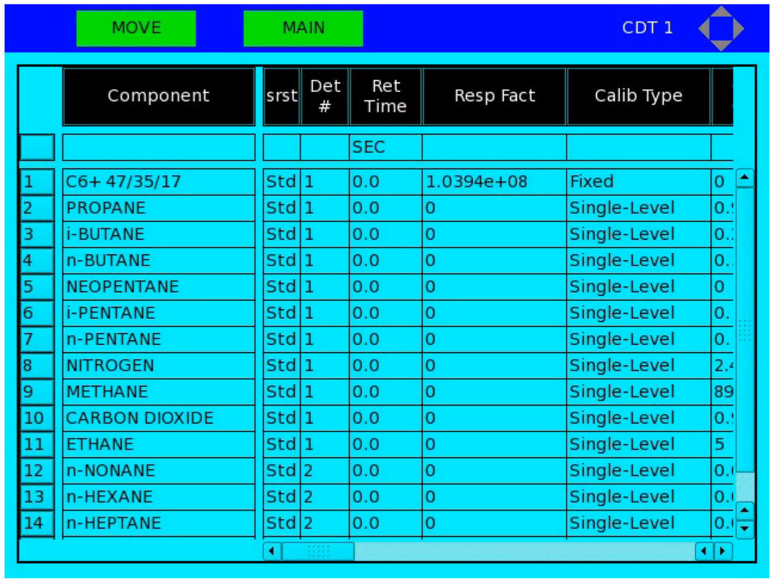
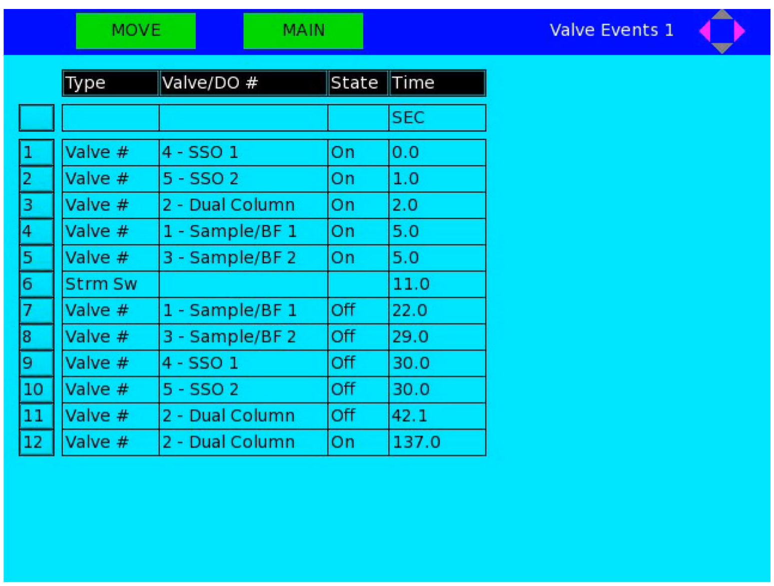


Figure A-45: Component Data Table (CDT) Screen



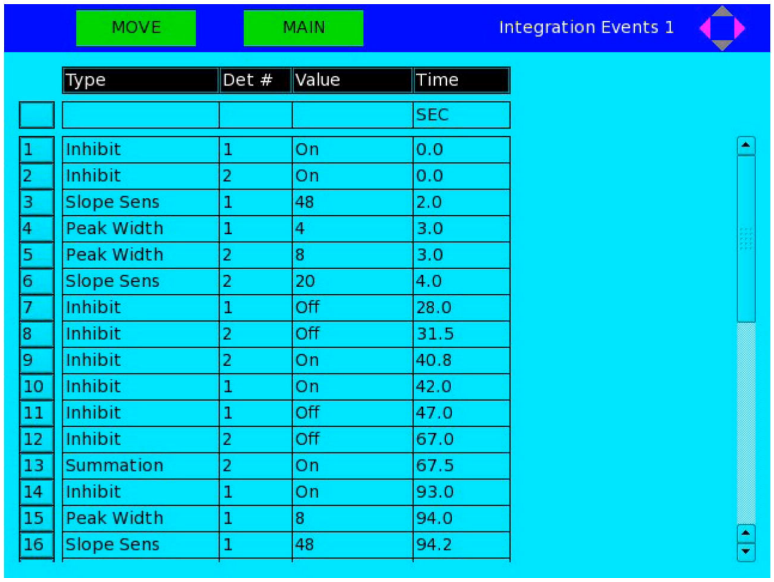
	Component	srst	Det #	Ret Time	Resp Fact	Calib Type	
				SEC			
1	C6+ 47/35/17	Std	1	0.0	1.0394e+08	Fixed	0
2	PROPANE	Std	1	0.0	0	Single-Level	0.
3	i-BUTANE	Std	1	0.0	0	Single-Level	0.
4	n-BUTANE	Std	1	0.0	0	Single-Level	0.
5	NEOPENTANE	Std	1	0.0	0	Single-Level	0
6	i-PENTANE	Std	1	0.0	0	Single-Level	0.
7	n-PENTANE	Std	1	0.0	0	Single-Level	0.
8	NITROGEN	Std	1	0.0	0	Single-Level	2.
9	METHANE	Std	1	0.0	0	Single-Level	89
10	CARBON DIOXIDE	Std	1	0.0	0	Single-Level	0.
11	ETHANE	Std	1	0.0	0	Single-Level	5
12	n-NONANE	Std	2	0.0	0	Single-Level	0.
13	n-HEXANE	Std	2	0.0	0	Single-Level	0.
14	n-HEPTANE	Std	2	0.0	0	Single-Level	0.

Figure A-46: Timed Events (TEV) - Valve Events Screen



	Type	Valve/DO #	State	Time
				SEC
1	Valve #	4 - SSO 1	On	0.0
2	Valve #	5 - SSO 2	On	1.0
3	Valve #	2 - Dual Column	On	2.0
4	Valve #	1 - Sample/BF 1	On	5.0
5	Valve #	3 - Sample/BF 2	On	5.0
6	Strm Sw			11.0
7	Valve #	1 - Sample/BF 1	Off	22.0
8	Valve #	3 - Sample/BF 2	Off	29.0
9	Valve #	4 - SSO 1	Off	30.0
10	Valve #	5 - SSO 2	Off	30.0
11	Valve #	2 - Dual Column	Off	42.1
12	Valve #	2 - Dual Column	On	137.0

Figure A-47: TEV - Integration Events Screen



	Type	Det #	Value	Time
				SEC
1	Inhibit	1	On	0.0
2	Inhibit	2	On	0.0
3	Slope Sens	1	48	2.0
4	Peak Width	1	4	3.0
5	Peak Width	2	8	3.0
6	Slope Sens	2	20	4.0
7	Inhibit	1	Off	28.0
8	Inhibit	2	Off	31.5
9	Inhibit	2	On	40.8
10	Inhibit	1	On	42.0
11	Inhibit	1	Off	47.0
12	Inhibit	2	Off	67.0
13	Summation	2	On	67.5
14	Inhibit	1	On	93.0
15	Peak Width	1	8	94.0
16	Slope Sens	1	48	94.2

Figure A-48: TEV - Spectrum Gain Events Screen

	Det #	Gain	Time
			SEC
1	1	3	0.0
2	2	3	0.0

Figure A-49: TEV - Analysis Time Screen

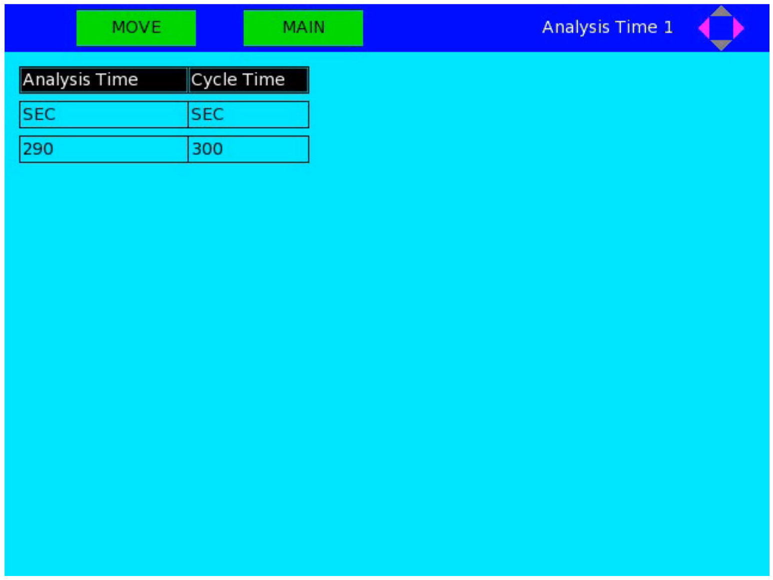
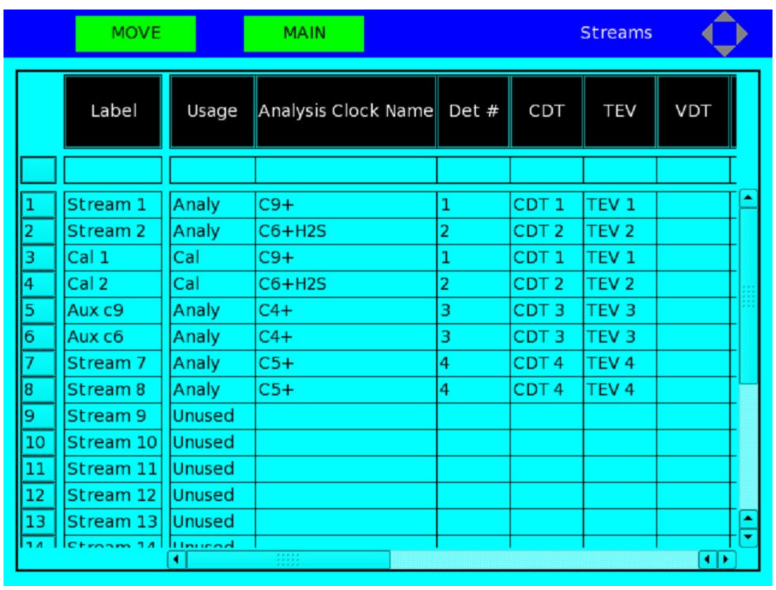
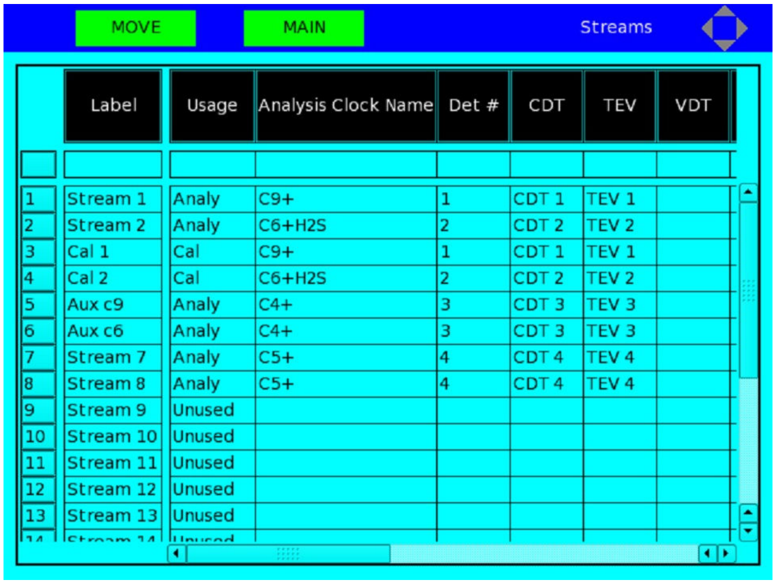


Figure A-50: Streams Screen



The *Streams* screen shows the different streams configured for the specific cycle clock.

Figure A-51: Single Stream Analysis



	Label	Usage	Analysis Clock Name	Det #	CDT	TEV	VDT
1	Stream 1	Analy	C9+	1	CDT 1	TEV 1	
2	Stream 2	Analy	C6+H2S	2	CDT 2	TEV 2	
3	Cal 1	Cal	C9+	1	CDT 1	TEV 1	
4	Cal 2	Cal	C6+H2S	2	CDT 2	TEV 2	
5	Aux c9	Analy	C4+	3	CDT 3	TEV 3	
6	Aux c6	Analy	C4+	3	CDT 3	TEV 3	
7	Stream 7	Analy	C5+	4	CDT 4	TEV 4	
8	Stream 8	Analy	C5+	4	CDT 4	TEV 4	
9	Stream 9	Unused					
10	Stream 10	Unused					
11	Stream 11	Unused					
12	Stream 12	Unused					
13	Stream 13	Unused					

- All four Analyses are listed in this screen.
- For the selected Analysis, the streams are displayed.

Figure A-52: Single Stream Analysis (Continued)

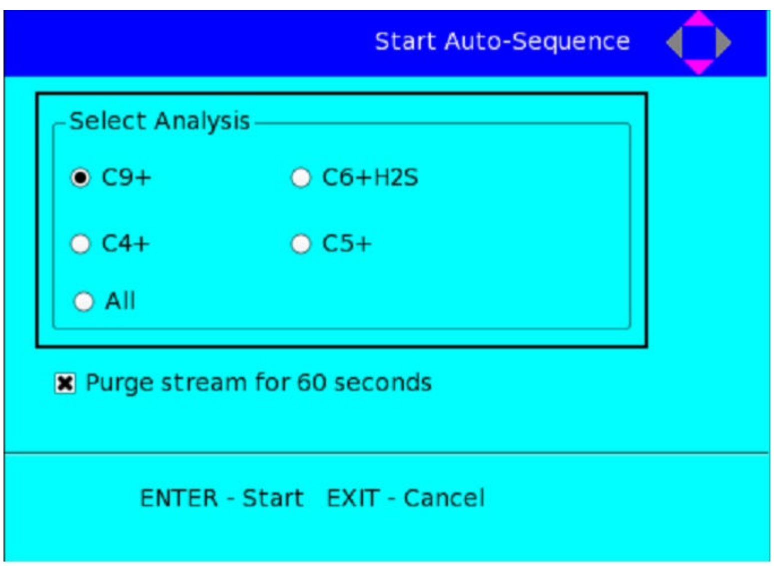


Figure A-53: Status Screen

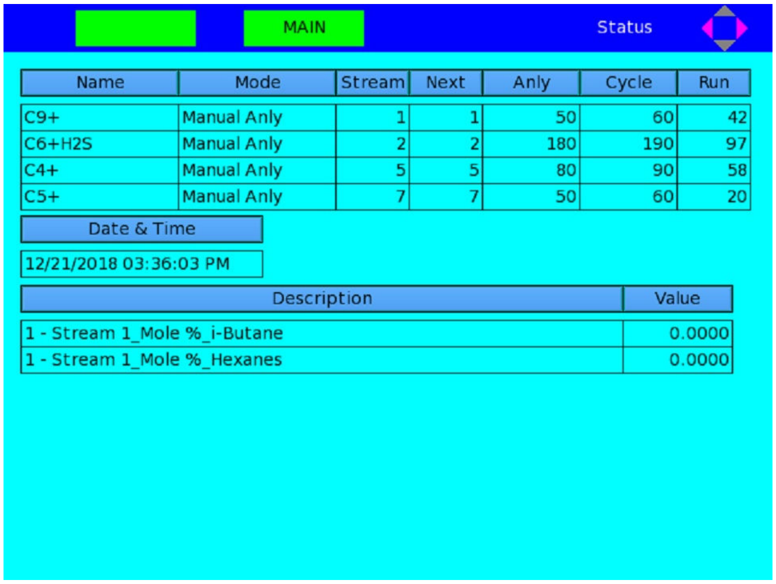
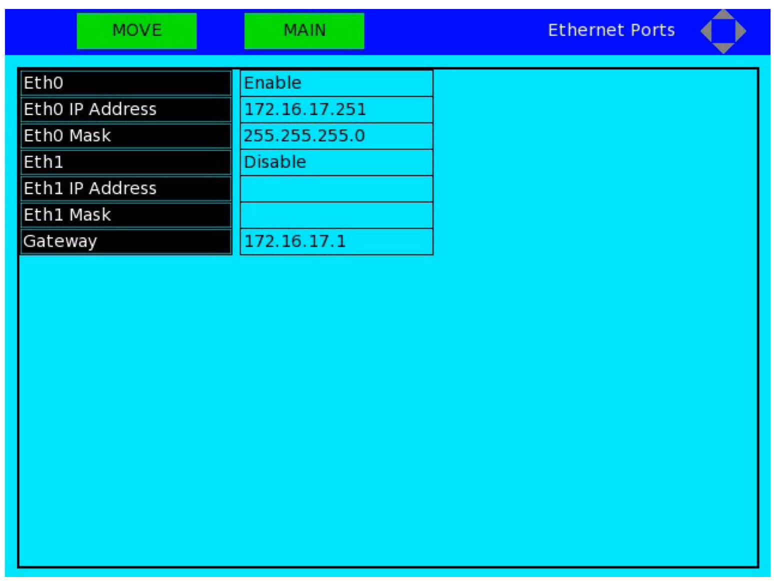


Figure A-54: Ethernet Ports Screen



A.4.4 Logs/Reports menu

The ***Logs/Reports*** menu enables you to view the various reports that are available from the gas chromatograph (GC).

Refer to the *Logs/Reports* section of the MON2020 Software for Gas Chromatographs Reference Manual for detailed information regarding the ***Logs/Reports*** menu screens.

Figure A-55: Logs/Reports Menu

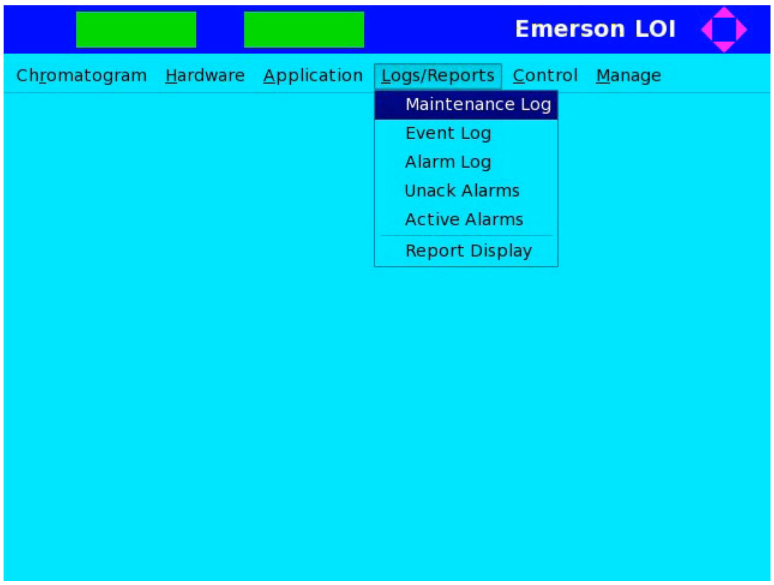
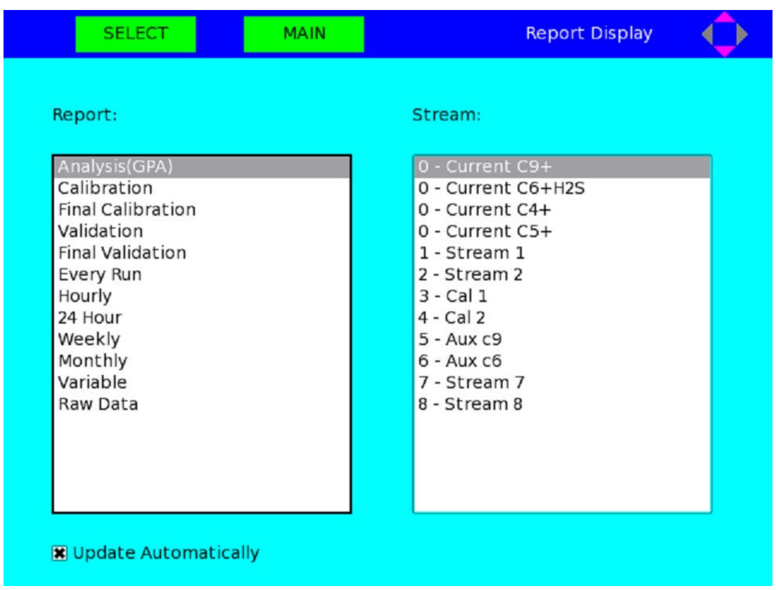


Figure A-56: Logs/Reports Menu - Report Display



The ***Report Display*** screen shows the analysis names for Cycle Clock 3 and 4. It also shows all the streams associated with cycle clocks.

Figure A-57: Maintenance Log Screen

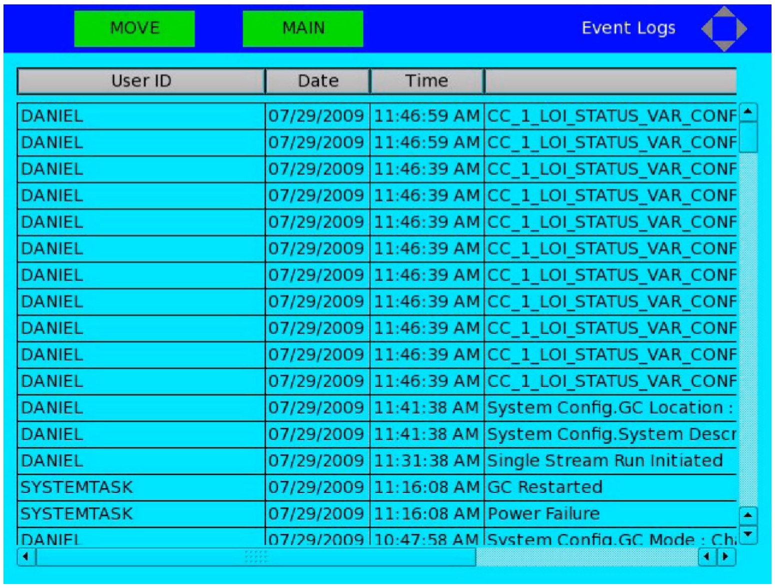


Figure A-58: Event Logs Screen

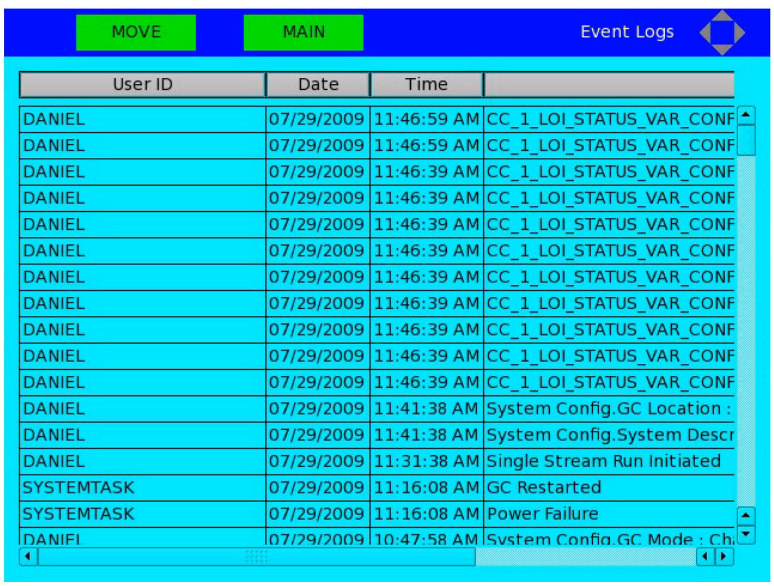
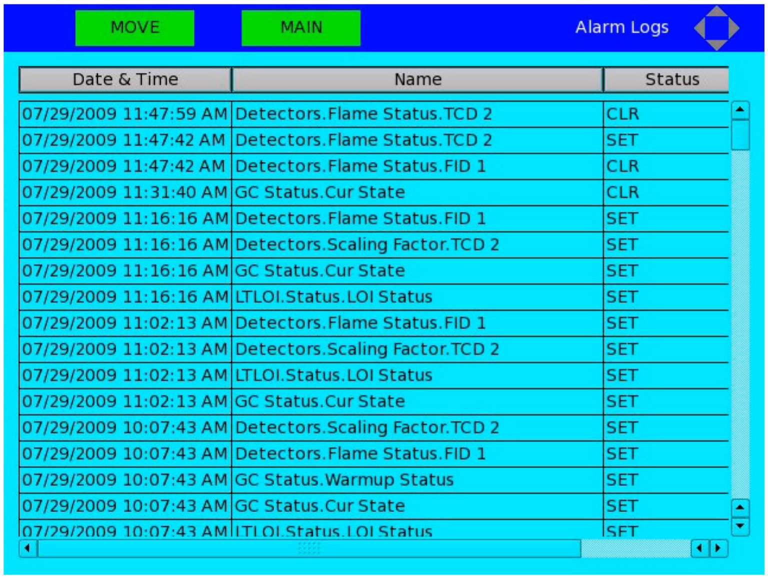
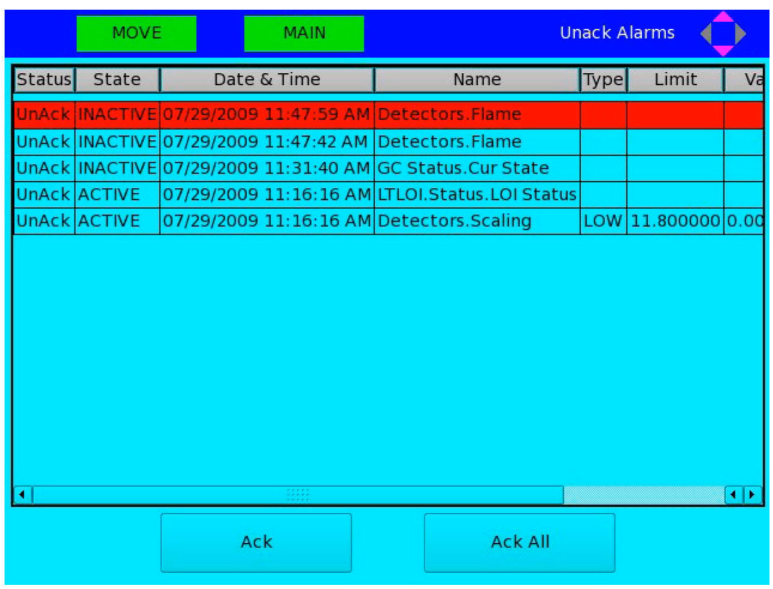


Figure A-59: Alarm Logs Screen



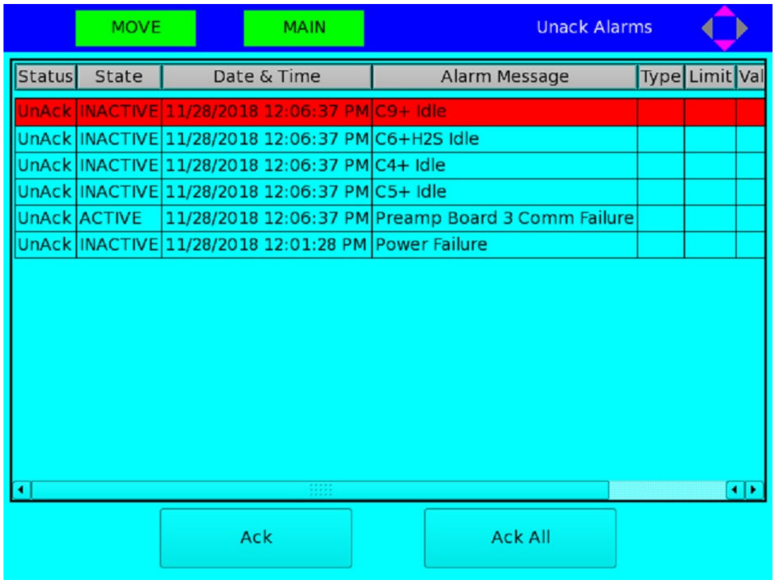
Date & Time	Name	Status
07/29/2009 11:47:59 AM	Detectors.Flame Status.TCD 2	CLR
07/29/2009 11:47:42 AM	Detectors.Flame Status.TCD 2	SET
07/29/2009 11:47:42 AM	Detectors.Flame Status.FID 1	CLR
07/29/2009 11:31:40 AM	GC Status.Cur State	CLR
07/29/2009 11:16:16 AM	Detectors.Flame Status.FID 1	SET
07/29/2009 11:16:16 AM	Detectors.Scaling Factor.TCD 2	SET
07/29/2009 11:16:16 AM	GC Status.Cur State	SET
07/29/2009 11:16:16 AM	LTLOI.Status.LOI Status	SET
07/29/2009 11:02:13 AM	Detectors.Flame Status.FID 1	SET
07/29/2009 11:02:13 AM	Detectors.Scaling Factor.TCD 2	SET
07/29/2009 11:02:13 AM	LTLOI.Status.LOI Status	SET
07/29/2009 11:02:13 AM	GC Status.Cur State	SET
07/29/2009 10:07:43 AM	Detectors.Scaling Factor.TCD 2	SET
07/29/2009 10:07:43 AM	Detectors.Flame Status.FID 1	SET
07/29/2009 10:07:43 AM	GC Status.Warmup Status	SET
07/29/2009 10:07:43 AM	GC Status.Cur State	SET
07/29/2009 10:07:43 AM	LTLOI.Status.LOI Status	SET

Figure A-60: Unack Alarms Screen



Status	State	Date & Time	Name	Type	Limit	Va
UnAck	INACTIVE	07/29/2009 11:47:59 AM	Detectors.Flame			
UnAck	INACTIVE	07/29/2009 11:47:42 AM	Detectors.Flame			
UnAck	INACTIVE	07/29/2009 11:31:40 AM	GC Status.Cur State			
UnAck	ACTIVE	07/29/2009 11:16:16 AM	LTLOI.Status.LOI Status			
UnAck	ACTIVE	07/29/2009 11:16:16 AM	Detectors.Scaling	LOW	11.800000	0.00

Figure A-61: Unack Alarm Screen



Analysis Cycle Clocks 3 and 4 Unacked alarms when Idle.

Figure A-62: Active Alarms Screen

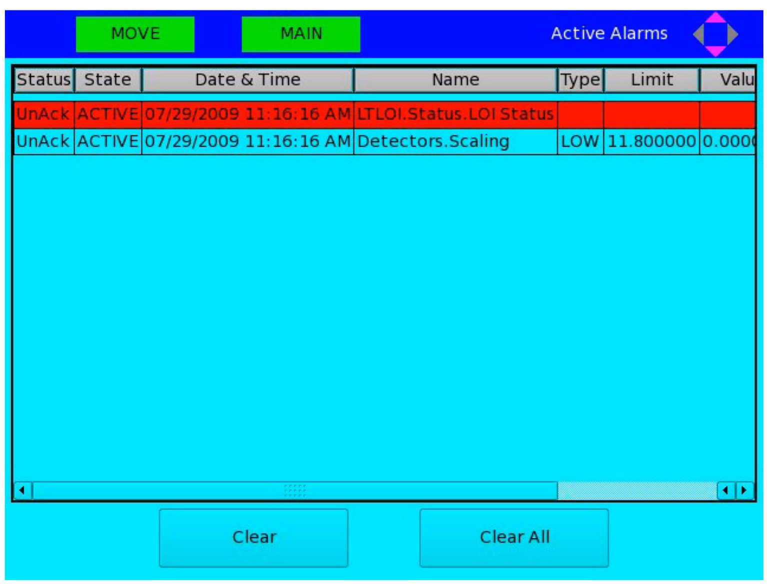
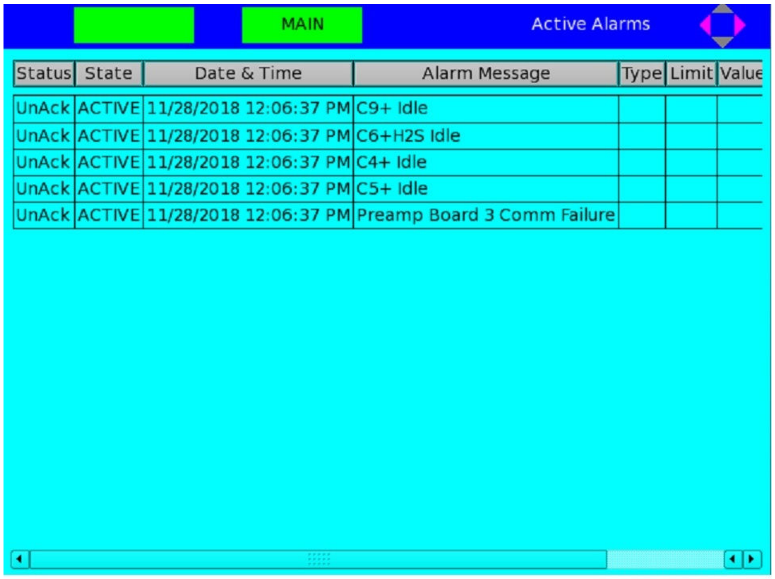


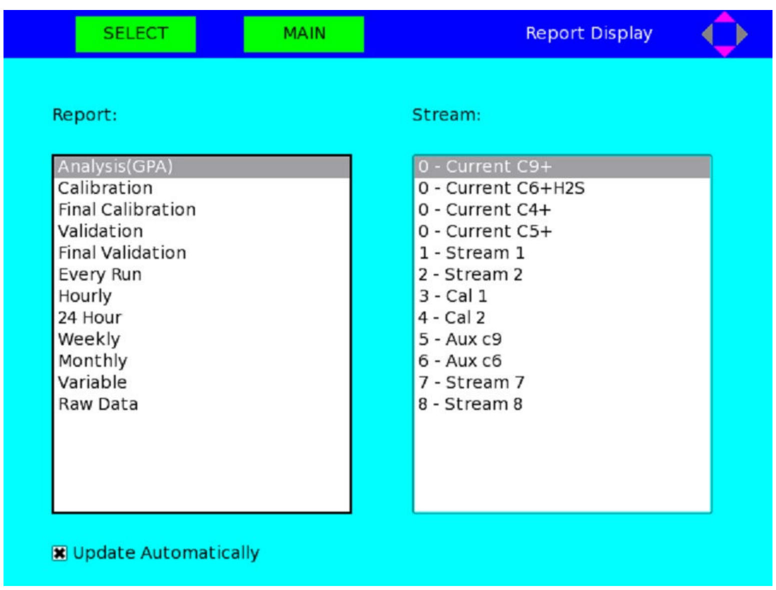
Figure A-63: Active Alarm Screen With Multiple Analysis Clocks



Note

Analysis Cycle Clocks 3 and 4 - alarms when Idle.

Figure A-64: Report Display Screen



The right side of the *Report Display* screen shows the analysis names for the four analysis clocks and all the streams associated with cycle clocks

A.4.5 Control menu

The *Control* menu enables you to stop, calibrate, or place on automatic control a sample stream from the analyzer.

Refer to the *Control menu* section of the MON2020 Software for Gas Chromatographs Reference Manual for detailed information regarding the *Control* menu screens.

Figure A-65: Control Menu

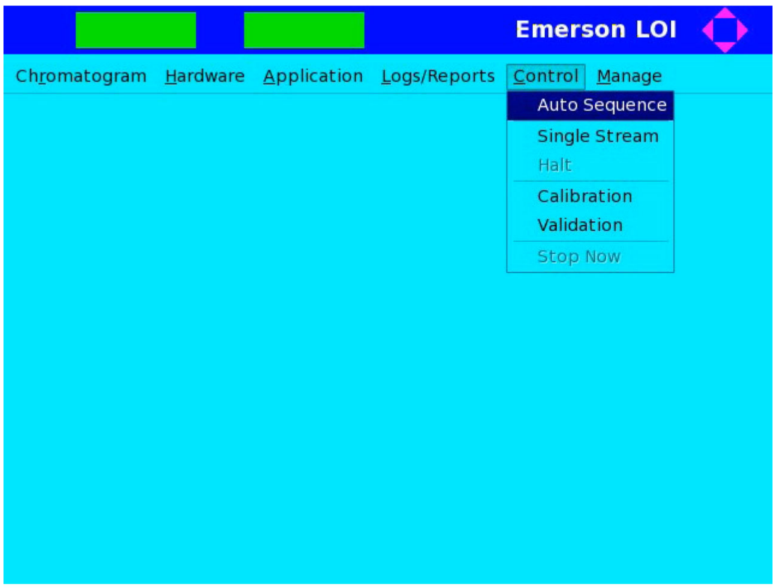


Figure A-66: Auto Sequence Screen

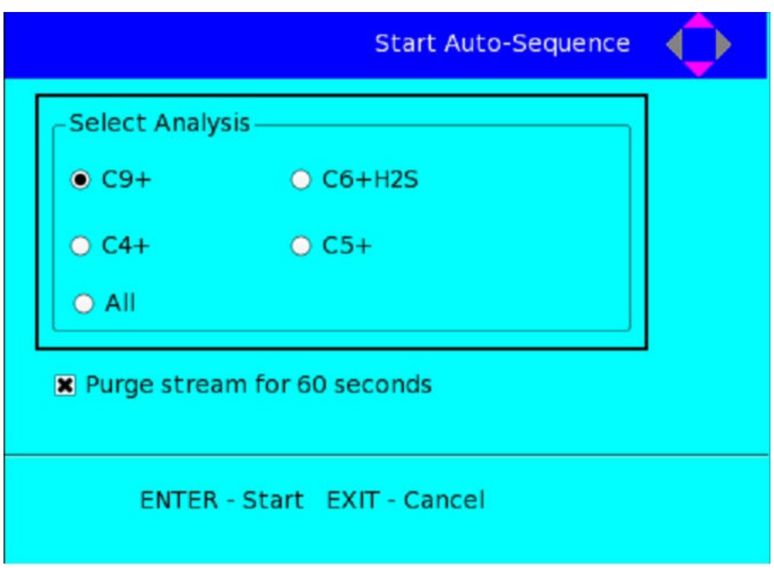
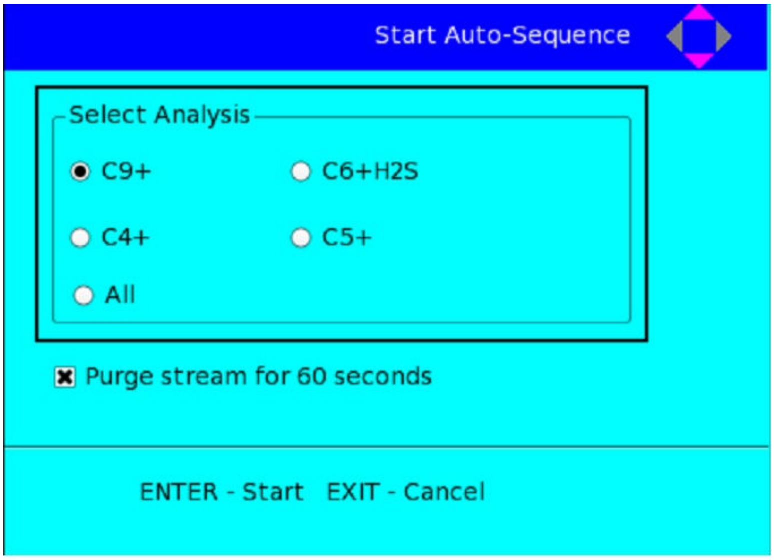
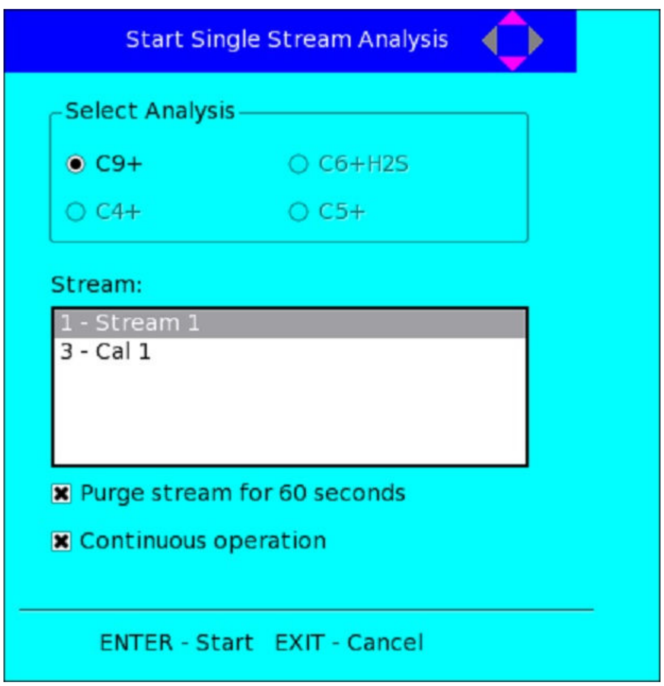


Figure A-67: Auto Sequence Screen



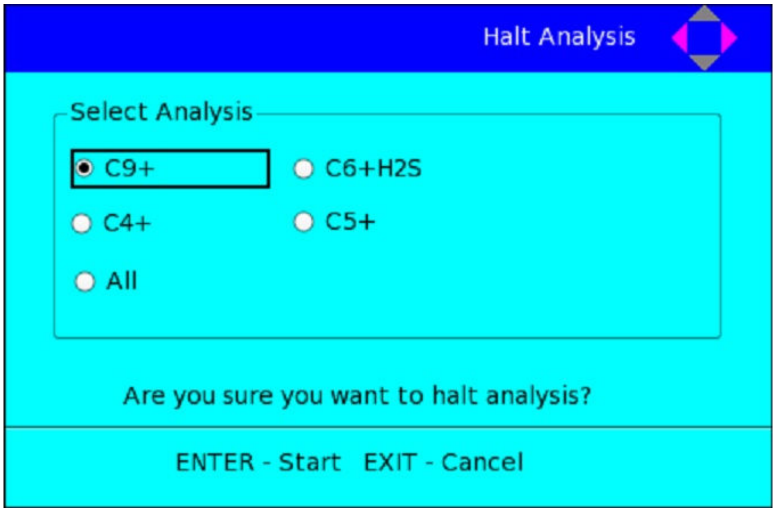
The *Auto Sequence* screen provides selections for the four Analysis options or ALL. Select the radio button and press **ENTER** to begin auto sequencing. Press **EXIT** to abort the process.

Figure A-68: Single Stream Screen



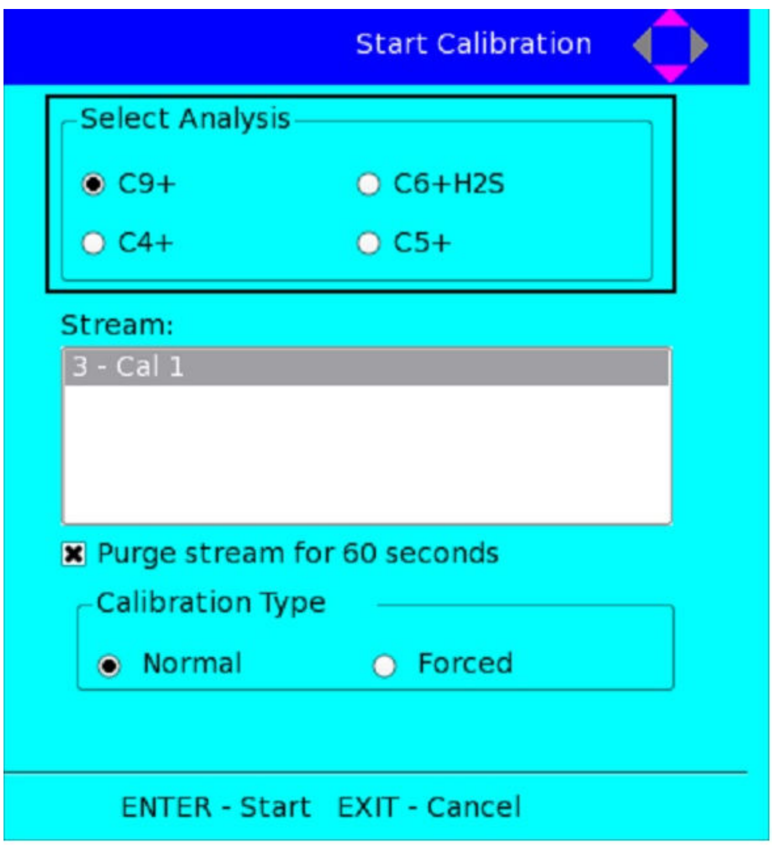
The *Single Stream* screen provides selections for the four Analysis options. Select the radio button and press **ENTER** to begin the analysis. Press **EXIT** to abort the process. The stream for the selected analysis is indicated in the field below the analysis.

Figure A-69: Halt Screen



The *Halt* screen provides selections to halt the analysis for the four Analysis options or All. Select the radio button and press **ENTER** to halt the current analysis. Press **EXIT** to abort the process.

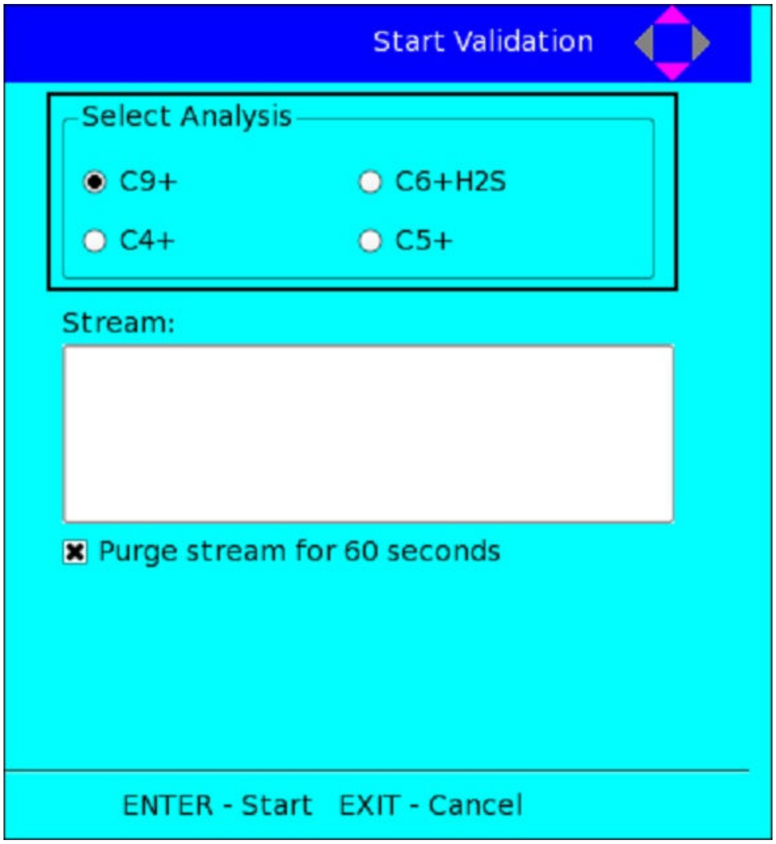
Figure A-70: Calibration Screen



The *Calibration* screen provides selections for provides selections for the four Analysis options or ALL.

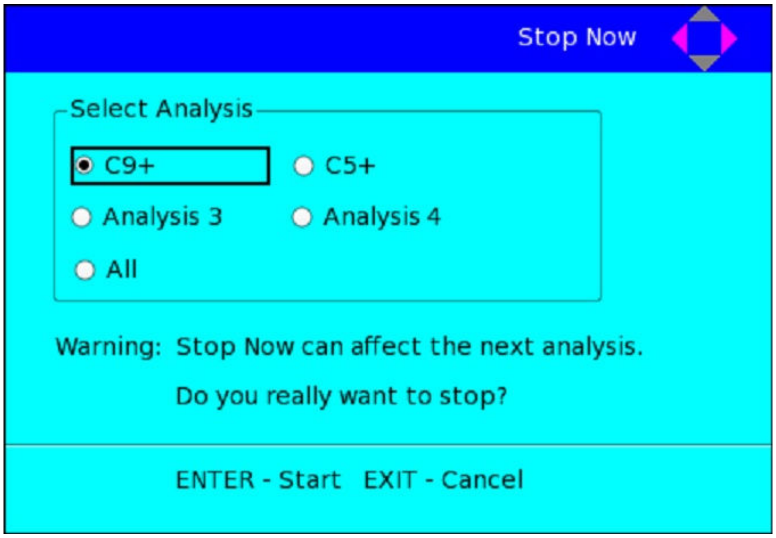
1. Select the radio button and press **ENTER**.
2. Select the Calibration Type, Normal or Forced.
3. Press **ENTER** to begin the calibration.
4. Press **EXIT** to abort the process.

Figure A-71: Validation Screen



The *Validation* screen provides selections for the four Analysis options or All. Select the radio button and press **ENTER** to begin the validation. Press **EXIT** to abort the process.

Figure A-72: Stop Now Screen



Important

Do not perform a **Stop Now** unless absolutely necessary. Whenever possible, use the **Halt** function.

This function forces the system into Idle mode. If **Stop Now** is performed while an analysis clock run is in progress, the components may continue to elute from the columns. No analysis data will be generated. To immediately stop an analysis run, do the following:

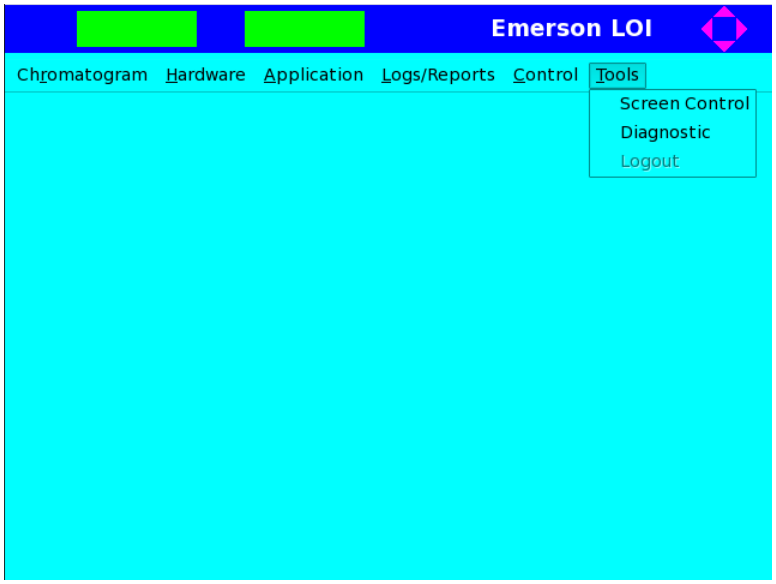
A. *Select **Control** → **Stop Now**. A confirmation message displays.*
B. *Select the **Analysis Clock** radio button and press **ENTER** to stop the analysis.*
C. *Click **Yes** and the current analysis clock run stops.*
D. *Press **EXIT** to abort the process to stop.*

A.4.6 Tools menu

The *Tools* menu enables you to change the screen control, change a user's password, and log off of the gas chromatograph (GC) to which you are connected.

Refer to the menu section of the MON2020 Software for Gas Chromatographs Reference Manual for detailed information regarding the *Tools* menu screens.

Figure A-73: Tools Menu



Use the **Tools** → **Screen Control** menu to adjust screen brightness **Up** or **Down.**

Use the **Boost Up** or **Down** command to increase or decrease the contrast intensity.

Figure A-74: Screen Control Screen

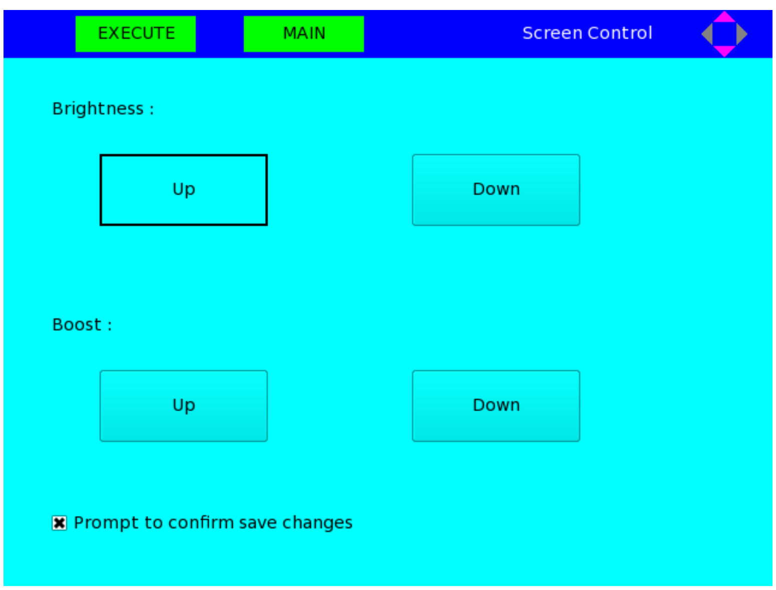
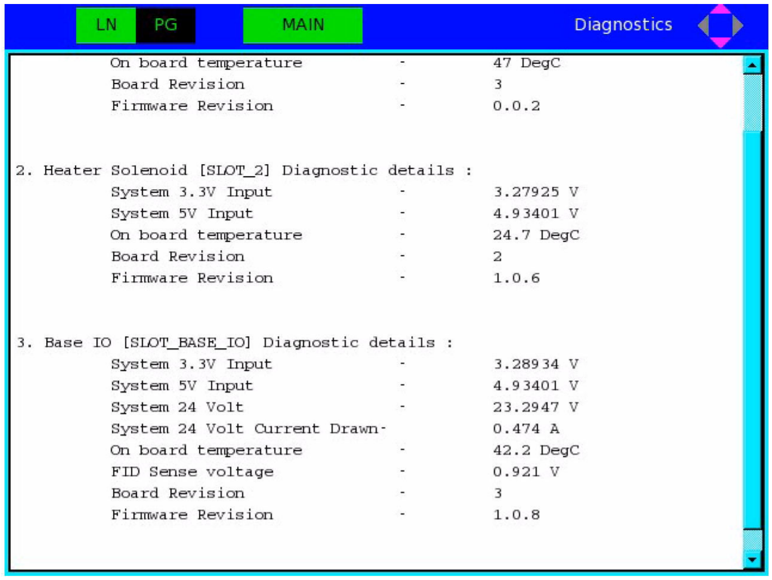


Figure A-75: Diagnostic Screen



A.5 Troubleshoot a blank local operator interface (LOI) display screen

If the LOI is powered up but the LCD display screen is blank, do the following:

Procedure

1. Power down the gas chromatograph and allow to cool before opening the upper enclosure door.
2. Unscrew and remove the LOI board.
3. Flip the LOI over to expose its motherboard and associated electronics. Make sure the J12 connector is tightly connected to the motherboard via ribbon cable.

If the screen is still blank, replace the board.

B Carrier gas installation and maintenance

This appendix provides a description of the optional carrier manifold (P/N 2-3-5000-050) that permits the connection of two carrier gas bottles, or cylinders, to a gas chromatograph (GC) system.

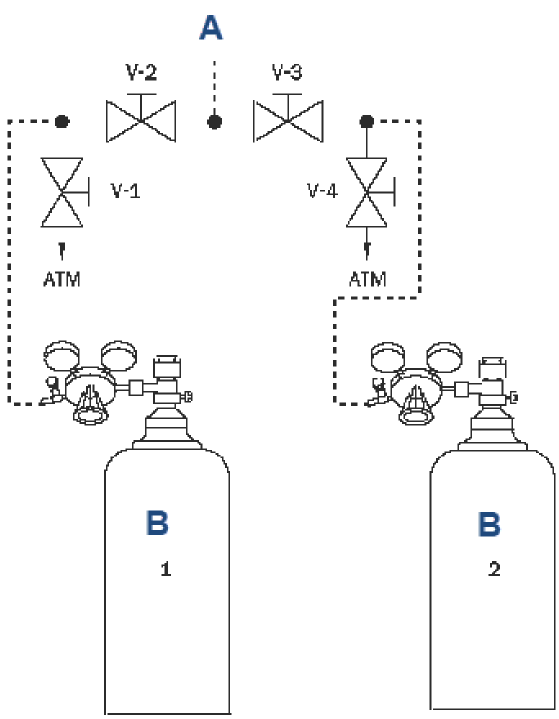
B.1 Carrier gas

The benefits of this manifold are as follows:

Note
The illustration and information in this appendix are adapted from drawing AE-10098.

- When one bottle is nearly empty (i.e., 110 psig [758.4 kPa] remaining), the other bottle becomes the primary supply.
- You can disconnect each bottle for refilling without interrupting GC operation.

Figure B-1: Manifold for Two Carrier Gas Bottles to GC System



A. Analyzer
B. Carrier cylinder

Valve	Carrier gas cylinder	Valve description
V-1	Carrier Cylinder 1	Bleed valve
V-2	Carrier Cylinder 1	Block valve
V-3	Carrier Cylinder 2	Block valve
V-4	Carrier Cylinder 2	Bleed valve

B.2 Install manifold and purge line

To install and purge the dual-bottle carrier gas manifold, proceed as follows:

Procedure

1. Install manifold as shown in Figure B-1. Close all valves and tighten all fittings. Run tubing to the gas chromatograph (GC), but do not connect.
2. Back off pressure regulator (counter clockwise) fully.
3. Open cylinder valve for Carrier Cylinder 1.
   The pressure indicator will read the cylinder pressure.
4. Open the shut-off valve attached to the carrier regulator.
5. Regulate pressure out of the cylinder to 20 psig (137.9 kPa); then close the cylinder valve.
6. Open V-1 (bleed valve) and let the carrier gas bleed to atmosphere until both gauges read 0 psig; then close V-1.
7. Repeat Step 4 and Step 5 twice to purge the line to V-2.
8. Purge the line to V-3 by repeating Step 2 through Step 6; but this time, use bleed valve V-4 and Carrier Cylinder 2.
9. With valves 1-4 closed, open both cylinder valves and regulate both carriers to approximately 10 psig (68.9 kPa).
10. Open V-2 and V-3 simultaneously; then turn both cylinder valves off and let the carrier gasses bleed through the line to the GC until all gauges read 0 psig.
11. Repeat Step 8 and Step 9 twice to purge the line to the GC.
12. Close V-3; leave V-2 open.
13. Open the cylinder valve of Carrier Cylinder 1 and, with carrier gas flowing at 10 psig (68.9 kPa) or below, connect the carrier line to the GC.
14. Slowly regulate Carrier Cylinder 1 to 110 psig (6.9 to 758.4 kPa).
15. Open V-3 and slowly regulate Carrier Cylinder 2 to 100 psig (689.4 kPa).
    By doing this, all but 100 pounds of Carrier Cylinder 1 will be used before any of Carrier Cylinder 2 is used. When Carrier Cylinder 1 gets to 100 pounds, replace the cylinder.
16. Leak-check all of the fittings carefully.
17. Let the GC run overnight before calibrating.

B.3 Replace carrier cylinder

To replace one carrier cylinder without interrupting gas chromatograph (GC) operation:

Procedure

1. Turn cylinder valve off.
2. Back off on cylinder pressure regulator until handle turns freely.
3. Remove cylinder.
4. Attach new cylinder to regulator and repeat Step 3 through Step 7 of Install manifold and purge line, using appropriate bleed valve to purge line.
5. Leak-check the fitting.
6. Open the appropriate block valve to the analyzer (V-2 or V-3) and regulate outlet pressure to appropriate level.

   See Step 14 and Step 15 of Install manifold and purge line.

B.4 Calibration gas for BTU analysis

The calibration gas used for BTU analysis should be blended of gases specified as primary standards. Primary standard gases are blended using weights that are traceable to the National Institute of Standards and Technology (NIST). For other applications, blend the calibration gas to the specifications detailed in the analyzer's Application Data Sheets.

The calibration gas should not have any component that could drop out at the coldest temperature to which the gas will be subjected. A typical blend for a temperature of 0 °F (-17.7 °C) is listed in the following table. No dropout will occur in this calibration gas if it is blended at a pressure below 250 psig (1723.7 kPa).

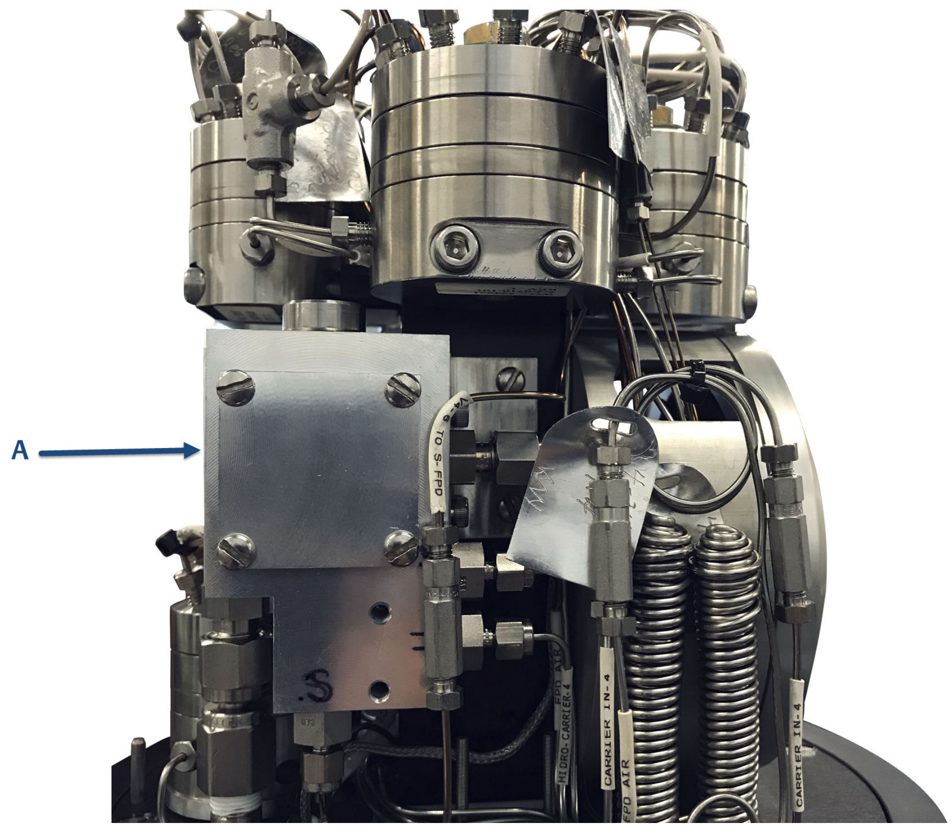
Gas	Mole Percent
Nitrogen	2.5
Carbon Dioxide	0.5
Methane	Balance
Propane	1.0
Isobutane	0.3
N-butane	0.3
Neopentane	0.1
Isopentane	0.1
N-pentane	0.1
N-hexane	0.03

Carefully plan the sampling system for the best chromatographic analyses.

C Micro flame photometric detector (µFPD)

The latest version of the Rosemount 700XA is now designed with an integral µFPD. In previous versions of the gas chromatograph (GC), side-car design was the only option for the FPD. The new design reduces the gas chromatograph's footprint and eliminates the side-car.

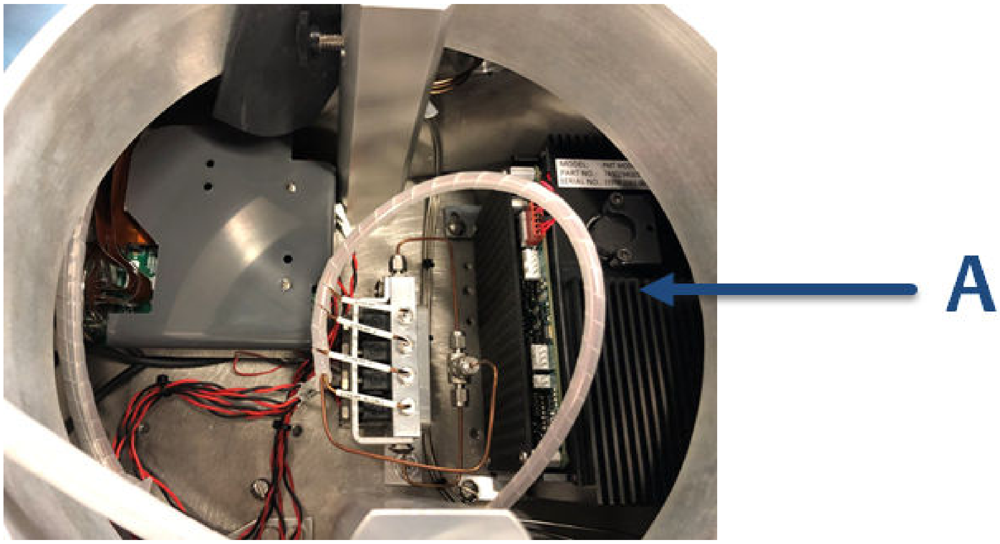
Figure C-1: Rosemount 700XA µFPD



A. µFPD burner assembly

The µFPD photo multiplier tube (PMT) is located in the upper enclosure beneath the oven assembly ULTEM base plate.

Figure C-2: μFPD PMT



C.1 Configure the micro flame photometric detector (μFPD)

Procedure

1. Open MON2020 and select **Hardware** → **Detectors**.
   If your gas chromatograph (GC) has an integral FPD, **FPD G2** displays in Slot 1 or Slot 2.

   Note
   Before making any modifications to this window, halt the analysis.

2. Select **Hardware** → **Detectors**.
3. Select **Manual** if you want to control the burner ignition; select **Auto** if you want the GC to control the burner ignition.
   The following data displays for each detector:

Name	Description
Det #	Numerical identifier for the detector to which the following data applies.
Detector	Options, which depend on your GC's configuration, are: • TCD (thermal conductivity detector) • FPD G2 (μFPD) • FID (flame ionization detector) • FID G2
H2 Valve	Optional hydrogen carrier shut-off valve
Flame Temp RTD	Select the appropriate resistance temperature device (RTD) from the drop-down list. The RTD measures the temperature of the flame.

Name	Description
Flame Ignition	Select **Manual** if you want to control the burner ignition; select **Auto** if you want the GC to control the burner ignition.
Ignition Attempts	Indicates the number of times the GC will try to light the flame. If an **Auto** ignition sequence fails to light the flame after the specified number of attempts, the GC will close the hydrogen valve, switch the ignition parameter to **Manual**, and set an active alarm.
Wait Time Bet Tries	Indicates the amount of time, in seconds, the GC will wait between ignition attempts.
Igniter On Duration	Indicates the length of time that the igniter will remain on.
Flame On Sense Temp	The flame ignites when the internal temperature exceeds the value set in this field.
Flame Out Sense Temp	The flame is extinguished when the internal burner temperature falls below the value set below the **Flame On Sense Temp**.
FPD Flame Status DI	Applies to FPDs only. Allows you to select from a list of available digital inputs (DIs). The DI that is selected will receive the FPD's flame status value.
Preamp Val	Detector count. Read-only.
Flame Temperature	Temperature of the flame as read by the RTD. Read-only.
Flame Status	Options are: **Off**, **On**, and **Over Temperature**. Read-only.
H2 Valve Cur State	Options are: **Open** and **Closed**. Read-only.
Scaling Factor	Preamp calibration factor.
Igniter Status	Options are: **Off** and **On**. Read-only.
Electrometer Voltage(1)	Output at first stage of FID preamp. Read-only.
Pre Amplifier Voltage(1)	Output at second stage of FID preamp. Read-only.
Polarizing Voltage(1)	Igniter voltage. Read-only.
Gain Status	Options are: **Low** and **High**.
Status	Options are: **Ok**, **Not Installed**, and **Internal Error**. Read-only.

(1) Not used with μFPD.

4. If the **Flame Ignition** field is set to **Manual**, and if the **Flame Status** field is set to **Off**, do the following to restart the flame:
   a) Click **Ignite**.
      The **Flame Status** field changes to **On** when the internal temperature exceeds the value set in the **Flame On Sense Temp** field.

D Recommended spare parts

D.1 Recommended spare parts for Rosemount 700XA thermal conductivity detector (TCD) analyzers

Quantity		Description	Part Number
1-5 GCs	6 or more GCs or Critical Installations		
1	1	Kit, fuse, XA	2-3-0710-074
1	2	Solenoid, 4-way, MAC, 24 Vdc	2-4-0710-224
Note 1	Note 1	Solenoid, 3-way, 24 Vdc	2-4-0700-124
1	1	Thermistor seals, package of 10	2-3-0500-391
1 per valve	1 per valve	Kit diaphragm, 10-port XA	2-4-0710-171
1 per valve	1 per valve	Kit, diaphragm, 6-port XA	2-4-0710-248
1	1	Column set	Note 2
1 per stream	1 per stream	Filter element 2 micron	2-4-5000-113
1 per stream	1 per stream	Membrane kit, 120 filter	2-4-5000-938
0	1	PCA detector preamp	7A00401G01
0	1	PCA solenoid/heater driver	9A00402G01
0	1	PCA base in/out (I/O)	7A00403G01
0	1	PCA backplane	7A00420G01
0	1	PCA main central processing unit (CPU)	7A00555G01
0	Note 3	Assembly, power supply (AC)	7C00086-001
0	Note 4	Pressure switch carrier	2-4-0710-266
0	1 per detector	Kit, thermistors, thermal conductivity detector (TCD)	Note 2
0	1 per carrier	Carrier dryer assembly	2-3-0500-180

1. If a GC has a stream internal switching assembly, Emerson recommends one spare.
2. Application dependent. Please contact your Rosemount Customer Care representative and provide the GC's sales order number for recommended part number and description.
3. If the GCs are powered with an AC lin, Emerson recommends one spare.

4. If the GCs have a pressure switch installed, Emerson recommends one spare.

D.2 Recommended spare parts for Rosemount 700XA flame ionization detector (FID)/thermal conductivity detector (TCD) analyzers

Quantity		Description	Part number
1-5 gas chromatographs (GCs)	6 or more GCs or critical installations		
1	1	Kit, fuse, XA	2-3-0710-074
1	2	Solenoid, 4-way, MAC, 24 Vdc	2-4-0710-224
Note 1	Note 1	Solenoid, 3-way, 24 Vdc	2-4-0700-124
1	1	Thermistor seals, package of 10	2-3-0500-391
1 per valve	1 per valve	Kit diaphragm, 10-port XA	2-4-0710-171
1 per valve	1 per valve	Kit diaphragm, 6-port XA	2-4-0710-248
1	1	Column set	Note 2
1 per stream	1 per stream	Filter element, 2 micron	2-4-5000-113
1 per stream	1 per stream	Membrane kit, 120 filter	2-4-5000-938
0	1	PCA detector preamp	7A00401G01
0	1	PCA solenoid/heater driver	9A00402G01
0	1	PCA base in/out (I/O)	7A00403G01
0	1	PCA backplane	7A00420G01
0	1	PCA main central porcessing unit (CPU)	7A00555G01
0	1	PCA flame ionization detector (FID) electrometer	2-3-0710-014
0	Note 3	Assembly, power supply (AC)	7C00086-001
0	1	Assmembly, micro FID, XA	2-3-0710-077
0	Note 4	Kit, field methanator replacement	2-3-0710-700
0	Note 4	Pressure switch, carrier	2-4-0710-266
0	1 per detector	Kit, thermistors, thermal conductivity detector (TCD)	Note 2
0	1 per carrier	Carrier dryer assembly	2-3-0500-180

1. If a GC has a stream internal switching assembly, Emerson recommends one spare.
2. Application dependent. Please contact your Emerson Customer Care representative and provide the GC's sales order number for recommended part number and description.

3. If the GCs are powered with an AC line, Emerson recommends one spare.
4. If the GCs have this option installed, Emerson recommends one spare.

D.3 Recommended spare parts for Rosemount 700XA flame ionization detector (FID) analyzers

Quantity		Description	Part number
1-5 gas chromatographs (GCs)	6 or more GCs or critical installations		
1	1	Kit, fuse, XA	2-3-0710-074
1	2	Solenoid, 4-way, MAC, 24 Vdc	2-4-0710-224
Note 1	Note 1	Solenoid, 3-way, 24 Vdc	2-4-0700-124
1 per valve	1 per valve	Kit, diaphragm, 10-port XZ	2-4-0710-171
1 per valve	1 per valve	Kit, diaphragm, 6-port XA	2-4-0710-248
1	1	Column set	Note 2
1 per stream	1 per stream	Filter element, 2 micron	2-4-5000-113
1 per stream	1 per stream	Membrane kit, 120 filter	2-4-5000-938
0	1	PCA detector preamp	7A00401G01
0	1	PCA solenoid/heater driver	9A00402G01
0	1	PCA base in/out (I/O)	7A00403G01
0	1	PCA backplane	7A00420G01
0	1	PCA main central processing unit (CPU)	7A00555G01
0	1	PCA flame ionization detector (FID) electrometer	2-3-0710-014
0	Note 3	Assembly, power supply (AC)	7C00086-001
0	1	Assmbly, micro FID, XA	2-3-0710-077
0	Note 4	Kit, field, methanator replacement	2-3-0710-700
0	Note 4	Pressure switch, carrier	2-4-0710-266
0	1 per carrier	Carrier dryer assembly	2-3-0500-180

Note
If a GC has a stream internal switching assembly, then one spare is recommended.

Note
Application dependent. Please contact your Rosemount Analytical, Inc. representative and provide the GC's sales order number for recommended part number and description.

Note
If the GCs are powered with an AC line, then one spare is recommended.

Note
If the GCs have this option installed, then one spare is recommended.

D.4 Recommended spare parts for µFPD analyzers

Description	Part number	Quantity
700XA, BURNER, µFPD	7A00233G01	0 (as needed)
700XA, FIBER CABLE, µFPD	7P00444H01	0 (as needed)
700XA µFPD ASSY, IGNITOR & THERMOCOUPLE	7A00232G01	1
700XA µFPD EDMOND OPTICS LEN, 25 MM OD	7C00319-001	2
700XA, FLAME CHAMBER, µFPD	7P00435H01	0 (as needed)
700XA, GAS MIXER, µFPD	7P00437H01	0 (as needed)
700XA µFPD SIDE ENTRY PMT MODULE	7A00234G01	0 (as needed)
700XA, µFPD O-Ring Kit	7A00243G01	1
700XA, uFPD Screws, Connectors, Washers Kit	7A00244G01	1

E Shipping and long-term storage recommendations

For applications equipped with special columns, e.g., mole sieve, read and follow the additional instructions shipped with the analyzer and/or column set first. If you need another copy, please contact customer service.

The following recommendations should be followed:

- For shipping purposes the gas chromatograph should be secured to a wooden pallet, maintained in a vertical position and enclosed in a wood framework.
- Auxiliary equipment such as sample probes may be stored in the packaging in which it was shipped. If this packaging material is no longer available, secure the equipment to prevent excessive shaking and protect the accessories in a water proof enclosure.
- The gas chromatograph should be stored in a sheltered environment that is temperature controlled between -30 °C (-22° F) and 60° C (140 ° F) to keep the gas chromatograph's protective coatings from deteriorating from exposure to rain or caustic or corrosive environments. Humidity in the sheltered environment should be non-condensing. Be especially cautious of humidity if the conduit has been potted. Temporary caps and desiccant may be necessary.
- The configuration of the analyzer may be retained through battery back-up on the CPU for at least two years. If lost for some reason, a custom program for downloading the appropriate GC application is included on the USB shipped with the system documentation.
- If the gas chromatograph has been in operation, the system should be purged with carrier gas before powering the gas chromatograph down, especially when heavy hydrocarbons or components that tend to polymerize are present. Allowing the gas chromatograph to perform a few analysis cycles without sample gas is an acceptable method of purging the system.

  Note
  To expedite the purge process, you may use 30 psig of a dry inert gas, such as nitrogen or helium.

  Monitor the results and halt the analyzer after component values fall to **0** or after peaks are significantly reduced in size. Save a copy of the diagnostic data under **Tools** → **Save Diagnostic Data**; once the file has been saved to a local PC, USB, or hard drive, you may remove power.

- After removing power from the GC, remove the purge gas and immediately cap all inlets and vents, including the carrier drier. These vents and inlets should be capped with the fittings that were in place when the GC shipped from the factory or with Swagelok® caps (not provided). This will protect the columns and filters and should result in a trouble-free start up when the unit is returned to service.
- The sample conditioning system vents and inlets should also be capped with the fittings that were in place when the system shipped from the factory. Additionally, all vents should be closed.

- Any remaining openings—such as conduit entries—should also have appropriate plugs installed to prevent foreign material such as dust or water from entering the system.

F Pre-defined Modbus® Map Files

F.1 Definitions of Terms

Register: Modbus register number

Data type: The following data types are supported:

1. INT - 16-bit integer value
2. FLOAT - 32-bit IEEE single precision floating point value
3. Bitmap (INT) - 16 Boolean values packed into a single 16-bit integer. Each bit represents one Boolean value.
4. Long - 32-bit long integer value
5. Bitmap (long) - 32 Boolean values packed into a 32-bit long integer. Each bit represents one Boolean value.
6. SCALED_FP_1 ... SCALED_FP_32 - Scaled floating point data type is also referred to as *Ranged Integers*. A 32-bit floating point value is converted to a 16-bit integer. For more details, refer to Edit Scales.

Variable: System variable that is mapped to a Modbus register.

Record #: This field is applicable only for Archive Average System Variables. The record # tells the GC which historical average value to retrieve. For example, Record #1 refers to the most recent average, Record #2 refers to the second most recent average and so on.

Access: Can either be *Read only* or *Read-Write*. A small fraction of GC system variables can be updated from a Modbus Master. Writable registers have to be set to *RD_WR* in the mapping before they can be written from a Modbus Master.

Format: This field is applicable for system variables that hold date/time. Date/time is internally stored in a 32-bit Unix time_t format. The format field is used to convert the date/time to human readable form. The available format modifiers are:

- **MM** - 2 digit month (1-12)
- **DD** - 2 digit day of the month (1-31)
- **YY** - 2 digit year (0-99)
- **YYYY** - 4 digit year (1970 - 2038)
- **hh** - 2 digit hour in 24 hour format (0-23)
- **mm** - 2 digit minutes (0-59)
- **SS** - 2 digit seconds (0-59)
- **MMDDYY** - 6 digit date. If the date is January 4, 2010, the register reads **010410**. If the date is November 7, 2012, the register reads **110712**.
- **DDMMYY** - 6 digit date. If the date is January 4, 2010, the register reads **040110**. If the date is November 7, 2012, the register reads **071112**.

- **YYMMDD -** 6 digit date. If the date is April 17, 2007, the register reads **070417**. If the date is January 31, 2014, the register reads **140131**.
- **hhmmss -** 6 digit time in 24 hour format
- **hhmm -** 4 digit time in 24 hour format

F.2 SIM_2251 map file (with GPA results)

Register #	Data Type	Variable	Record #	Access	Format
3001	INT	Last Analy_Component Code(US)[1 - Component 1]		RD_ONLY	
3002	INT	Last Analy_Component Code(US)[2 - Component 2]		RD_ONLY	
3003	INT	Last Analy_Component Code(US)[3 - Component 3]		RD_ONLY	
3004	INT	Last Analy_Component Code(US)[4 - Component 4]		RD_ONLY	
3005	INT	Last Analy_Component Code(US)[5 - Component 5]		RD_ONLY	
3006	INT	Last Analy_Component Code(US)[6 - Component 6]		RD_ONLY	
3007	INT	Last Analy_Component Code(US)[7 - Component 7]		RD_ONLY	
3008	INT	Last Analy_Component Code(US)[8 - Component 8]		RD_ONLY	
3009	INT	Last Analy_Component Code(US)[9 - Component 9]		RD_ONLY	
3010	INT	Last Analy_Component Code(US)[10 - Component 10]		RD_ONLY	
3011	INT	Last Analy_Component Code(US)[11 - Component 11]		RD_ONLY	
3012	INT	Last Analy_Component Code(US)[12 - Component 12]		RD_ONLY	
3013	INT	Last Analy_Component Code(US)[13 - Component 13]		RD_ONLY	
3014	INT	Last Analy_Component Code(US)[14 - Component 14]		RD_ONLY	
3015	INT	Last Analy_Component Code(US)[15 - Component 15]		RD_ONLY	
3016	INT	Last Analy_Component Code(US)[16 - Component 16]		RD_ONLY	
3017	INT	Last Analy_Component Code(US)[1 - Component 1]		RD_ONLY	
3018	INT	Last Analy_Component Code(US)[2 - Component 2]		RD_ONLY	
3019	INT	Last Analy_Component Code(US)[3 - Component 3]		RD_ONLY	
3020	INT	Last Analy_Component Code(US)[4 - Component 4]		RD_ONLY	
3021	INT	Last Analy_Component Code(US)[5 - Component 5]		RD_ONLY	
3022	INT	Last Analy_Component Code(US)[6 - Component 6]		RD_ONLY	
3023	INT	Last Analy_Component Code(US)[7 - Component 7]		RD_ONLY	
3024	INT	Last Analy_Component Code(US)[8 - Component 8]		RD_ONLY	
3025	INT	Last Analy_Component Code(US)[9 - Component 9]		RD_ONLY	
3026	INT	Last Analy_Component Code(US)[10 - Component 10]		RD_ONLY	
3027	INT	Last Analy_Component Code(US)[11 - Component 11]		RD_ONLY	
3028	INT	Last Analy_Component Code(US)[12 - Component 12]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
3029	INT	Last Analy_Component Code(US)[13 - Component 13]		RD_ONLY	
3030	INT	Last Analy_Component Code(US)[14 - Component 14]		RD_ONLY	
3031	INT	Last Analy_Component Code(US)[15 - Component 15]		RD_ONLY	
3032	INT	Last Analy_Component Code(US)[16 - Component 16]		RD_ONLY	
3033	INT	Run Time(1/30th Sec)		RD_ONLY	
3034	INT	Last Analy_Stream Number		RD_ONLY	
3035	INT	Last Analy_CDT Stream Mask		RD_ONLY	
3036	INT	Current Time (time_t)		RD_WR	MM
3037	INT	Current Time(time_t)		RD_WR	DD
3038	INT	Current Time (time_t)		RD_WR	YY
3039	INT	Current Time (time_t)		RD_WR	hh
3040	INT	Current Time (time_t)		RD_WR	mm
3041	INT	Last Analy_Start Time		RD_ONLY	MM
3042	INT	Last Analy_Start Time		RD_ONLY	DD
3043	INT	Last Analy_Start Time		RD_ONLY	YY
3044	INT	Last Analy_Start Time		RD_ONLY	hh
3045	INT	Last Analy_Start Time		RD_ONLY	mm

Register #	Data Type	Variable	Record #	Access	Format
3046	Bitmap(INT)	0:Unused, 1:Unused, 2:System Alarm_Alarm On - Last Analysis_Analog Input 1 Low Signal, 3:System Alarm_Alarm On - Last Analysis_Analog Input 1 High Signal, 4:System Alarm_Alarm On - Last Analysis_Analog Input 2 Low Signal, 5:System Alarm_Alarm On - Last Analysis_Analog Input 2 High Signal, 6:Unused, 7:Unused, 8:System Alarm_Alarm On - Last Analysis_Analog Output 1 Low Signal, 9:System Alarm_Alarm On - Last Analysis_Analog Output 1 High Signal, 10:System Alarm_Alarm On - Last Analysis_Analog Output 2 Low Signal, 11:System Alarm_Alarm On - Last Analysis_Analog Output 2 High Signal, 12:System Alarm_Alarm On - Last Analysis_Analog Output 3 Low Signal, 13:System Alarm_Alarm On - Last Analysis_Analog Output 3 High Signal, 14:Analyzer Failure, 15:Unused		RD_ONLY	
3047	Bitmap(INT)	0:System Alarm_Alarm On - Current Analysis_Power Failure, 1:Calibration Failed, 2:Preamp Failure, 3:Unused, 4:Unused, 5:Unused, 6:Unused, 7:Unused, 8:Unused, 9:Unused, 10:Unused, 11:Unused, 12:Unused, 13:Unused, 14:Unused, 15:Unused		RD_ONLY	
3048	INT	1 – Stream 1_Active Low Limit Alarms		RD_ONLY	
3049	INT	1 - Stream 1_Active High Limit Alarms		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
3050	INT	2 - Stream 2_Active Low Limit Alarms		RD_ONLY	
3051	INT	2 - Stream 2_Active High Limit Alarms		RD_ONLY	
3052	INT	3 - Stream 3_Active Low Limit Alarms		RD_ONLY	
3053	INT	3 - Stream 3_Active High Limit Alarms		RD_ONLY	
3054	INT	4 - Stream 4_Active Low Limit Alarms		RD_ONLY	
3055	INT	4 - Stream 4_Active High Limit Alarms		RD_ONLY	
3056	INT	5 - Stream 5_Active Low Limit Alarms		RD_ONLY	
3057	INT	5 - Stream 5_Active High Limit Alarms		RD_ONLY	
3058	INT	New Data Flag		RD_WR	
3059	INT	Analy/Calib Flag		RD_ONLY	
5001	LONG	Last Analy_Cycle Time (1/30th sec)		RD_ONLY	
5002	LONG	Last Cal_Cycle Time (1/30th sec)		RD_ONLY	
7001	FLOAT	Last Analy_Mole %[1 - Component 1]		RD_ONLY	
7002	FLOAT	Last Analy_Mole %[2 - Component 2]		RD_ONLY	
7003	FLOAT	Last Analy_Mole %[3 - Component 3]		RD_ONLY	
7004	FLOAT	Last Analy_Mole %[4 - Component 4]		RD_ONLY	
7005	FLOAT	Last Analy_Mole %[5 - Component 5]		RD_ONLY	
7006	FLOAT	Last Analy_Mole %[6 - Component 6]		RD_ONLY	
7007	FLOAT	Last Analy_Mole %[7 - Component 7]		RD_ONLY	
7008	FLOAT	Last Analy_Mole %[8 - Component 8]		RD_ONLY	
7009	FLOAT	Last Analy_Mole %[9 - Component 9]		RD_ONLY	
7010	FLOAT	Last Analy_Mole %[10 - Component 10]		RD_ONLY	
7011	FLOAT	Last Analy_Mole %[11 - Component 11]		RD_ONLY	
7012	FLOAT	Last Analy_Mole %[12 - Component 12]		RD_ONLY	
7013	FLOAT	Last Analy_Mole %[13 - Component 13]		RD_ONLY	
7014	FLOAT	Last Analy_Mole %[14 - Component 14]		RD_ONLY	
7015	FLOAT	Last Analy_Mole %[15 - Component 15]		RD_ONLY	
7016	FLOAT	Last Analy_Mole %[16 - Component 16]		RD_ONLY	
7017	FLOAT	Last Analy_Weight %[1 - Component 1]		RD_ONLY	
7018	FLOAT	Last Analy_Weight %[2 - Component 2]		RD_ONLY	
7019	FLOAT	Last Analy_Weight %[3 - Component 3]		RD_ONLY	
7020	FLOAT	Last Analy_Weight %[4 - Component 4]		RD_ONLY	
7021	FLOAT	Last Analy_Weight %[5 - Component 5]		RD_ONLY	
7022	FLOAT	Last Analy_Weight %[6 - Component 6]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7023	FLOAT	Last Analy_Weight %[7 - Component 7]		RD_ONLY	
7024	FLOAT	Last Analy_Weight %[8 - Component 8]		RD_ONLY	
7025	FLOAT	Last Analy_Weight %[9 - Component 9]		RD_ONLY	
7026	FLOAT	Last Analy_Weight %[10 - Component 10]		RD_ONLY	
7027	FLOAT	Last Analy_Weight %[11 - Component 11]		RD_ONLY	
7028	FLOAT	Last Analy_Weight %[12 - Component 12]		RD_ONLY	
7029	FLOAT	Last Analy_Weight %[13 - Component 13]		RD_ONLY	
7030	FLOAT	Last Analy_Weight %[14 - Component 14]		RD_ONLY	
7031	FLOAT	Last Analy_Weight %[15 - Component 15]		RD_ONLY	
7032	FLOAT	Last Analy_Weight %[16 - Component 16]		RD_ONLY	
7033	FLOAT	Last Analy_HV Gross BTU Dry		RD_ONLY	
7034	FLOAT	Last Analy_HV Gross BTU Sat		RD_ONLY	
7035	FLOAT	Last Analy_GPA Real Rel Den Gas		RD_ONLY	
7036	FLOAT	Last Analy_GPA Z Factor		RD_ONLY	
7037	FLOAT	Last Analy_GPA Wobbe Index		RD_ONLY	
7038	FLOAT	Last Analy_Total Unnormalized Conc		RD_ONLY	
7039	FLOAT	Last Analy_Gal/1000 SCF C2+		RD_ONLY	
7040	FLOAT	Calc Result[1 - User Cal 01]		RD_ONLY	
7041	FLOAT	Calc Result[2 - User Cal 02]		RD_ONLY	
7042	FLOAT	Calc Result[3 - User Cal 03]		RD_ONLY	
7043	FLOAT	Calc Result[4 - User Cal 04]		RD_ONLY	
7044	FLOAT	Calc Result[5 - User Cal 05]		RD_ONLY	
7045	FLOAT	Unused		RD_ONLY	
7046	FLOAT	Unused		RD_ONLY	
7047	FLOAT	Unused		RD_ONLY	
7048	FLOAT	Unused		RD_ONLY	
7049	FLOAT	Unused		RD_ONLY	
7050	FLOAT	Unused		RD_ONLY	
7051	FLOAT	Unused		RD_ONLY	
7052	FLOAT	Unused		RD_ONLY	
7053	FLOAT	Unused		RD_ONLY	
7054	FLOAT	Last Analy_HV Gross BTU Act		RD_ONLY	
7055	FLOAT	Avg[1 - Average 1]		RD_ONLY	
7056	FLOAT	Avg[2 - Average 2]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7057	FLOAT	Avg[3 - Average 3]		RD_ONLY	
7058	FLOAT	Avg[4 - Average 4]		RD_ONLY	
7059	FLOAT	Avg[5 - Average 5]		RD_ONLY	
7060	FLOAT	Avg[6 - Average 6]		RD_ONLY	
7061	FLOAT	Avg[7 - Average 7]		RD_ONLY	
7062	FLOAT	Avg[8 - Average 8]		RD_ONLY	
7063	FLOAT	Avg[9 - Average 9]		RD_ONLY	
7064	FLOAT	Avg[10 - Average 10]		RD_ONLY	
7065	FLOAT	Avg[11 - Average 11]		RD_ONLY	
7066	FLOAT	Avg[12 - Average 12]		RD_ONLY	
7067	FLOAT	Avg[13 - Average 13]		RD_ONLY	
7068	FLOAT	Avg[14 - Average 14]		RD_ONLY	
7069	FLOAT	Avg[15 - Average 15]		RD_ONLY	
7070	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
7071	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
7072	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
7073	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
7074	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
7075	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
7076	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
7077	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
7078	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
7079	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
7080	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
7081	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
7082	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
7083	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
7084	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
7085	FLOAT	Current Value[1 - Analog Input 1]		RD_ONLY	
7086	FLOAT	Current Value[2 - Analog Input 2]		RD_ONLY	
7087	FLOAT	Last FCalib_HV Gross BTU Act		RD_ONLY	
7088	FLOAT	Last FCalib_HV Gross BTU Dry		RD_ONLY	
7089	FLOAT	Last FCalib_HV Gross BTU Sat		RD_ONLY	
7090	FLOAT	Last FCalib_GPA Wobbe Index		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7091	FLOAT	Last FCalib_GPA Real Rel Den Gas		RD_ONLY	
7092	FLOAT	Last FCalib_GPA Z Factor		RD_ONLY	
7093	FLOAT	Last FCalib_Gal/1000 SCF C2+		RD_ONLY	
7094	FLOAT	Last FCalib_Total Unnormalized Conc		RD_ONLY	
7095	FLOAT	Last Analy_Response Factor[1 - Component 1]		RD_ONLY	
7096	FLOAT	Last Analy_Response Factor[2 - Component 2]		RD_ONLY	
7097	FLOAT	Last Analy_Response Factor[3 - Component 3]		RD_ONLY	
7098	FLOAT	Last Analy_Response Factor[4 - Component 4]		RD_ONLY	
7099	FLOAT	Last Analy_Response Factor[5 - Component 5]		RD_ONLY	
7100	FLOAT	Last Analy_Response Factor[6 - Component 6]		RD_ONLY	
7101	FLOAT	Last Analy_Response Factor[7 - Component 7]		RD_ONLY	
7102	FLOAT	Last Analy_Response Factor[8 - Component 8]		RD_ONLY	
7103	FLOAT	Last Analy_Response Factor[9 - Component 9]		RD_ONLY	
7104	FLOAT	Last Analy_Response Factor[10 - Component 10]		RD_ONLY	
7105	FLOAT	Last Analy_Response Factor[11 - Component 11]		RD_ONLY	
7106	FLOAT	Last Analy_Response Factor[12 - Component 12]		RD_ONLY	
7107	FLOAT	Last Analy_Response Factor[13 - Component 13]		RD_ONLY	
7108	FLOAT	Last Analy_Response Factor[14 - Component 14]		RD_ONLY	
7109	FLOAT	Last Analy_Response Factor[15 - Component 15]		RD_ONLY	
7110	FLOAT	Last Analy_Response Factor[16 - Component 16]		RD_ONLY	
7111	FLOAT	Last Analy_Response Factor[1 - Component 1]		RD_ONLY	
7112	FLOAT	Last Analy_Response Factor[2 - Component 2]		RD_ONLY	
7113	FLOAT	Last Analy_Response Factor[3 - Component 3]		RD_ONLY	
7114	FLOAT	Last Analy_Response Factor[4 - Component 4]		RD_ONLY	
7115	FLOAT	Last Analy_Response Factor[5 - Component 5]		RD_ONLY	
7116	FLOAT	Last Analy_Response Factor[6 - Component 6]		RD_ONLY	
7117	FLOAT	Last Analy_Response Factor[7 - Component 7]		RD_ONLY	
7118	FLOAT	Last Analy_Response Factor[8 - Component 8]		RD_ONLY	
7119	FLOAT	Last Analy_Response Factor[9 - Component 9]		RD_ONLY	
7120	FLOAT	Last Analy_Response Factor[10 - Component 10]		RD_ONLY	
7121	FLOAT	Last Analy_Response Factor[11 - Component 11]		RD_ONLY	
7122	FLOAT	Last Analy_Response Factor[12 - Component 12]		RD_ONLY	
7123	FLOAT	Last Analy_Response Factor[13 - Component 13]		RD_ONLY	
7124	FLOAT	Last Analy_Response Factor[14 - Component 14]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7125	FLOAT	Last Analy_Response Factor[15 - Component 15]		RD_ONLY	
7126	FLOAT	Last Analy_Response Factor[16 - Component 16]		RD_ONLY	
7127	FLOAT	Avg[1 - Average 1]		RD_ONLY	
7128	FLOAT	Avg[2 - Average 2]		RD_ONLY	
7129	FLOAT	Avg[3 - Average 3]		RD_ONLY	
7130	FLOAT	Avg[4 - Average 4]		RD_ONLY	
7131	FLOAT	Avg[5 - Average 5]		RD_ONLY	
7132	FLOAT	Avg[6 - Average 6]		RD_ONLY	
7133	FLOAT	Avg[7 - Average 7]		RD_ONLY	
7134	FLOAT	Avg[8 - Average 8]		RD_ONLY	
7135	FLOAT	Avg[9 - Average 9]		RD_ONLY	
7136	FLOAT	Avg[10 - Average 10]		RD_ONLY	
7137	FLOAT	Avg[11 - Average 11]		RD_ONLY	
7138	FLOAT	Avg[12 - Average 12]		RD_ONLY	
7139	FLOAT	Avg[13 - Average 13]		RD_ONLY	
7140	FLOAT	Avg[14 - Average 14]		RD_ONLY	
7141	FLOAT	Avg[15 - Average 15]		RD_ONLY	
7142	FLOAT	Avg[16 - Average 16]		RD_ONLY	
7143	FLOAT	Avg[17 - Average 17]		RD_ONLY	
7144	FLOAT	Avg[18 - Average 18]		RD_ONLY	
7145	FLOAT	Avg[19 - Average 19]		RD_ONLY	
7146	FLOAT	Avg[20 - Average 20]		RD_ONLY	
7147	FLOAT	Avg[21 - Average 21]		RD_ONLY	
7148	FLOAT	Avg[22 - Average 22]		RD_ONLY	
7149	FLOAT	Avg[23 - Average 23]		RD_ONLY	
7150	FLOAT	Avg[24 - Average 24]		RD_ONLY	
7151	FLOAT	Avg[25 - Average 25]		RD_ONLY	
7152	FLOAT	Avg[26 - Average 26]		RD_ONLY	
7153	FLOAT	Avg[27 - Average 27]		RD_ONLY	
7154	FLOAT	Avg[28 - Average 28]		RD_ONLY	
7155	FLOAT	Avg[29 - Average 29]		RD_ONLY	
7156	FLOAT	Avg[30 - Average 30]		RD_ONLY	
7157	FLOAT	Avg[31 - Average 31]		RD_ONLY	
7158	FLOAT	Avg[32 - Average 32]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7159	FLOAT	Avg[33 - Average 33]		RD_ONLY	
7160	FLOAT	Avg[34 - Average 34]		RD_ONLY	
7161	FLOAT	Avg[35 - Average 35]		RD_ONLY	
7162	FLOAT	Avg[36 - Average 36]		RD_ONLY	
7163	FLOAT	Max[1 - Average 1]		RD_ONLY	
7164	FLOAT	Max[2 - Average 2]		RD_ONLY	
7165	FLOAT	Max[3 - Average 3]		RD_ONLY	
7166	FLOAT	Max[4 - Average 4]		RD_ONLY	
7167	FLOAT	Max[5 - Average 5]		RD_ONLY	
7168	FLOAT	Max[6 - Average 6]		RD_ONLY	
7169	FLOAT	Max[7 - Average 7]		RD_ONLY	
7170	FLOAT	Max[8 - Average 8]		RD_ONLY	
7171	FLOAT	Max[9 - Average 9]		RD_ONLY	
7172	FLOAT	Max[10 - Average 10]		RD_ONLY	
7173	FLOAT	Max[11 - Average 11]		RD_ONLY	
7174	FLOAT	Max[12 - Average 12]		RD_ONLY	
7175	FLOAT	Max[13 - Average 13]		RD_ONLY	
7176	FLOAT	Max[14 - Average 14]		RD_ONLY	
7177	FLOAT	Max[15 - Average 15]		RD_ONLY	
7178	FLOAT	Max[16 - Average 16]		RD_ONLY	
7179	FLOAT	Max[17 - Average 17]		RD_ONLY	
7180	FLOAT	Max[18 - Average 18]		RD_ONLY	
7181	FLOAT	Max[19 - Average 19]		RD_ONLY	
7182	FLOAT	Max[20 - Average 20]		RD_ONLY	
7183	FLOAT	Max[21 - Average 21]		RD_ONLY	
7184	FLOAT	Max[22 - Average 22]		RD_ONLY	
7185	FLOAT	Max[23 - Average 23]		RD_ONLY	
7186	FLOAT	Max[24 - Average 24]		RD_ONLY	
7187	FLOAT	Max[25 - Average 25]		RD_ONLY	
7188	FLOAT	Max[26 - Average 26]		RD_ONLY	
7189	FLOAT	Max[27 - Average 27]		RD_ONLY	
7190	FLOAT	Max[28 - Average 28]		RD_ONLY	
7191	FLOAT	Max[29 - Average 29]		RD_ONLY	
7192	FLOAT	Max[30 - Average 30]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7193	FLOAT	Max[31 - Average 31]		RD_ONLY	
7194	FLOAT	Max[32 - Average 32]		RD_ONLY	
7195	FLOAT	Max[33 - Average 33]		RD_ONLY	
7196	FLOAT	Max[34 - Average 34]		RD_ONLY	
7197	FLOAT	Max[35 - Average 35]		RD_ONLY	
7198	FLOAT	Max[36 - Average 36]		RD_ONLY	
7199	FLOAT	Min[1 - Average 1]		RD_ONLY	
7200	FLOAT	Min[2 - Average 2]		RD_ONLY	
7201	FLOAT	Min[3 - Average 3]		RD_ONLY	
7202	FLOAT	Min[4 - Average 4]		RD_ONLY	
7203	FLOAT	Min[5 - Average 5]		RD_ONLY	
7204	FLOAT	Min[6 - Average 6]		RD_ONLY	
7205	FLOAT	Min[7 - Average 7]		RD_ONLY	
7206	FLOAT	Min[8 - Average 8]		RD_ONLY	
7207	FLOAT	Min[9 - Average 9]		RD_ONLY	
7208	FLOAT	Min[10 - Average 10]		RD_ONLY	
7209	FLOAT	Min[11 - Average 11]		RD_ONLY	
7210	FLOAT	Min[12 - Average 12]		RD_ONLY	
7211	FLOAT	Min[13 - Average 13]		RD_ONLY	
7212	FLOAT	Min[14 - Average 14]		RD_ONLY	
7213	FLOAT	Min[15 - Average 15]		RD_ONLY	
7214	FLOAT	Min[16 - Average 16]		RD_ONLY	
7215	FLOAT	Min[17 - Average 17]		RD_ONLY	
7216	FLOAT	Min[18 - Average 18]		RD_ONLY	
7217	FLOAT	Min[19 - Average 19]		RD_ONLY	
7218	FLOAT	Min[20 - Average 20]		RD_ONLY	
7219	FLOAT	Min[21 - Average 21]		RD_ONLY	
7220	FLOAT	Min[22 - Average 22]		RD_ONLY	
7221	FLOAT	Min[23 - Average 23]		RD_ONLY	
7222	FLOAT	Min[24 - Average 24]		RD_ONLY	
7223	FLOAT	Min[25 - Average 25]		RD_ONLY	
7224	FLOAT	Min[26 - Average 26]		RD_ONLY	
7225	FLOAT	Min[27 - Average 27]		RD_ONLY	
7226	FLOAT	Min[28 - Average 28]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7227	FLOAT	Min[29 - Average 29]		RD_ONLY	
7228	FLOAT	Min[30 - Average 30]		RD_ONLY	
7229	FLOAT	Min[31 - Average 31]		RD_ONLY	
7230	FLOAT	Min[32 - Average 32]		RD_ONLY	
7231	FLOAT	Min[33 - Average 33]		RD_ONLY	
7232	FLOAT	Min[34 - Average 34]		RD_ONLY	
7233	FLOAT	Min[35 - Average 35]		RD_ONLY	
7234	FLOAT	Min[36 - Average 36]		RD_ONLY	
7235	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
7236	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
7237	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
7238	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
7239	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
7240	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
7241	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
7242	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
7243	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
7244	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
7245	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
7246	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
7247	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
7248	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
7249	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
7250	FLOAT	Archive_Avg[16 - Average 16]	1	RD_ONLY	
7251	FLOAT	Archive_Avg[17 - Average 17]	1	RD_ONLY	
7252	FLOAT	Archive_Avg[18 - Average 18]	1	RD_ONLY	
7253	FLOAT	Archive_Avg[19 - Average 19]	1	RD_ONLY	
7254	FLOAT	Archive_Avg[20 - Average 20]	1	RD_ONLY	
7255	FLOAT	Archive_Avg[21 - Average 21]	1	RD_ONLY	
7256	FLOAT	Archive_Avg[22 - Average 22]	1	RD_ONLY	
7257	FLOAT	Archive_Avg[23 - Average 23]	1	RD_ONLY	
7258	FLOAT	Archive_Avg[24 - Average 24]	1	RD_ONLY	
7259	FLOAT	Archive_Avg[25 - Average 25]	1	RD_ONLY	
7260	FLOAT	Archive_Avg[26 - Average 26]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7261	FLOAT	Archive_Avg[27 - Average 27]	1	RD_ONLY	
7262	FLOAT	Archive_Avg[28 - Average 28]	1	RD_ONLY	
7263	FLOAT	Archive_Avg[29 - Average 29]	1	RD_ONLY	
7264	FLOAT	Archive_Avg[30 - Average 30]	1	RD_ONLY	
7265	FLOAT	Archive_Avg[31 - Average 31]	1	RD_ONLY	
7266	FLOAT	Archive_Avg[32 - Average 32]	1	RD_ONLY	
7267	FLOAT	Archive_Avg[33 - Average 33]	1	RD_ONLY	
7268	FLOAT	Archive_Avg[34 - Average 34]	1	RD_ONLY	
7269	FLOAT	Archive_Avg[35 - Average 35]	1	RD_ONLY	
7270	FLOAT	Archive_Avg[36 - Average 36]	1	RD_ONLY	
7271	FLOAT	Archive_Max[1 - Average 1]	1	RD_ONLY	
7272	FLOAT	Archive_Max[2 - Average 2]	1	RD_ONLY	
7273	FLOAT	Archive_Max[3 - Average 3]	1	RD_ONLY	
7274	FLOAT	Archive_Max[4 - Average 4]	1	RD_ONLY	
7275	FLOAT	Archive_Max[5 - Average 5]	1	RD_ONLY	
7276	FLOAT	Archive_Max[6 - Average 6]	1	RD_ONLY	
7277	FLOAT	Archive_Max[7 - Average 7]	1	RD_ONLY	
7278	FLOAT	Archive_Max[8 - Average 8]	1	RD_ONLY	
7279	FLOAT	Archive_Max[9 - Average 9]	1	RD_ONLY	
7280	FLOAT	Archive_Max[10 - Average 10]	1	RD_ONLY	
7281	FLOAT	Archive_Max[11 - Average 11]	1	RD_ONLY	
7282	FLOAT	Archive_Max[12 - Average 12]	1	RD_ONLY	
7283	FLOAT	Archive_Max[13 - Average 13]	1	RD_ONLY	
7284	FLOAT	Archive_Max[14 - Average 14]	1	RD_ONLY	
7285	FLOAT	Archive_Max[15 - Average 15]	1	RD_ONLY	
7286	FLOAT	Archive_Max[16 - Average 16]	1	RD_ONLY	
7287	FLOAT	Archive_Max[17 - Average 17]	1	RD_ONLY	
7288	FLOAT	Archive_Max[18 - Average 18]	1	RD_ONLY	
7289	FLOAT	Archive_Max[19 - Average 19]	1	RD_ONLY	
7290	FLOAT	Archive_Max[20 - Average 20]	1	RD_ONLY	
7291	FLOAT	Archive_Max[21 - Average 21]	1	RD_ONLY	
7292	FLOAT	Archive_Max[22 - Average 22]	1	RD_ONLY	
7293	FLOAT	Archive_Max[23 - Average 23]	1	RD_ONLY	
7294	FLOAT	Archive_Max[24 - Average 24]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7295	FLOAT	Archive_Max[25 - Average 25]	1	RD_ONLY	
7296	FLOAT	Archive_Max[26 - Average 26]	1	RD_ONLY	
7297	FLOAT	Archive_Max[27 - Average 27]	1	RD_ONLY	
7298	FLOAT	Archive_Max[28 - Average 28]	1	RD_ONLY	
7299	FLOAT	Archive_Max[29 - Average 29]	1	RD_ONLY	
7300	FLOAT	Archive_Max[30 - Average 30]	1	RD_ONLY	
7301	FLOAT	Archive_Max[31 - Average 31]	1	RD_ONLY	
7302	FLOAT	Archive_Max[32 - Average 32]	1	RD_ONLY	
7303	FLOAT	Archive_Max[33 - Average 33]	1	RD_ONLY	
7304	FLOAT	Archive_Max[34 - Average 34]	1	RD_ONLY	
7305	FLOAT	Archive_Max[35 - Average 35]	1	RD_ONLY	
7306	FLOAT	Archive_Max[36 - Average 36]	1	RD_ONLY	
7307	FLOAT	Archive_Min[1 - Average 1]	1	RD_ONLY	
7308	FLOAT	Archive_Min[2 - Average 2]	1	RD_ONLY	
7309	FLOAT	Archive_Min[3 - Average 3]	1	RD_ONLY	
7310	FLOAT	Archive_Min[4 - Average 4]	1	RD_ONLY	
7311	FLOAT	Archive_Min[5 - Average 5]	1	RD_ONLY	
7312	FLOAT	Archive_Min[6 - Average 6]	1	RD_ONLY	
7313	FLOAT	Archive_Min[7 - Average 7]	1	RD_ONLY	
7314	FLOAT	Archive_Min[8 - Average 8]	1	RD_ONLY	
7315	FLOAT	Archive_Min[9 - Average 9]	1	RD_ONLY	
7316	FLOAT	Archive_Min[10 - Average 10]	1	RD_ONLY	
7317	FLOAT	Archive_Min[11 - Average 11]	1	RD_ONLY	
7318	FLOAT	Archive_Min[12 - Average 12]	1	RD_ONLY	
7319	FLOAT	Archive_Min[13 - Average 13]	1	RD_ONLY	
7320	FLOAT	Archive_Min[14 - Average 14]	1	RD_ONLY	
7321	FLOAT	Archive_Min[15 - Average 15]	1	RD_ONLY	
7322	FLOAT	Archive_Min[16 - Average 16]	1	RD_ONLY	
7323	FLOAT	Archive_Min[17 - Average 17]	1	RD_ONLY	
7324	FLOAT	Archive_Min[18 - Average 18]	1	RD_ONLY	
7325	FLOAT	Archive_Min[19 - Average 19]	1	RD_ONLY	
7326	FLOAT	Archive_Min[20 - Average 20]	1	RD_ONLY	
7327	FLOAT	Archive_Min[21 - Average 21]	1	RD_ONLY	
7328	FLOAT	Archive_Min[22 - Average 22]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7329	FLOAT	Archive_Min[23 - Average 23]	1	RD_ONLY	
7330	FLOAT	Archive_Min[24 - Average 24]	1	RD_ONLY	
7331	FLOAT	Archive_Min[25 - Average 25]	1	RD_ONLY	
7332	FLOAT	Archive_Min[26 - Average 26]	1	RD_ONLY	
7333	FLOAT	Archive_Min[27 - Average 27]	1	RD_ONLY	
7334	FLOAT	Archive_Min[28 - Average 28]	1	RD_ONLY	
7335	FLOAT	Archive_Min[29 - Average 29]	1	RD_ONLY	
7336	FLOAT	Archive_Min[30 - Average 30]	1	RD_ONLY	
7337	FLOAT	Archive_Min[31 - Average 31]	1	RD_ONLY	
7338	FLOAT	Archive_Min[32 - Average 32]	1	RD_ONLY	
7339	FLOAT	Archive_Min[33 - Average 33]	1	RD_ONLY	
7340	FLOAT	Archive_Min[34 - Average 34]	1	RD_ONLY	
7341	FLOAT	Archive_Min[35 - Average 35]	1	RD_ONLY	
7342	FLOAT	Archive_Min[36 - Average 36]	1	RD_ONLY	
7343	FLOAT	Archive_Avg[1 - Average 1]	2	RD_ONLY	
7344	FLOAT	Archive_Avg[2 - Average 2]	2	RD_ONLY	
7345	FLOAT	Archive_Avg[3 - Average 3]	2	RD_ONLY	
7346	FLOAT	Archive_Avg[4 - Average 4]	2	RD_ONLY	
7347	FLOAT	Archive_Avg[5 - Average 5]	2	RD_ONLY	
7348	FLOAT	Archive_Avg[6 - Average 6]	2	RD_ONLY	
7349	FLOAT	Archive_Avg[7 - Average 7]	2	RD_ONLY	
7350	FLOAT	Archive_Avg[8 - Average 8]	2	RD_ONLY	
7351	FLOAT	Archive_Avg[9 - Average 9]	2	RD_ONLY	
7352	FLOAT	Archive_Avg[10 - Average 10]	2	RD_ONLY	
7353	FLOAT	Archive_Avg[11 - Average 11]	2	RD_ONLY	
7354	FLOAT	Archive_Avg[12 - Average 12]	2	RD_ONLY	
7355	FLOAT	Archive_Avg[13 - Average 13]	2	RD_ONLY	
7356	FLOAT	Archive_Avg[14 - Average 14]	2	RD_ONLY	
7357	FLOAT	Archive_Avg[15 - Average 15]	2	RD_ONLY	
7358	FLOAT	Archive_Avg[16 - Average 16]	2	RD_ONLY	
7359	FLOAT	Archive_Avg[17 - Average 17]	2	RD_ONLY	
7360	FLOAT	Archive_Avg[18 - Average 18]	2	RD_ONLY	
7361	FLOAT	Archive_Avg[19 - Average 19]	2	RD_ONLY	
7362	FLOAT	Archive_Avg[20 - Average 20]	2	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7363	FLOAT	Archive_Avg[21 - Average 21]	2	RD_ONLY	
7364	FLOAT	Archive_Avg[22 - Average 22]	2	RD_ONLY	
7365	FLOAT	Archive_Avg[23 - Average 23]	2	RD_ONLY	
7366	FLOAT	Archive_Avg[24 - Average 24]	2	RD_ONLY	
7367	FLOAT	Archive_Avg[25 - Average 25]	2	RD_ONLY	
7368	FLOAT	Archive_Avg[26 - Average 26]	2	RD_ONLY	
7369	FLOAT	Archive_Avg[27 - Average 27]	2	RD_ONLY	
7370	FLOAT	Archive_Avg[28 - Average 28]	2	RD_ONLY	
7371	FLOAT	Archive_Avg[29 - Average 29]	2	RD_ONLY	
7372	FLOAT	Archive_Avg[30 - Average 30]	2	RD_ONLY	
7373	FLOAT	Archive_Avg[31 - Average 31]	2	RD_ONLY	
7374	FLOAT	Archive_Avg[32 - Average 32]	2	RD_ONLY	
7375	FLOAT	Archive_Avg[33 - Average 33]	2	RD_ONLY	
7376	FLOAT	Archive_Avg[34 - Average 34]	2	RD_ONLY	
7377	FLOAT	Archive_Avg[35 - Average 35]	2	RD_ONLY	
7378	FLOAT	Archive_Avg[36 - Average 36]	2	RD_ONLY	
7379	FLOAT	Archive_Max[1 - Average 1]	2	RD_ONLY	
7380	FLOAT	Archive_Max[2 - Average 2]	2	RD_ONLY	
7381	FLOAT	Archive_Max[3 - Average 3]	2	RD_ONLY	
7382	FLOAT	Archive_Max[4 - Average 4]	2	RD_ONLY	
7383	FLOAT	Archive_Max[5 - Average 5]	2	RD_ONLY	
7384	FLOAT	Archive_Max[6 - Average 6]	2	RD_ONLY	
7385	FLOAT	Archive_Max[7 - Average 7]	2	RD_ONLY	
7386	FLOAT	Archive_Max[8 - Average 8]	2	RD_ONLY	
7387	FLOAT	Archive_Max[9 - Average 9]	2	RD_ONLY	
7388	FLOAT	Archive_Max[10 - Average 10]	2	RD_ONLY	
7389	FLOAT	Archive_Max[11 - Average 11]	2	RD_ONLY	
7390	FLOAT	Archive_Max[12 - Average 12]	2	RD_ONLY	
7391	FLOAT	Archive_Max[13 - Average 13]	2	RD_ONLY	
7392	FLOAT	Archive_Max[14 - Average 14]	2	RD_ONLY	
7393	FLOAT	Archive_Max[15 - Average 15]	2	RD_ONLY	
7394	FLOAT	Archive_Max[16 - Average 16]	2	RD_ONLY	
7395	FLOAT	Archive_Max[17 - Average 17]	2	RD_ONLY	
7396	FLOAT	Archive_Max[18 - Average 18]	2	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7397	FLOAT	Archive_Max[19 - Average 19]	2	RD_ONLY	
7398	FLOAT	Archive_Max[20 - Average 20]	2	RD_ONLY	
7399	FLOAT	Archive_Max[21 - Average 21]	2	RD_ONLY	
7400	FLOAT	Archive_Max[22 - Average 22]	2	RD_ONLY	
7401	FLOAT	Archive_Max[23 - Average 23]	2	RD_ONLY	
7402	FLOAT	Archive_Max[24 - Average 24]	2	RD_ONLY	
7403	FLOAT	Archive_Max[25 - Average 25]	2	RD_ONLY	
7404	FLOAT	Archive_Max[26 - Average 26]	2	RD_ONLY	
7405	FLOAT	Archive_Max[27 - Average 27]	2	RD_ONLY	
7406	FLOAT	Archive_Max[28 - Average 28]	2	RD_ONLY	
7407	FLOAT	Archive_Max[29 - Average 29]	2	RD_ONLY	
7408	FLOAT	Archive_Max[30 - Average 30]	2	RD_ONLY	
7409	FLOAT	Archive_Max[31 - Average 31]	2	RD_ONLY	
7410	FLOAT	Archive_Max[32 - Average 32]	2	RD_ONLY	
7411	FLOAT	Archive_Max[33 - Average 33]	2	RD_ONLY	
7412	FLOAT	Archive_Max[34 - Average 34]	2	RD_ONLY	
7413	FLOAT	Archive_Max[35 - Average 35]	2	RD_ONLY	
7414	FLOAT	Archive_Max[36 - Average 36]	2	RD_ONLY	
7415	FLOAT	Archive_Min[1 - Average 1]	2	RD_ONLY	
7416	FLOAT	Archive_Min[2 - Average 2]	2	RD_ONLY	
7417	FLOAT	Archive_Min[3 - Average 3]	2	RD_ONLY	
7418	FLOAT	Archive_Min[4 - Average 4]	2	RD_ONLY	
7419	FLOAT	Archive_Min[5 - Average 5]	2	RD_ONLY	
7420	FLOAT	Archive_Min[6 - Average 6]	2	RD_ONLY	
7421	FLOAT	Archive_Min[7 - Average 7]	2	RD_ONLY	
7422	FLOAT	Archive_Min[8 - Average 8]	2	RD_ONLY	
7423	FLOAT	Archive_Min[9 - Average 9]	2	RD_ONLY	
7424	FLOAT	Archive_Min[10 - Average 10]	2	RD_ONLY	
7425	FLOAT	Archive_Min[11 - Average 11]	2	RD_ONLY	
7426	FLOAT	Archive_Min[12 - Average 12]	2	RD_ONLY	
7427	FLOAT	Archive_Min[13 - Average 13]	2	RD_ONLY	
7428	FLOAT	Archive_Min[14 - Average 14]	2	RD_ONLY	
7429	FLOAT	Archive_Min[15 - Average 15]	2	RD_ONLY	
7430	FLOAT	Archive_Min[16 - Average 16]	2	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7431	FLOAT	Archive_Min[17 - Average 17]	2	RD_ONLY	
7432	FLOAT	Archive_Min[18 - Average 18]	2	RD_ONLY	
7433	FLOAT	Archive_Min[19 - Average 19]	2	RD_ONLY	
7434	FLOAT	Archive_Min[20 - Average 20]	2	RD_ONLY	
7435	FLOAT	Archive_Min[21 - Average 21]	2	RD_ONLY	
7436	FLOAT	Archive_Min[22 - Average 22]	2	RD_ONLY	
7437	FLOAT	Archive_Min[23 - Average 23]	2	RD_ONLY	
7438	FLOAT	Archive_Min[24 - Average 24]	2	RD_ONLY	
7439	FLOAT	Archive_Min[25 - Average 25]	2	RD_ONLY	
7440	FLOAT	Archive_Min[26 - Average 26]	2	RD_ONLY	
7441	FLOAT	Archive_Min[27 - Average 27]	2	RD_ONLY	
7442	FLOAT	Archive_Min[28 - Average 28]	2	RD_ONLY	
7443	FLOAT	Archive_Min[29 - Average 29]	2	RD_ONLY	
7444	FLOAT	Archive_Min[30 - Average 30]	2	RD_ONLY	
7445	FLOAT	Archive_Min[31 - Average 31]	2	RD_ONLY	
7446	FLOAT	Archive_Min[32 - Average 32]	2	RD_ONLY	
7447	FLOAT	Archive_Min[33 - Average 33]	2	RD_ONLY	
7448	FLOAT	Archive_Min[34 - Average 34]	2	RD_ONLY	
7449	FLOAT	Archive_Min[35 - Average 35]	2	RD_ONLY	
7450	FLOAT	Archive_Min[36 - Average 36]	2	RD_ONLY	
7451	FLOAT	Archive_Avg[1 - Average 1]	3	RD_ONLY	
7452	FLOAT	Archive_Avg[2 - Average 2]	3	RD_ONLY	
7453	FLOAT	Archive_Avg[3 - Average 3]	3	RD_ONLY	
7454	FLOAT	Archive_Avg[4 - Average 4]	3	RD_ONLY	
7455	FLOAT	Archive_Avg[5 - Average 5]	3	RD_ONLY	
7456	FLOAT	Archive_Avg[6 - Average 6]	3	RD_ONLY	
7457	FLOAT	Archive_Avg[7 - Average 7]	3	RD_ONLY	
7458	FLOAT	Archive_Avg[8 - Average 8]	3	RD_ONLY	
7459	FLOAT	Archive_Avg[9 - Average 9]	3	RD_ONLY	
7460	FLOAT	Archive_Avg[10 - Average 10]	3	RD_ONLY	
7461	FLOAT	Archive_Avg[11 - Average 11]	3	RD_ONLY	
7462	FLOAT	Archive_Avg[12 - Average 12]	3	RD_ONLY	
7463	FLOAT	Archive_Avg[13 - Average 13]	3	RD_ONLY	
7464	FLOAT	Archive_Avg[14 - Average 14]	3	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7465	FLOAT	Archive_Avg[15 - Average 15]	3	RD_ONLY	
7466	FLOAT	Archive_Avg[16 - Average 16]	3	RD_ONLY	
7467	FLOAT	Archive_Avg[17 - Average 17]	3	RD_ONLY	
7468	FLOAT	Archive_Avg[18 - Average 18]	3	RD_ONLY	
7469	FLOAT	Archive_Avg[19 - Average 19]	3	RD_ONLY	
7470	FLOAT	Archive_Avg[20 - Average 20]	3	RD_ONLY	
7471	FLOAT	Archive_Avg[21 - Average 21]	3	RD_ONLY	
7472	FLOAT	Archive_Avg[22 - Average 22]	3	RD_ONLY	
7473	FLOAT	Archive_Avg[23 - Average 23]	3	RD_ONLY	
7474	FLOAT	Archive_Avg[24 - Average 24]	3	RD_ONLY	
7475	FLOAT	Archive_Avg[25 - Average 25]	3	RD_ONLY	
7476	FLOAT	Archive_Avg[26 - Average 26]	3	RD_ONLY	
7477	FLOAT	Archive_Avg[27 - Average 27]	3	RD_ONLY	
7478	FLOAT	Archive_Avg[28 - Average 28]	3	RD_ONLY	
7479	FLOAT	Archive_Avg[29 - Average 29]	3	RD_ONLY	
7480	FLOAT	Archive_Avg[30 - Average 30]	3	RD_ONLY	
7481	FLOAT	Archive_Avg[31 - Average 31]	3	RD_ONLY	
7482	FLOAT	Archive_Avg[32 - Average 32]	3	RD_ONLY	
7483	FLOAT	Archive_Avg[33 - Average 33]	3	RD_ONLY	
7484	FLOAT	Archive_Avg[34 - Average 34]	3	RD_ONLY	
7485	FLOAT	Archive_Avg[35 - Average 35]	3	RD_ONLY	
7486	FLOAT	Archive_Avg[36 - Average 36]	3	RD_ONLY	
7487	FLOAT	Archive_Max[1 - Average 1]	3	RD_ONLY	
7488	FLOAT	Archive_Max[2 - Average 2]	3	RD_ONLY	
7489	FLOAT	Archive_Max[3 - Average 3]	3	RD_ONLY	
7490	FLOAT	Archive_Max[4 - Average 4]	3	RD_ONLY	
7491	FLOAT	Archive_Max[5 - Average 5]	3	RD_ONLY	
7492	FLOAT	Archive_Max[6 - Average 6]	3	RD_ONLY	
7493	FLOAT	Archive_Max[7 - Average 7]	3	RD_ONLY	
7494	FLOAT	Archive_Max[8 - Average 8]	3	RD_ONLY	
7495	FLOAT	Archive_Max[9 - Average 9]	3	RD_ONLY	
7496	FLOAT	Archive_Max[10 - Average 10]	3	RD_ONLY	
7497	FLOAT	Archive_Max[11 - Average 11]	3	RD_ONLY	
7498	FLOAT	Archive_Max[12 - Average 12]	3	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7499	FLOAT	Archive_Max[13 - Average 13]	3	RD_ONLY	
7500	FLOAT	Archive_Max[14 - Average 14]	3	RD_ONLY	
7501	FLOAT	Archive_Max[15 - Average 15]	3	RD_ONLY	
7502	FLOAT	Archive_Max[16 - Average 16]	3	RD_ONLY	
7503	FLOAT	Archive_Max[17 - Average 17]	3	RD_ONLY	
7504	FLOAT	Archive_Max[18 - Average 18]	3	RD_ONLY	
7505	FLOAT	Archive_Max[19 - Average 19]	3	RD_ONLY	
7506	FLOAT	Archive_Max[20 - Average 20]	3	RD_ONLY	
7507	FLOAT	Archive_Max[21 - Average 21]	3	RD_ONLY	
7508	FLOAT	Archive_Max[22 - Average 22]	3	RD_ONLY	
7509	FLOAT	Archive_Max[23 - Average 23]	3	RD_ONLY	
7510	FLOAT	Archive_Max[24 - Average 24]	3	RD_ONLY	
7511	FLOAT	Archive_Max[25 - Average 25]	3	RD_ONLY	
7512	FLOAT	Archive_Max[26 - Average 26]	3	RD_ONLY	
7513	FLOAT	Archive_Max[27 - Average 27]	3	RD_ONLY	
7514	FLOAT	Archive_Max[28 - Average 28]	3	RD_ONLY	
7515	FLOAT	Archive_Max[29 - Average 29]	3	RD_ONLY	
7516	FLOAT	Archive_Max[30 - Average 30]	3	RD_ONLY	
7517	FLOAT	Archive_Max[31 - Average 31]	3	RD_ONLY	
7518	FLOAT	Archive_Max[32 - Average 32]	3	RD_ONLY	
7519	FLOAT	Archive_Max[33 - Average 33]	3	RD_ONLY	
7520	FLOAT	Archive_Max[34 - Average 34]	3	RD_ONLY	
7521	FLOAT	Archive_Max[35 - Average 35]	3	RD_ONLY	
7522	FLOAT	Archive_Max[36 - Average 36]	3	RD_ONLY	
7523	FLOAT	Archive_Min[1 - Average 1]	3	RD_ONLY	
7524	FLOAT	Archive_Min[2 - Average 2]	3	RD_ONLY	
7525	FLOAT	Archive_Min[3 - Average 3]	3	RD_ONLY	
7526	FLOAT	Archive_Min[4 - Average 4]	3	RD_ONLY	
7527	FLOAT	Archive_Min[5 - Average 5]	3	RD_ONLY	
7528	FLOAT	Archive_Min[6 - Average 6]	3	RD_ONLY	
7529	FLOAT	Archive_Min[7 - Average 7]	3	RD_ONLY	
7530	FLOAT	Archive_Min[8 - Average 8]	3	RD_ONLY	
7531	FLOAT	Archive_Min[9 - Average 9]	3	RD_ONLY	
7532	FLOAT	Archive_Min[10 - Average 10]	3	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7533	FLOAT	Archive_Min[11 - Average 11]	3	RD_ONLY	
7534	FLOAT	Archive_Min[12 - Average 12]	3	RD_ONLY	
7535	FLOAT	Archive_Min[13 - Average 13]	3	RD_ONLY	
7536	FLOAT	Archive_Min[14 - Average 14]	3	RD_ONLY	
7537	FLOAT	Archive_Min[15 - Average 15]	3	RD_ONLY	
7538	FLOAT	Archive_Min[16 - Average 16]	3	RD_ONLY	
7539	FLOAT	Archive_Min[17 - Average 17]	3	RD_ONLY	
7540	FLOAT	Archive_Min[18 - Average 18]	3	RD_ONLY	
7541	FLOAT	Archive_Min[19 - Average 19]	3	RD_ONLY	
7542	FLOAT	Archive_Min[20 - Average 20]	3	RD_ONLY	
7543	FLOAT	Archive_Min[21 - Average 21]	3	RD_ONLY	
7544	FLOAT	Archive_Min[22 - Average 22]	3	RD_ONLY	
7545	FLOAT	Archive_Min[23 - Average 23]	3	RD_ONLY	
7546	FLOAT	Archive_Min[24 - Average 24]	3	RD_ONLY	
7547	FLOAT	Archive_Min[25 - Average 25]	3	RD_ONLY	
7548	FLOAT	Archive_Min[26 - Average 26]	3	RD_ONLY	
7549	FLOAT	Archive_Min[27 - Average 27]	3	RD_ONLY	
7550	FLOAT	Archive_Min[28 - Average 28]	3	RD_ONLY	
7551	FLOAT	Archive_Min[29 - Average 29]	3	RD_ONLY	
7552	FLOAT	Archive_Min[30 - Average 30]	3	RD_ONLY	
7553	FLOAT	Archive_Min[31 - Average 31]	3	RD_ONLY	
7554	FLOAT	Archive_Min[32 - Average 32]	3	RD_ONLY	
7555	FLOAT	Archive_Min[33 - Average 33]	3	RD_ONLY	
7556	FLOAT	Archive_Min[34 - Average 34]	3	RD_ONLY	
7557	FLOAT	Archive_Min[35 - Average 35]	3	RD_ONLY	
7558	FLOAT	Archive_Min[36 - Average 36]	3	RD_ONLY	
7560	FLOAT	Current Value[1 - Analog Input 1]		RD_ONLY	
7561	FLOAT	Current Value[2 - Analog Input 2]		RD_ONLY	
7562	FLOAT	Current Value[3]		RD_ONLY	
7563	FLOAT	Current Value[4]		RD_ONLY	
7564	FLOAT	Current Value[1 - Analog Input 1]		RD_ONLY	
7565	FLOAT	Current Value[2 - Analog Input 2]		RD_ONLY	
7566	FLOAT	Current Value[3]		RD_ONLY	
7567	FLOAT	Current Value[4]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7621	FLOAT	1 - Stream 1_Start Time		RD_ONLY	YYMMDD
7622	FLOAT	1 - Stream 1_Start Time		RD_ONLY	hhmmss
7623	FLOAT	1 - Stream 1_Mole %[1 - Component 1]		RD_ONLY	
7624	FLOAT	1 - Stream 1_Mole %[2 - Component 2]		RD_ONLY	
7625	FLOAT	1 - Stream 1_Mole %[3 - Component 3]		RD_ONLY	
7626	FLOAT	1 - Stream 1_Mole %[4 - Component 4]		RD_ONLY	
7627	FLOAT	1 - Stream 1_Mole %[5 - Component 5]		RD_ONLY	
7628	FLOAT	1 - Stream 1_Mole %[6 - Component 6]		RD_ONLY	
7629	FLOAT	1 - Stream 1_Mole %[7 - Component 7]		RD_ONLY	
7630	FLOAT	1 - Stream 1_Mole %[8 - Component 8]		RD_ONLY	
7631	FLOAT	1 - Stream 1_Mole %[9 - Component 9]		RD_ONLY	
7632	FLOAT	1 - Stream 1_Mole %[10 - Component 10]		RD_ONLY	
7633	FLOAT	1 - Stream 1_Mole %[11 - Component 11]		RD_ONLY	
7634	FLOAT	1 - Stream 1_Mole %[12 - Component 12]		RD_ONLY	
7635	FLOAT	1 - Stream 1_Mole %[13 - Component 13]		RD_ONLY	
7636	FLOAT	1 - Stream 1_Mole %[14 - Component 14]		RD_ONLY	
7637	FLOAT	1 - Stream 1_Mole %[15 - Component 15]		RD_ONLY	
7638	FLOAT	1 - Stream 1_Mole %[16 - Component 16]		RD_ONLY	
7639	FLOAT	1 - Stream 1_Mole %[17 - Component 17]		RD_ONLY	
7640	FLOAT	1 - Stream 1_Mole %[18 - Component 18]		RD_ONLY	
7641	FLOAT	1 - Stream 1_Mole %[19 - Component 19]		RD_ONLY	
7642	FLOAT	1 - Stream 1_Mole %[20 - Component 20]		RD_ONLY	
7643	FLOAT	1 - Stream 1_HV Gross BTU Dry		RD_ONLY	
7644	FLOAT	1 - Stream 1_GPA Real Rel Den Gas		RD_ONLY	
7645	FLOAT	1 - Stream 1_GPA Z Factor		RD_ONLY	
7646	FLOAT	1 - Stream 1_Total Unnormalized Conc		RD_ONLY	
7647	FLOAT	Unused		RD_ONLY	
7648	FLOAT	Unused		RD_ONLY	
7649	FLOAT	Unused		RD_ONLY	
7650	FLOAT	Unused		RD_ONLY	
7651	FLOAT	2 - Stream 2_Start Time		RD_ONLY	YYMMDD
7652	FLOAT	2 - Stream 2_Start Time		RD_ONLY	hhmmss
7653	FLOAT	2 - Stream 2_Mole %[1 - Component 1]		RD_ONLY	
7654	FLOAT	2 - Stream 2_Mole %[2 - Component 2]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7655	FLOAT	2 - Stream 2_Mole %[3 - Component 3]		RD_ONLY	
7656	FLOAT	2 - Stream 2_Mole %[4 - Component 4]		RD_ONLY	
7657	FLOAT	2 - Stream 2_Mole %[5 - Component 5]		RD_ONLY	
7658	FLOAT	2 - Stream 2_Mole %[6 - Component 6]		RD_ONLY	
7659	FLOAT	2 - Stream 2_Mole %[7 - Component 7]		RD_ONLY	
7660	FLOAT	2 - Stream 2_Mole %[8 - Component 8]		RD_ONLY	
7661	FLOAT	2 - Stream 2_Mole %[9 - Component 9]		RD_ONLY	
7662	FLOAT	2 - Stream 2_Mole %[10 - Component 10]		RD_ONLY	
7663	FLOAT	2 - Stream 2_Mole %[11 - Component 11]		RD_ONLY	
7664	FLOAT	2 - Stream 2_Mole %[12 - Component 12]		RD_ONLY	
7665	FLOAT	2 - Stream 2_Mole %[13 - Component 13]		RD_ONLY	
7666	FLOAT	2 - Stream 2_Mole %[14 - Component 14]		RD_ONLY	
7667	FLOAT	2 - Stream 2_Mole %[15 - Component 15]		RD_ONLY	
7668	FLOAT	2 - Stream 2_Mole %[16 - Component 16]		RD_ONLY	
7669	FLOAT	2 - Stream 2_Mole %[17 - Component 17]		RD_ONLY	
7670	FLOAT	2 - Stream 2_Mole %[18 - Component 18]		RD_ONLY	
7671	FLOAT	2 - Stream 2_Mole %[19 - Component 19]		RD_ONLY	
7672	FLOAT	2 - Stream 2_Mole %[20 - Component 20]		RD_ONLY	
7673	FLOAT	2 - Stream 2_HV Gross BTU Dry		RD_ONLY	
7674	FLOAT	2 - Stream 2_GPA Real Rel Den Gas		RD_ONLY	
7675	FLOAT	2 - Stream 2_GPA Z Factor		RD_ONLY	
7676	FLOAT	2 - Stream 2_Total Unnormalized Conc		RD_ONLY	
7677	FLOAT	Unused		RD_ONLY	
7678	FLOAT	Unused		RD_ONLY	
7679	FLOAT	Unused		RD_ONLY	
7680	FLOAT	Unused		RD_ONLY	
7681	FLOAT	3 - Stream 3_Start Time		RD_ONLY	YYMMDD
7682	FLOAT	3 - Stream 3_Start Time		RD_ONLY	hhmmss
7683	FLOAT	3 - Stream 3_Mole %[1 - Component 1]		RD_ONLY	
7684	FLOAT	3 - Stream 3_Mole %[2 - Component 2]		RD_ONLY	
7685	FLOAT	3 - Stream 3_Mole %[3 - Component 3]		RD_ONLY	
7686	FLOAT	3 - Stream 3_Mole %[4 - Component 4]		RD_ONLY	
7687	FLOAT	3 - Stream 3_Mole %[5 - Component 5]		RD_ONLY	
7688	FLOAT	3 - Stream 3_Mole %[6 - Component 6]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7689	FLOAT	3 - Stream 3_Mole %[7 - Component 7]		RD_ONLY	
7690	FLOAT	3 - Stream 3_Mole %[8 - Component 8]		RD_ONLY	
7691	FLOAT	3 - Stream 3_Mole %[9 - Component 9]		RD_ONLY	
7692	FLOAT	3 - Stream 3_Mole %[10 - Component 10]		RD_ONLY	
7693	FLOAT	3 - Stream 3_Mole %[11 - Component 11]		RD_ONLY	
7694	FLOAT	3 - Stream 3_Mole %[12 - Component 12]		RD_ONLY	
7695	FLOAT	3 - Stream 3_Mole %[13 - Component 13]		RD_ONLY	
7696	FLOAT	3 - Stream 3_Mole %[14 - Component 14]		RD_ONLY	
7697	FLOAT	3 - Stream 3_Mole %[15 - Component 15]		RD_ONLY	
7698	FLOAT	3 - Stream 3_Mole %[16 - Component 16]		RD_ONLY	
7699	FLOAT	3 - Stream 3_Mole %[17 - Component 17]		RD_ONLY	
7700	FLOAT	3 - Stream 3_Mole %[18 - Component 18]		RD_ONLY	
7701	FLOAT	3 - Stream 3_Mole %[19 - Component 19]		RD_ONLY	
7702	FLOAT	3 - Stream 3_Mole %[20 - Component 20]		RD_ONLY	
7703	FLOAT	3 - Stream 3_HV Gross BTU Dry		RD_ONLY	
7704	FLOAT	3 - Stream 3_GPA Real Rel Den Gas		RD_ONLY	
7705	FLOAT	3 - Stream 3_GPA Z Factor		RD_ONLY	
7706	FLOAT	3 - Stream 3_Total Unnormalized Conc		RD_ONLY	
7707	FLOAT	Unused		RD_ONLY	
7708	FLOAT	Unused		RD_ONLY	
7709	FLOAT	Unused		RD_ONLY	
7710	FLOAT	Unused		RD_ONLY	
7711	FLOAT	4 - Stream 4_Start Time		RD_ONLY	YYMMDD
7712	FLOAT	4 - Stream 4_Start Time		RD_ONLY	hhmmss
7713	FLOAT	4 - Stream 4_Mole %[1 - Component 1]		RD_ONLY	
7714	FLOAT	4 - Stream 4_Mole %[2 - Component 2]		RD_ONLY	
7715	FLOAT	4 - Stream 4_Mole %[3 - Component 3]		RD_ONLY	
7716	FLOAT	4 - Stream 4_Mole %[4 - Component 4]		RD_ONLY	
7717	FLOAT	4 - Stream 4_Mole %[5 - Component 5]		RD_ONLY	
7718	FLOAT	4 - Stream 4_Mole %[6 - Component 6]		RD_ONLY	
7719	FLOAT	4 - Stream 4_Mole %[7 - Component 7]		RD_ONLY	
7720	FLOAT	4 - Stream 4_Mole %[8 - Component 8]		RD_ONLY	
7721	FLOAT	4 - Stream 4_Mole %[9 - Component 9]		RD_ONLY	
7722	FLOAT	4 - Stream 4_Mole %[10 - Component 10]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7723	FLOAT	4 - Stream 4_Mole %[11 - Component 11]		RD_ONLY	
7724	FLOAT	4 - Stream 4_Mole %[12 - Component 12]		RD_ONLY	
7725	FLOAT	4 - Stream 4_Mole %[13 - Component 13]		RD_ONLY	
7726	FLOAT	4 - Stream 4_Mole %[14 - Component 14]		RD_ONLY	
7727	FLOAT	4 - Stream 4_Mole %[15 - Component 15]		RD_ONLY	
7728	FLOAT	4 - Stream 4_Mole %[16 - Component 16]		RD_ONLY	
7729	FLOAT	4 - Stream 4_Mole %[17 - Component 17]		RD_ONLY	
7730	FLOAT	4 - Stream 4_Mole %[18 - Component 18]		RD_ONLY	
7731	FLOAT	4 - Stream 4_Mole %[19 - Component 19]		RD_ONLY	
7732	FLOAT	4 - Stream 4_Mole %[20 - Component 20]		RD_ONLY	
7733	FLOAT	4 - Stream 4_HV Gross BTU Dry		RD_ONLY	
7734	FLOAT	4 - Stream 4_GPA Real Rel Den Gas		RD_ONLY	
7735	FLOAT	4 - Stream 4_GPA Z Factor		RD_ONLY	
7736	FLOAT	4 - Stream 4_Total Unnormalized Conc		RD_ONLY	
7737	FLOAT	Unused		RD_ONLY	
7738	FLOAT	Unused		RD_ONLY	
7739	FLOAT	Unused		RD_ONLY	
7740	FLOAT	Unused		RD_ONLY	
7741	FLOAT	5 - Stream 5_Start Time		RD_ONLY	YYMMDD
7742	FLOAT	5 - Stream 5_Start Time		RD_ONLY	hhmmss
7743	FLOAT	5 - Stream 5_Mole %[1 - Component 1]		RD_ONLY	
7744	FLOAT	5 - Stream 5_Mole %[2 - Component 2]		RD_ONLY	
7745	FLOAT	5 - Stream 5_Mole %[3 - Component 3]		RD_ONLY	
7746	FLOAT	5 - Stream 5_Mole %[4 - Component 4]		RD_ONLY	
7747	FLOAT	5 - Stream 5_Mole %[5 - Component 5]		RD_ONLY	
7748	FLOAT	5 - Stream 5_Mole %[6 - Component 6]		RD_ONLY	
7749	FLOAT	5 - Stream 5_Mole %[7 - Component 7]		RD_ONLY	
7750	FLOAT	5 - Stream 5_Mole %[8 - Component 8]		RD_ONLY	
7751	FLOAT	5 - Stream 5_Mole %[9 - Component 9]		RD_ONLY	
7752	FLOAT	5 - Stream 5_Mole %[10 - Component 10]		RD_ONLY	
7753	FLOAT	5 - Stream 5_Mole %[11 - Component 11]		RD_ONLY	
7754	FLOAT	5 - Stream 5_Mole %[12 - Component 12]		RD_ONLY	
7755	FLOAT	5 - Stream 5_Mole %[13 - Component 13]		RD_ONLY	
7756	FLOAT	5 - Stream 5_Mole %[14 - Component 14]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7757	FLOAT	5 - Stream 5_Mole %[15 - Component 15]		RD_ONLY	
7758	FLOAT	5 - Stream 5_Mole %[16 - Component 16]		RD_ONLY	
7759	FLOAT	5 - Stream 5_Mole %[17 - Component 17]		RD_ONLY	
7760	FLOAT	5 - Stream 5_Mole %[18 - Component 18]		RD_ONLY	
7761	FLOAT	5 - Stream 5_Mole %[19 - Component 19]		RD_ONLY	
7762	FLOAT	5 - Stream 5_Mole %[20 - Component 20]		RD_ONLY	
7763	FLOAT	5 - Stream 5_HV Gross BTU Dry		RD_ONLY	
7764	FLOAT	5 - Stream 5_GPA Real Rel Den Gas		RD_ONLY	
7765	FLOAT	5 - Stream 5_GPA Z Factor		RD_ONLY	
7766	FLOAT	5 - Stream 5_Total Unnormalized Conc		RD_ONLY	
7767	FLOAT	Unused		RD_ONLY	
7768	FLOAT	Unused		RD_ONLY	
7769	FLOAT	Unused		RD_ONLY	
7770	FLOAT	Unused		RD_ONLY	
7771	FLOAT	6 - Stream 6_Start Time		RD_ONLY	YYMMDD
7772	FLOAT	6 - Stream 6_Start Time		RD_ONLY	hhmmss
7773	FLOAT	6 - Stream 6_Mole %[1 - Component 1]		RD_ONLY	
7774	FLOAT	6 - Stream 6_Mole %[2 - Component 2]		RD_ONLY	
7775	FLOAT	6 - Stream 6_Mole %[3 - Component 3]		RD_ONLY	
7776	FLOAT	6 - Stream 6_Mole %[4 - Component 4]		RD_ONLY	
7777	FLOAT	6 - Stream 6_Mole %[5 - Component 5]		RD_ONLY	
7778	FLOAT	6 - Stream 6_Mole %[6 - Component 6]		RD_ONLY	
7779	FLOAT	6 - Stream 6_Mole %[7 - Component 7]		RD_ONLY	
7780	FLOAT	6 - Stream 6_Mole %[8 - Component 8]		RD_ONLY	
7781	FLOAT	6 - Stream 6_Mole %[9 - Component 9]		RD_ONLY	
7782	FLOAT	6 - Stream 6_Mole %[10 - Component 10]		RD_ONLY	
7783	FLOAT	6 - Stream 6_Mole %[11 - Component 11]		RD_ONLY	
7784	FLOAT	6 - Stream 6_Mole %[12 - Component 12]		RD_ONLY	
7785	FLOAT	6 - Stream 6_Mole %[13 - Component 13]		RD_ONLY	
7786	FLOAT	6 - Stream 6_Mole %[14 - Component 14]		RD_ONLY	
7787	FLOAT	6 - Stream 6_Mole %[15 - Component 15]		RD_ONLY	
7788	FLOAT	6 - Stream 6_Mole %[16 - Component 16]		RD_ONLY	
7789	FLOAT	6 - Stream 6_Mole %[17 - Component 17]		RD_ONLY	
7790	FLOAT	6 - Stream 6_Mole %[18 - Component 18]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7791	FLOAT	6 - Stream 6_Mole %[19 - Component 19]		RD_ONLY	
7792	FLOAT	6 - Stream 6_Mole %[20 - Component 20]		RD_ONLY	
7793	FLOAT	6 - Stream 6_HV Gross BTU Dry		RD_ONLY	
7794	FLOAT	6 - Stream 6_GPA Real Rel Den Gas		RD_ONLY	
7795	FLOAT	6 - Stream 6_GPA Z Factor		RD_ONLY	
7796	FLOAT	6 - Stream 6_Total Unnormalized Conc		RD_ONLY	
7797	FLOAT	Unused		RD_ONLY	
7798	FLOAT	Unused		RD_ONLY	
7799	FLOAT	Unused		RD_ONLY	
7800	FLOAT	Unused		RD_ONLY	
7801	FLOAT	7 - Stream 7_Start Time		RD_ONLY	YYMMDD
7802	FLOAT	7 - Stream 7_Start Time		RD_ONLY	hhmmss
7803	FLOAT	7 - Stream 7_Mole %[1 - Component 1]		RD_ONLY	
7804	FLOAT	7 - Stream 7_Mole %[2 - Component 2]		RD_ONLY	
7805	FLOAT	7 - Stream 7_Mole %[3 - Component 3]		RD_ONLY	
7806	FLOAT	7 - Stream 7_Mole %[4 - Component 4]		RD_ONLY	
7807	FLOAT	7 - Stream 7_Mole %[5 - Component 5]		RD_ONLY	
7808	FLOAT	7 - Stream 7_Mole %[6 - Component 6]		RD_ONLY	
7809	FLOAT	7 - Stream 7_Mole %[7 - Component 7]		RD_ONLY	
7810	FLOAT	7 - Stream 7_Mole %[8 - Component 8]		RD_ONLY	
7811	FLOAT	7 - Stream 7_Mole %[9 - Component 9]		RD_ONLY	
7812	FLOAT	7 - Stream 7_Mole %[10 - Component 10]		RD_ONLY	
7813	FLOAT	7 - Stream 7_Mole %[11 - Component 11]		RD_ONLY	
7814	FLOAT	7 - Stream 7_Mole %[12 - Component 12]		RD_ONLY	
7815	FLOAT	7 - Stream 7_Mole %[13 - Component 13]		RD_ONLY	
7816	FLOAT	7 - Stream 7_Mole %[14 - Component 14]		RD_ONLY	
7817	FLOAT	7 - Stream 7_Mole %[15 - Component 15]		RD_ONLY	
7818	FLOAT	7 - Stream 7_Mole %[16 - Component 16]		RD_ONLY	
7819	FLOAT	7 - Stream 7_Mole %[17 - Component 17]		RD_ONLY	
7820	FLOAT	7 - Stream 7_Mole %[18 - Component 18]		RD_ONLY	
7821	FLOAT	7 - Stream 7_Mole %[19 - Component 19]		RD_ONLY	
7822	FLOAT	7 - Stream 7_Mole %[20 - Component 20]		RD_ONLY	
7823	FLOAT	7 - Stream 7_HV Gross BTU Dry		RD_ONLY	
7824	FLOAT	7 - Stream 7_GPA Real Rel Den Gas		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7825	FLOAT	7 - Stream 7_GPA Z Factor		RD_ONLY	
7826	FLOAT	7 - Stream 7_Total Unnormalized Conc		RD_ONLY	
7827	FLOAT	Unused		RD_ONLY	
7828	FLOAT	Unused		RD_ONLY	
7829	FLOAT	Unused		RD_ONLY	
7830	FLOAT	Unused		RD_ONLY	
7831	FLOAT	8 - Stream 8_Start Time		RD_ONLY	YYMMDD
7832	FLOAT	8 - Stream 8_Start Time		RD_ONLY	hhmmss
7833	FLOAT	8 - Stream 8_Mole %[1 - Component 1]		RD_ONLY	
7834	FLOAT	8 - Stream 8_Mole %[2 - Component 2]		RD_ONLY	
7835	FLOAT	8 - Stream 8_Mole %[3 - Component 3]		RD_ONLY	
7836	FLOAT	8 - Stream 8_Mole %[4 - Component 4]		RD_ONLY	
7837	FLOAT	8 - Stream 8_Mole %[5 - Component 5]		RD_ONLY	
7838	FLOAT	8 - Stream 8_Mole %[6 - Component 6]		RD_ONLY	
7839	FLOAT	8 - Stream 8_Mole %[7 - Component 7]		RD_ONLY	
7840	FLOAT	8 - Stream 8_Mole %[8 - Component 8]		RD_ONLY	
7841	FLOAT	8 - Stream 8_Mole %[9 - Component 9]		RD_ONLY	
7842	FLOAT	8 - Stream 8_Mole %[10 - Component 10]		RD_ONLY	
7843	FLOAT	8 - Stream 8_Mole %[11 - Component 11]		RD_ONLY	
7844	FLOAT	8 - Stream 8_Mole %[12 - Component 12]		RD_ONLY	
7845	FLOAT	8 - Stream 8_Mole %[13 - Component 13]		RD_ONLY	
7846	FLOAT	8 - Stream 8_Mole %[14 - Component 14]		RD_ONLY	
7847	FLOAT	8 - Stream 8_Mole %[15 - Component 15]		RD_ONLY	
7848	FLOAT	8 - Stream 8_Mole %[16 - Component 16]		RD_ONLY	
7849	FLOAT	8 - Stream 8_Mole %[17 - Component 17]		RD_ONLY	
7850	FLOAT	8 - Stream 8_Mole %[18 - Component 18]		RD_ONLY	
7851	FLOAT	8 - Stream 8_Mole %[19 - Component 19]		RD_ONLY	
7852	FLOAT	8 - Stream 8_Mole %[20 - Component 20]		RD_ONLY	
7853	FLOAT	8 - Stream 8_HV Gross BTU Dry		RD_ONLY	
7854	FLOAT	8 - Stream 8_GPA Real Rel Den Gas		RD_ONLY	
7855	FLOAT	8 - Stream 8_GPA Z Factor		RD_ONLY	
7856	FLOAT	8 - Stream 8_Total Unnormalized Conc		RD_ONLY	
7857	FLOAT	Unused		RD_ONLY	
7858	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7859	FLOAT	Unused		RD_ONLY	
7860	FLOAT	Unused		RD_ONLY	
7861	FLOAT	9 - Stream 9_Start Time		RD_ONLY	YYMMDD
7862	FLOAT	9 - Stream 9_Start Time		RD_ONLY	hhmmss
7863	FLOAT	9 - Stream 9_Mole %[1 - Component 1]		RD_ONLY	
7864	FLOAT	9 - Stream 9_Mole %[2 - Component 2]		RD_ONLY	
7865	FLOAT	9 - Stream 9_Mole %[3 - Component 3]		RD_ONLY	
7866	FLOAT	9 - Stream 9_Mole %[4 - Component 4]		RD_ONLY	
7867	FLOAT	9 - Stream 9_Mole %[5 - Component 5]		RD_ONLY	
7868	FLOAT	9 - Stream 9_Mole %[6 - Component 6]		RD_ONLY	
7869	FLOAT	9 - Stream 9_Mole %[7 - Component 7]		RD_ONLY	
7870	FLOAT	9 - Stream 9_Mole %[8 - Component 8]		RD_ONLY	
7871	FLOAT	9 - Stream 9_Mole %[9 - Component 9]		RD_ONLY	
7872	FLOAT	9 - Stream 9_Mole %[10 - Component 10]		RD_ONLY	
7873	FLOAT	9 - Stream 9_Mole %[11 - Component 11]		RD_ONLY	
7874	FLOAT	9 - Stream 9_Mole %[12 - Component 12]		RD_ONLY	
7875	FLOAT	9 - Stream 9_Mole %[13 - Component 13]		RD_ONLY	
7876	FLOAT	9 - Stream 9_Mole %[14 - Component 14]		RD_ONLY	
7877	FLOAT	9 - Stream 9_Mole %[15 - Component 15]		RD_ONLY	
7878	FLOAT	9 - Stream 9_Mole %[16 - Component 16]		RD_ONLY	
7879	FLOAT	9 - Stream 9_Mole %[17 - Component 17]		RD_ONLY	
7880	FLOAT	9 - Stream 9_Mole %[18 - Component 18]		RD_ONLY	
7881	FLOAT	9 - Stream 9_Mole %[19 - Component 19]		RD_ONLY	
7882	FLOAT	9 - Stream 9_Mole %[20 - Component 20]		RD_ONLY	
7883	FLOAT	9 - Stream 9_HV Gross BTU Dry		RD_ONLY	
7884	FLOAT	9 - Stream 9_GPA Real Rel Den Gas		RD_ONLY	
7885	FLOAT	9 - Stream 9_GPA Z Factor		RD_ONLY	
7886	FLOAT	9 - Stream 9_Total Unnormalized Conc		RD_ONLY	
7887	FLOAT	Unused		RD_ONLY	
7888	FLOAT	Unused		RD_ONLY	
7889	FLOAT	Unused		RD_ONLY	
7890	FLOAT	Unused		RD_ONLY	
7891	FLOAT	10 - Stream 10_Start Time		RD_ONLY	YYMMDD
7892	FLOAT	10 - Stream 10_Start Time		RD_ONLY	hhmmss

Register #	Data Type	Variable	Record #	Access	Format
7893	FLOAT	10 - Stream 10_Mole %[1 - Component 1]		RD_ONLY	
7894	FLOAT	10 - Stream 10_Mole %[2 - Component 2]		RD_ONLY	
7895	FLOAT	10 - Stream 10_Mole %[3 - Component 3]		RD_ONLY	
7896	FLOAT	10 - Stream 10_Mole %[4 - Component 4]		RD_ONLY	
7897	FLOAT	10 - Stream 10_Mole %[5 - Component 5]		RD_ONLY	
7898	FLOAT	10 - Stream 10_Mole %[6 - Component 6]		RD_ONLY	
7899	FLOAT	10 - Stream 10_Mole %[7 - Component 7]		RD_ONLY	
7900	FLOAT	10 - Stream 10_Mole %[8 - Component 8]		RD_ONLY	
7901	FLOAT	10 - Stream 10_Mole %[9 - Component 9]		RD_ONLY	
7902	FLOAT	10 - Stream 10_Mole %[10 - Component 10]		RD_ONLY	
7903	FLOAT	10 - Stream 10_Mole %[11 - Component 11]		RD_ONLY	
7904	FLOAT	10 - Stream 10_Mole %[12 - Component 12]		RD_ONLY	
7905	FLOAT	10 - Stream 10_Mole %[13 - Component 13]		RD_ONLY	
7906	FLOAT	10 - Stream 10_Mole %[14 - Component 14]		RD_ONLY	
7907	FLOAT	10 - Stream 10_Mole %[15 - Component 15]		RD_ONLY	
7908	FLOAT	10 - Stream 10_Mole %[16 - Component 16]		RD_ONLY	
7909	FLOAT	10 - Stream 10_Mole %[17 - Component 17]		RD_ONLY	
7910	FLOAT	10 - Stream 10_Mole %[18 - Component 18]		RD_ONLY	
7911	FLOAT	10 - Stream 10_Mole %[19 - Component 19]		RD_ONLY	
7912	FLOAT	10 - Stream 10_Mole %[20 - Component 20]		RD_ONLY	
7913	FLOAT	10 - Stream 10_HV Gross BTU Dry		RD_ONLY	
7914	FLOAT	10 - Stream 10_GPA Real Rel Den Gas		RD_ONLY	
7915	FLOAT	10 - Stream 10_GPA Z Factor		RD_ONLY	
7916	FLOAT	10 - Stream 10_Total Unnormalized Conc		RD_ONLY	
7917	FLOAT	Unused		RD_ONLY	
7918	FLOAT	Unused		RD_ONLY	
7919	FLOAT	Unused		RD_ONLY	
7920	FLOAT	Unused		RD_ONLY	
7921	FLOAT	11 - Stream 11_Start Time		RD_ONLY	YYMMDD
7922	FLOAT	11 - Stream 11_Start Time		RD_ONLY	hhmmss
7923	FLOAT	11 - Stream 11_Mole %[1 - Component 1]		RD_ONLY	
7924	FLOAT	11 - Stream 11_Mole %[2 - Component 2]		RD_ONLY	
7925	FLOAT	11 - Stream 11_Mole %[3 - Component 3]		RD_ONLY	
7926	FLOAT	11 - Stream 11_Mole %[4 - Component 4]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7927	FLOAT	11 - Stream 11_Mole %[5 - Component 5]		RD_ONLY	
7928	FLOAT	11 - Stream 11_Mole %[6 - Component 6]		RD_ONLY	
7929	FLOAT	11 - Stream 11_Mole %[7 - Component 7]		RD_ONLY	
7930	FLOAT	11 - Stream 11_Mole %[8 - Component 8]		RD_ONLY	
7931	FLOAT	11 - Stream 11_Mole %[9 - Component 9]		RD_ONLY	
7932	FLOAT	11 - Stream 11_Mole %[10 - Component 10]		RD_ONLY	
7933	FLOAT	11 - Stream 11_Mole %[11 - Component 11]		RD_ONLY	
7934	FLOAT	11 - Stream 11_Mole %[12 - Component 12]		RD_ONLY	
7935	FLOAT	11 - Stream 11_Mole %[13 - Component 13]		RD_ONLY	
7936	FLOAT	11 - Stream 11_Mole %[14 - Component 14]		RD_ONLY	
7937	FLOAT	11 - Stream 11_Mole %[15 - Component 15]		RD_ONLY	
7938	FLOAT	11 - Stream 11_Mole %[16 - Component 16]		RD_ONLY	
7939	FLOAT	11 - Stream 11_Mole %[17 - Component 17]		RD_ONLY	
7940	FLOAT	11 - Stream 11_Mole %[18 - Component 18]		RD_ONLY	
7941	FLOAT	11 - Stream 11_Mole %[19 - Component 19]		RD_ONLY	
7942	FLOAT	11 - Stream 11_Mole %[20 - Component 20]		RD_ONLY	
7943	FLOAT	11 - Stream 11_HV Gross BTU Dry		RD_ONLY	
7944	FLOAT	11 - Stream 11_GPA Real Rel Den Gas		RD_ONLY	
7945	FLOAT	11 - Stream 11_GPA Z Factor		RD_ONLY	
7946	FLOAT	11 - Stream 11_Total Unnormalized Conc		RD_ONLY	
7947	FLOAT	Unused		RD_ONLY	
7948	FLOAT	Unused		RD_ONLY	
7949	FLOAT	Unused		RD_ONLY	
7950	FLOAT	Unused		RD_ONLY	
7951	FLOAT	12 - Stream 12_Start Time		RD_ONLY	YYMMDD
7952	FLOAT	12 - Stream 12_Start Time		RD_ONLY	hhmmss
7953	FLOAT	12 - Stream 12_Mole %[1 - Component 1]		RD_ONLY	
7954	FLOAT	12 - Stream 12_Mole %[2 - Component 2]		RD_ONLY	
7955	FLOAT	12 - Stream 12_Mole %[3 - Component 3]		RD_ONLY	
7956	FLOAT	12 - Stream 12_Mole %[4 - Component 4]		RD_ONLY	
7957	FLOAT	12 - Stream 12_Mole %[5 - Component 5]		RD_ONLY	
7958	FLOAT	12 - Stream 12_Mole %[6 - Component 6]		RD_ONLY	
7959	FLOAT	12 - Stream 12_Mole %[7 - Component 7]		RD_ONLY	
7960	FLOAT	12 - Stream 12_Mole %[8 - Component 8]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7961	FLOAT	12 - Stream 12_Mole %[9 - Component 9]		RD_ONLY	
7962	FLOAT	12 - Stream 12_Mole %[10 - Component 10]		RD_ONLY	
7963	FLOAT	12 - Stream 12_Mole %[11 - Component 11]		RD_ONLY	
7964	FLOAT	12 - Stream 12_Mole %[12 - Component 12]		RD_ONLY	
7965	FLOAT	12 - Stream 12_Mole %[13 - Component 13]		RD_ONLY	
7966	FLOAT	12 - Stream 12_Mole %[14 - Component 14]		RD_ONLY	
7967	FLOAT	12 - Stream 12_Mole %[15 - Component 15]		RD_ONLY	
7968	FLOAT	12 - Stream 12_Mole %[16 - Component 16]		RD_ONLY	
7969	FLOAT	12 - Stream 12_Mole %[17 - Component 17]		RD_ONLY	
7970	FLOAT	12 - Stream 12_Mole %[18 - Component 18]		RD_ONLY	
7971	FLOAT	12 - Stream 12_Mole %[19 - Component 19]		RD_ONLY	
7972	FLOAT	12 - Stream 12_Mole %[20 - Component 20]		RD_ONLY	
7973	FLOAT	12 - Stream 12_HV Gross BTU Dry		RD_ONLY	
7974	FLOAT	12 - Stream 12_GPA Real Rel Den Gas		RD_ONLY	
7975	FLOAT	12 - Stream 12_GPA Z Factor		RD_ONLY	
7976	FLOAT	12 - Stream 12_Total Unnormalized Conc		RD_ONLY	
7977	FLOAT	Unused		RD_ONLY	
7978	FLOAT	Unused		RD_ONLY	
7979	FLOAT	Unused		RD_ONLY	
7980	FLOAT	Unused		RD_ONLY	
7981	FLOAT	Unused		RD_ONLY	
7982	FLOAT	Unused		RD_ONLY	
7983	FLOAT	Unused		RD_ONLY	
7984	FLOAT	Unused		RD_ONLY	
7985	FLOAT	Unused		RD_ONLY	
7986	FLOAT	Unused		RD_ONLY	
7987	FLOAT	Unused		RD_ONLY	
7988	FLOAT	Unused		RD_ONLY	
7989	FLOAT	Unused		RD_ONLY	
7990	FLOAT	Unused		RD_ONLY	
7991	FLOAT	Unused		RD_ONLY	
7992	FLOAT	Unused		RD_ONLY	
7993	FLOAT	Unused		RD_ONLY	
7994	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7995	FLOAT	Unused		RD_ONLY	
7996	FLOAT	GC Control_Auto Sequence		RD_WR	
7997	FLOAT	GC Control_Halt		RD_WR	
7998	FLOAT	GC Control_Calibration		RD_WR	
7999	FLOAT	GC Control_Single Stream		RD_WR	
8000	FLOAT	Current Stream		RD_ONLY	
8001	FLOAT	GC Calibrating		RD_ONLY	
8002	FLOAT	GC Running		RD_ONLY	
8003	FLOAT	Unused		RD_ONLY	
8004	FLOAT	Run Time		RD_ONLY	
8005	FLOAT	Current Analysis Mode		RD_ONLY	
8006	FLOAT	GC Control_Validation		RD_WR	
8007	FLOAT	Unused		RD_ONLY	
8008	FLOAT	Unused		RD_ONLY	
8009	FLOAT	Unused		RD_ONLY	
8010	FLOAT	Unused		RD_ONLY	
8011	FLOAT	Unused		RD_ONLY	
8012	FLOAT	Unused		RD_ONLY	
8013	FLOAT	Unused		RD_ONLY	
8014	FLOAT	Unused		RD_ONLY	
8015	FLOAT	Unused		RD_ONLY	
8016	FLOAT	Unused		RD_ONLY	
8017	FLOAT	Unused		RD_ONLY	
8018	FLOAT	Unused		RD_ONLY	
8019	FLOAT	Unused		RD_ONLY	
8020	FLOAT	Unused		RD_ONLY	
8021	FLOAT	Unused		RD_ONLY	
8022	FLOAT	Unused		RD_ONLY	
8023	FLOAT	Unused		RD_ONLY	
8024	FLOAT	Unused		RD_ONLY	
8025	FLOAT	Unused		RD_ONLY	
8026	FLOAT	Unused		RD_ONLY	
8027	FLOAT	Unused		RD_ONLY	
8028	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8029	FLOAT	Unused		RD_ONLY	
8030	FLOAT	Unused		RD_ONLY	
8031	FLOAT	Unused		RD_ONLY	
8032	FLOAT	Unused		RD_ONLY	
8033	FLOAT	Unused		RD_ONLY	
8034	FLOAT	Unused		RD_ONLY	
8035	FLOAT	Unused		RD_ONLY	
8036	FLOAT	Unused		RD_ONLY	
8037	FLOAT	Unused		RD_ONLY	
8038	FLOAT	Unused		RD_ONLY	
8039	FLOAT	Unused		RD_ONLY	
8040	FLOAT	Unused		RD_ONLY	
8041	FLOAT	Unused		RD_ONLY	
8042	FLOAT	Unused		RD_ONLY	
8043	FLOAT	Unused		RD_ONLY	
8044	FLOAT	Unused		RD_ONLY	
8045	FLOAT	Unused		RD_ONLY	
8046	FLOAT	Unused		RD_ONLY	
8047	FLOAT	Unused		RD_ONLY	
8048	FLOAT	Unused		RD_ONLY	
8049	FLOAT	Unused		RD_ONLY	
8050	FLOAT	Unused		RD_ONLY	
8051	FLOAT	Unused		RD_ONLY	
8052	FLOAT	Unused		RD_ONLY	
8053	FLOAT	Unused		RD_ONLY	
8054	FLOAT	Unused		RD_ONLY	
8055	FLOAT	Unused		RD_ONLY	
8056	FLOAT	Unused		RD_ONLY	
8057	FLOAT	Unused		RD_ONLY	
8058	FLOAT	Unused		RD_ONLY	
8059	FLOAT	Unused		RD_ONLY	
8060	FLOAT	Unused		RD_ONLY	
8061	FLOAT	Unused		RD_ONLY	
8062	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8063	FLOAT	Unused		RD_ONLY	
8064	FLOAT	Unused		RD_ONLY	
8065	FLOAT	Unused		RD_ONLY	
8066	FLOAT	Unused		RD_ONLY	
8067	FLOAT	Unused		RD_ONLY	
8068	FLOAT	Unused		RD_ONLY	
8069	FLOAT	Unused		RD_ONLY	
8070	FLOAT	Unused		RD_ONLY	
8071	FLOAT	Unused		RD_ONLY	
8072	FLOAT	Unused		RD_ONLY	
8073	FLOAT	Unused		RD_ONLY	
8074	FLOAT	Unused		RD_ONLY	
8075	FLOAT	Unused		RD_ONLY	
8076	FLOAT	Unused		RD_ONLY	
8077	FLOAT	Unused		RD_ONLY	
8078	FLOAT	Unused		RD_ONLY	
8079	FLOAT	Unused		RD_ONLY	
8080	FLOAT	Unused		RD_ONLY	
8081	FLOAT	Unused		RD_ONLY	
8082	FLOAT	Unused		RD_ONLY	
8083	FLOAT	Unused		RD_ONLY	
8084	FLOAT	Unused		RD_ONLY	
8085	FLOAT	Unused		RD_ONLY	
8086	FLOAT	Unused		RD_ONLY	
8087	FLOAT	Unused		RD_ONLY	
8088	FLOAT	Unused		RD_ONLY	
8089	FLOAT	Unused		RD_ONLY	
8090	FLOAT	Unused		RD_ONLY	
8091	FLOAT	Unused		RD_ONLY	
8092	FLOAT	Unused		RD_ONLY	
8093	FLOAT	Unused		RD_ONLY	
8094	FLOAT	Unused		RD_ONLY	
8095	FLOAT	Unused		RD_ONLY	
8096	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8097	FLOAT	Unused		RD_ONLY	
8098	FLOAT	Unused		RD_ONLY	
8099	FLOAT	Unused		RD_ONLY	
8100	FLOAT	Unused		RD_ONLY	
8101	FLOAT	Unused		RD_ONLY	
8102	FLOAT	Unused		RD_ONLY	
8103	FLOAT	Unused		RD_ONLY	
8104	FLOAT	Unused		RD_ONLY	
8105	FLOAT	Unused		RD_ONLY	
8106	FLOAT	Unused		RD_ONLY	
8107	FLOAT	Unused		RD_ONLY	
8108	FLOAT	Unused		RD_ONLY	
8109	FLOAT	Unused		RD_ONLY	
8110	FLOAT	Unused		RD_ONLY	
8111	FLOAT	Unused		RD_ONLY	
8112	FLOAT	Unused		RD_ONLY	
8113	FLOAT	Unused		RD_ONLY	
8114	FLOAT	Unused		RD_ONLY	
8115	FLOAT	Unused		RD_ONLY	
8116	FLOAT	Unused		RD_ONLY	
8117	FLOAT	Unused		RD_ONLY	
8118	FLOAT	Unused		RD_ONLY	
8119	FLOAT	Unused		RD_ONLY	
8120	FLOAT	Unused		RD_ONLY	
8121	FLOAT	Unused		RD_ONLY	
8122	FLOAT	Unused		RD_ONLY	
8123	FLOAT	Unused		RD_ONLY	
8124	FLOAT	Unused		RD_ONLY	
8125	FLOAT	Unused		RD_ONLY	
8126	FLOAT	Unused		RD_ONLY	
8127	FLOAT	Unused		RD_ONLY	
8128	FLOAT	Unused		RD_ONLY	
8129	FLOAT	Unused		RD_ONLY	
8130	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8131	FLOAT	Unused		RD_ONLY	
8132	FLOAT	Unused		RD_ONLY	
8133	FLOAT	Unused		RD_ONLY	
8134	FLOAT	Unused		RD_ONLY	
8135	FLOAT	Unused		RD_ONLY	
8136	FLOAT	Unused		RD_ONLY	
8137	FLOAT	Unused		RD_ONLY	
8138	FLOAT	Unused		RD_ONLY	
8139	FLOAT	Unused		RD_ONLY	
8140	FLOAT	Unused		RD_ONLY	
8141	FLOAT	Unused		RD_ONLY	
8142	FLOAT	Unused		RD_ONLY	
8143	FLOAT	Unused		RD_ONLY	
8144	FLOAT	Unused		RD_ONLY	
8145	FLOAT	Unused		RD_ONLY	
8146	FLOAT	Unused		RD_ONLY	
8147	FLOAT	Unused		RD_ONLY	
8148	FLOAT	Unused		RD_ONLY	
8149	FLOAT	Unused		RD_ONLY	
8150	FLOAT	Unused		RD_ONLY	
8151	FLOAT	Unused		RD_ONLY	
8152	FLOAT	Unused		RD_ONLY	
8153	FLOAT	Unused		RD_ONLY	
8154	FLOAT	Unused		RD_ONLY	
8155	FLOAT	Unused		RD_ONLY	
8156	FLOAT	Unused		RD_ONLY	
8157	FLOAT	Unused		RD_ONLY	
8158	FLOAT	Unused		RD_ONLY	
8159	FLOAT	Unused		RD_ONLY	
8160	FLOAT	Unused		RD_ONLY	
8161	FLOAT	Unused		RD_ONLY	
8162	FLOAT	Unused		RD_ONLY	
8163	FLOAT	Unused		RD_ONLY	
8164	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8165	FLOAT	Unused		RD_ONLY	
8166	FLOAT	Unused		RD_ONLY	
8167	FLOAT	Unused		RD_ONLY	
8168	FLOAT	Unused		RD_ONLY	
8169	FLOAT	Unused		RD_ONLY	
8170	FLOAT	Unused		RD_ONLY	
8171	FLOAT	Unused		RD_ONLY	
8172	FLOAT	Unused		RD_ONLY	
8173	FLOAT	Unused		RD_ONLY	
8174	FLOAT	Unused		RD_ONLY	
8175	FLOAT	Unused		RD_ONLY	
8176	FLOAT	Unused		RD_ONLY	
8177	FLOAT	Unused		RD_ONLY	
8178	FLOAT	Unused		RD_ONLY	
8179	FLOAT	Unused		RD_ONLY	
8180	FLOAT	Unused		RD_ONLY	
8181	FLOAT	Unused		RD_ONLY	
8182	FLOAT	Unused		RD_ONLY	
8183	FLOAT	Unused		RD_ONLY	
8184	FLOAT	Unused		RD_ONLY	
8185	FLOAT	Unused		RD_ONLY	
8186	FLOAT	Unused		RD_ONLY	
8187	FLOAT	Unused		RD_ONLY	
8188	FLOAT	Unused		RD_ONLY	
8189	FLOAT	Unused		RD_ONLY	
8190	FLOAT	Unused		RD_ONLY	
8191	FLOAT	Unused		RD_ONLY	
8192	FLOAT	Unused		RD_ONLY	
8193	FLOAT	Unused		RD_ONLY	
8194	FLOAT	Unused		RD_ONLY	
8195	FLOAT	Unused		RD_ONLY	
8196	FLOAT	Unused		RD_ONLY	
8197	FLOAT	Unused		RD_ONLY	
8198	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8199	FLOAT	Unused		RD_ONLY	
8200	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
8201	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
8202	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
8203	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
8204	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
8205	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
8206	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
8207	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
8208	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
8209	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
8210	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
8211	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
8212	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
8213	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
8214	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
8215	FLOAT	Archive_Avg[16 - Average 16]	1	RD_ONLY	
8216	FLOAT	Archive_Avg[17 - Average 17]	1	RD_ONLY	
8217	FLOAT	Archive_Avg[18 - Average 18]	1	RD_ONLY	
8218	FLOAT	Archive_Avg[19 - Average 19]	1	RD_ONLY	
8219	FLOAT	Archive_Avg[20 - Average 20]	1	RD_ONLY	
8220	FLOAT	Archive_Avg[21 - Average 21]	1	RD_ONLY	
8221	FLOAT	Archive_Avg[22 - Average 22]	1	RD_ONLY	
8222	FLOAT	Archive_Avg[23 - Average 23]	1	RD_ONLY	
8223	FLOAT	Archive_Avg[24 - Average 24]	1	RD_ONLY	
8224	FLOAT	Archive_Avg[25 - Average 25]	1	RD_ONLY	
8225	FLOAT	Archive_Avg[26 - Average 26]	1	RD_ONLY	
8226	FLOAT	Archive_Avg[27 - Average 27]	1	RD_ONLY	
8227	FLOAT	Archive_Avg[28 - Average 28]	1	RD_ONLY	
8228	FLOAT	Archive_Avg[29 - Average 29]	1	RD_ONLY	
8229	FLOAT	Archive_Avg[30 - Average 30]	1	RD_ONLY	
8230	FLOAT	Archive_Avg[31 - Average 31]	1	RD_ONLY	
8231	FLOAT	Archive_Avg[32 - Average 32]	1	RD_ONLY	
8232	FLOAT	Archive_Avg[33 - Average 33]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8233	FLOAT	Archive_Avg[34 - Average 34]	1	RD_ONLY	
8234	FLOAT	Archive_Avg[35 - Average 35]	1	RD_ONLY	
8235	FLOAT	Archive_Avg[36 - Average 36]	1	RD_ONLY	
8236	FLOAT	Archive_Avg[37 - Average 37]	1	RD_ONLY	
8237	FLOAT	Archive_Avg[38 - Average 38]	1	RD_ONLY	
8238	FLOAT	Archive_Avg[39 - Average 39]	1	RD_ONLY	
8239	FLOAT	Archive_Avg[40 - Average 40]	1	RD_ONLY	
8240	FLOAT	Archive_Avg[41 - Average 41]	1	RD_ONLY	
8241	FLOAT	Archive_Avg[42 - Average 42]	1	RD_ONLY	
8242	FLOAT	Archive_Avg[43 - Average 43]	1	RD_ONLY	
8243	FLOAT	Archive_Avg[44 - Average 44]	1	RD_ONLY	
8244	FLOAT	Archive_Avg[45 - Average 45]	1	RD_ONLY	
8245	FLOAT	Archive_Avg[46 - Average 46]	1	RD_ONLY	
8246	FLOAT	Archive_Avg[47 - Average 47]	1	RD_ONLY	
8247	FLOAT	Archive_Avg[48 - Average 48]	1	RD_ONLY	
8248	FLOAT	Archive_Avg[49 - Average 49]	1	RD_ONLY	
8249	FLOAT	Archive_Avg[50 - Average 50]	1	RD_ONLY	
8250	FLOAT	Archive_Avg[51 - Average 51]	1	RD_ONLY	
8251	FLOAT	Archive_Avg[52 - Average 52]	1	RD_ONLY	
8252	FLOAT	Archive_Avg[53 - Average 53]	1	RD_ONLY	
8253	FLOAT	Archive_Avg[54 - Average 54]	1	RD_ONLY	
8254	FLOAT	Archive_Avg[55 - Average 55]	1	RD_ONLY	
8255	FLOAT	Archive_Avg[56 - Average 56]	1	RD_ONLY	
8256	FLOAT	Archive_Avg[57 - Average 57]	1	RD_ONLY	
8257	FLOAT	Archive_Avg[58 - Average 58]	1	RD_ONLY	
8258	FLOAT	Archive_Avg[59 - Average 59]	1	RD_ONLY	
8259	FLOAT	Archive_Avg[60 - Average 60]	1	RD_ONLY	
8260	FLOAT	Archive_Avg[61 - Average 61]	1	RD_ONLY	
8261	FLOAT	Archive_Avg[62 - Average 62]	1	RD_ONLY	
8262	FLOAT	Archive_Avg[63 - Average 63]	1	RD_ONLY	
8263	FLOAT	Archive_Avg[64 - Average 64]	1	RD_ONLY	
8264	FLOAT	Archive_Avg[65 - Average 65]	1	RD_ONLY	
8265	FLOAT	Archive_Avg[66 - Average 66]	1	RD_ONLY	
8266	FLOAT	Archive_Avg[67 - Average 67]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8267	FLOAT	Archive_Avg[68 - Average 68]	1	RD_ONLY	
8268	FLOAT	Archive_Avg[69 - Average 69]	1	RD_ONLY	
8269	FLOAT	Archive_Avg[70 - Average 70]	1	RD_ONLY	
8270	FLOAT	Archive_Avg[71 - Average 71]	1	RD_ONLY	
8271	FLOAT	Archive_Avg[72 - Average 72]	1	RD_ONLY	
8272	FLOAT	Archive_Avg[73 - Average 73]	1	RD_ONLY	
8273	FLOAT	Archive_Avg[74 - Average 74]	1	RD_ONLY	
8274	FLOAT	Archive_Avg[75 - Average 75]	1	RD_ONLY	
8275	FLOAT	Archive_Avg[76 - Average 76]	1	RD_ONLY	
8276	FLOAT	Archive_Avg[77 - Average 77]	1	RD_ONLY	
8277	FLOAT	Archive_Avg[78 - Average 78]	1	RD_ONLY	
8278	FLOAT	Archive_Avg[79 - Average 79]	1	RD_ONLY	
8279	FLOAT	Archive_Avg[80 - Average 80]	1	RD_ONLY	
8280	FLOAT	Archive_Avg[81 - Average 81]	1	RD_ONLY	
8281	FLOAT	Archive_Avg[82 - Average 82]	1	RD_ONLY	
8282	FLOAT	Archive_Avg[83 - Average 83]	1	RD_ONLY	
8283	FLOAT	Archive_Avg[84 - Average 84]	1	RD_ONLY	
8284	FLOAT	Archive_Avg[85 - Average 85]	1	RD_ONLY	
8285	FLOAT	Archive_Avg[86 - Average 86]	1	RD_ONLY	
8286	FLOAT	Archive_Avg[87 - Average 87]	1	RD_ONLY	
8287	FLOAT	Archive_Avg[88 - Average 88]	1	RD_ONLY	
8288	FLOAT	Archive_Avg[89 - Average 89]	1	RD_ONLY	
8289	FLOAT	Archive_Avg[90 - Average 90]	1	RD_ONLY	
8290	FLOAT	Archive_Avg[91 - Average 91]	1	RD_ONLY	
8291	FLOAT	Archive_Avg[92 - Average 92]	1	RD_ONLY	
8292	FLOAT	Archive_Avg[93 - Average 93]	1	RD_ONLY	
8293	FLOAT	Archive_Avg[94 - Average 94]	1	RD_ONLY	
8294	FLOAT	Archive_Avg[95 - Average 95]	1	RD_ONLY	
8295	FLOAT	Archive_Avg[96 - Average 96]	1	RD_ONLY	
8296	FLOAT	Archive_Avg[97 - Average 97]	1	RD_ONLY	
8297	FLOAT	Archive_Avg[98 - Average 98]	1	RD_ONLY	
8298	FLOAT	Archive_Avg[99 - Average 99]	1	RD_ONLY	
8299	FLOAT	Archive_Avg[100 - Average 100]	1	RD_ONLY	
8300	FLOAT	Archive_Avg[101 - Average 101]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8301	FLOAT	Archive_Avg[102 - Average 102]	1	RD_ONLY	
8302	FLOAT	Archive_Avg[103 - Average 103]	1	RD_ONLY	
8303	FLOAT	Archive_Avg[104 - Average 104]	1	RD_ONLY	
8304	FLOAT	Archive_Avg[105 - Average 105]	1	RD_ONLY	
8305	FLOAT	Archive_Avg[106 - Average 106]	1	RD_ONLY	
8306	FLOAT	Archive_Avg[107 - Average 107]	1	RD_ONLY	
8307	FLOAT	Archive_Avg[108 - Average 108]	1	RD_ONLY	
8308	FLOAT	Archive_Avg[109 - Average 109]	1	RD_ONLY	
8309	FLOAT	Archive_Avg[110 - Average 110]	1	RD_ONLY	
8310	FLOAT	Archive_Avg[111 - Average 111]	1	RD_ONLY	
8311	FLOAT	Archive_Avg[112 - Average 112]	1	RD_ONLY	
8312	FLOAT	Archive_Avg[113 - Average 113]	1	RD_ONLY	
8313	FLOAT	Archive_Avg[114 - Average 114]	1	RD_ONLY	
8314	FLOAT	Archive_Avg[115 - Average 115]	1	RD_ONLY	
8315	FLOAT	Archive_Avg[116 - Average 116]	1	RD_ONLY	
8316	FLOAT	Archive_Avg[117 - Average 117]	1	RD_ONLY	
8317	FLOAT	Archive_Avg[118 - Average 118]	1	RD_ONLY	
8318	FLOAT	Archive_Avg[119 - Average 119]	1	RD_ONLY	
8319	FLOAT	Archive_Avg[120 - Average 120]	1	RD_ONLY	
8320	FLOAT	Archive_Avg[121 - Average 121]	1	RD_ONLY	
8321	FLOAT	Archive_Avg[122 - Average 122]	1	RD_ONLY	
8322	FLOAT	Archive_Avg[123 - Average 123]	1	RD_ONLY	
8323	FLOAT	Archive_Avg[124 - Average 124]	1	RD_ONLY	
8324	FLOAT	Archive_Avg[125 - Average 125]	1	RD_ONLY	
8325	FLOAT	Archive_Avg[126 - Average 126]	1	RD_ONLY	
8326	FLOAT	Archive_Avg[127 - Average 127]	1	RD_ONLY	
8327	FLOAT	Archive_Avg[128 - Average 128]	1	RD_ONLY	
8328	FLOAT	Archive_Avg[129 - Average 129]	1	RD_ONLY	
8329	FLOAT	Archive_Avg[130 - Average 130]	1	RD_ONLY	
8330	FLOAT	Archive_Avg[131 - Average 131]	1	RD_ONLY	
8331	FLOAT	Archive_Avg[132 - Average 132]	1	RD_ONLY	
8332	FLOAT	Archive_Avg[133 - Average 133]	1	RD_ONLY	
8333	FLOAT	Archive_Avg[134 - Average 134]	1	RD_ONLY	
8334	FLOAT	Archive_Avg[135 - Average 135]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8335	FLOAT	Archive_Avg[136 - Average 136]	1	RD_ONLY	
8336	FLOAT	Archive_Avg[137 - Average 137]	1	RD_ONLY	
8337	FLOAT	Archive_Avg[138 - Average 138]	1	RD_ONLY	
8338	FLOAT	Archive_Avg[139 - Average 139]	1	RD_ONLY	
8339	FLOAT	Archive_Avg[140 - Average 140]	1	RD_ONLY	
8340	FLOAT	Archive_Avg[141 - Average 141]	1	RD_ONLY	
8341	FLOAT	Archive_Avg[142 - Average 142]	1	RD_ONLY	
8342	FLOAT	Archive_Avg[143 - Average 143]	1	RD_ONLY	
8343	FLOAT	Archive_Avg[144 - Average 144]	1	RD_ONLY	
8344	FLOAT	Archive_Avg[145 - Average 145]	1	RD_ONLY	
8345	FLOAT	Archive_Avg[146 - Average 146]	1	RD_ONLY	
8346	FLOAT	Archive_Avg[147 - Average 147]	1	RD_ONLY	
8347	FLOAT	Archive_Avg[148 - Average 148]	1	RD_ONLY	
8348	FLOAT	Archive_Avg[149 - Average 149]	1	RD_ONLY	
8349	FLOAT	Archive_Avg[150 - Average 150]	1	RD_ONLY	
8350	FLOAT	Archive_Avg[151 - Average 151]	1	RD_ONLY	
8351	FLOAT	Archive_Avg[152 - Average 152]	1	RD_ONLY	
8352	FLOAT	Archive_Avg[153 - Average 153]	1	RD_ONLY	
8353	FLOAT	Archive_Avg[154 - Average 154]	1	RD_ONLY	
8354	FLOAT	Archive_Avg[155 - Average 155]	1	RD_ONLY	
8355	FLOAT	Archive_Avg[156 - Average 156]	1	RD_ONLY	
8356	FLOAT	Archive_Avg[157 - Average 157]	1	RD_ONLY	
8357	FLOAT	Archive_Avg[158 - Average 158]	1	RD_ONLY	
8358	FLOAT	Archive_Avg[159 - Average 159]	1	RD_ONLY	
8359	FLOAT	Archive_Avg[160 - Average 160]	1	RD_ONLY	
8360	FLOAT	Archive_Avg[161 - Average 161]	1	RD_ONLY	
8361	FLOAT	Archive_Avg[162 - Average 162]	1	RD_ONLY	
8362	FLOAT	Archive_Avg[163 - Average 163]	1	RD_ONLY	
8363	FLOAT	Archive_Avg[164 - Average 164]	1	RD_ONLY	
8364	FLOAT	Archive_Avg[165 - Average 165]	1	RD_ONLY	
8365	FLOAT	Archive_Avg[166 - Average 166]	1	RD_ONLY	
8366	FLOAT	Archive_Avg[167 - Average 167]	1	RD_ONLY	
8367	FLOAT	Archive_Avg[168 - Average 168]	1	RD_ONLY	
8368	FLOAT	Archive_Avg[169 - Average 169]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8369	FLOAT	Archive_Avg[170 - Average 170]	1	RD_ONLY	
8370	FLOAT	Archive_Avg[171 - Average 171]	1	RD_ONLY	
8371	FLOAT	Archive_Avg[172 - Average 172]	1	RD_ONLY	
8372	FLOAT	Archive_Avg[173 - Average 173]	1	RD_ONLY	
8373	FLOAT	Archive_Avg[174 - Average 174]	1	RD_ONLY	
8374	FLOAT	Archive_Avg[175 - Average 175]	1	RD_ONLY	
8375	FLOAT	Archive_Avg[176 - Average 176]	1	RD_ONLY	
8376	FLOAT	Archive_Avg[177 - Average 177]	1	RD_ONLY	
8377	FLOAT	Archive_Avg[178 - Average 178]	1	RD_ONLY	
8378	FLOAT	Archive_Avg[179 - Average 179]	1	RD_ONLY	
8379	FLOAT	Archive_Avg[180 - Average 180]	1	RD_ONLY	
8380	FLOAT	Archive_Avg[181 - Average 181]	1	RD_ONLY	
8381	FLOAT	Archive_Avg[182 - Average 182]	1	RD_ONLY	
8382	FLOAT	Archive_Avg[183 - Average 183]	1	RD_ONLY	
8383	FLOAT	Archive_Avg[184 - Average 184]	1	RD_ONLY	
8384	FLOAT	Archive_Avg[185 - Average 185]	1	RD_ONLY	
8385	FLOAT	Archive_Avg[186 - Average 186]	1	RD_ONLY	
8386	FLOAT	Archive_Avg[187 - Average 187]	1	RD_ONLY	
8387	FLOAT	Archive_Avg[188 - Average 188]	1	RD_ONLY	
8388	FLOAT	Archive_Avg[189 - Average 189]	1	RD_ONLY	
8389	FLOAT	Archive_Avg[190 - Average 190]	1	RD_ONLY	
8390	FLOAT	Archive_Avg[191 - Average 191]	1	RD_ONLY	
8391	FLOAT	Archive_Avg[192 - Average 192]	1	RD_ONLY	
8392	FLOAT	Archive_Avg[193 - Average 193]	1	RD_ONLY	
8393	FLOAT	Archive_Avg[194 - Average 194]	1	RD_ONLY	
8394	FLOAT	Archive_Avg[195 - Average 195]	1	RD_ONLY	
8395	FLOAT	Archive_Avg[196 - Average 196]	1	RD_ONLY	
8396	FLOAT	Archive_Avg[197 - Average 197]	1	RD_ONLY	
8397	FLOAT	Archive_Avg[198 - Average 198]	1	RD_ONLY	
8398	FLOAT	Archive_Avg[199 - Average 199]	1	RD_ONLY	
8399	FLOAT	Archive_Avg[200 - Average 200]	1	RD_ONLY	
8400	FLOAT	Archive_Avg[201 - Average 201]	1	RD_ONLY	
8401	FLOAT	Archive_Avg[202 - Average 202]	1	RD_ONLY	
8402	FLOAT	Archive_Avg[203 - Average 203]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8403	FLOAT	Archive_Avg[204 - Average 204]	1	RD_ONLY	
8404	FLOAT	Archive_Avg[205 - Average 205]	1	RD_ONLY	
8405	FLOAT	Archive_Avg[206 - Average 206]	1	RD_ONLY	
8406	FLOAT	Archive_Avg[207 - Average 207]	1	RD_ONLY	
8407	FLOAT	Archive_Avg[208 - Average 208]	1	RD_ONLY	
8408	FLOAT	Archive_Avg[209 - Average 209]	1	RD_ONLY	
8409	FLOAT	Archive_Avg[210 - Average 210]	1	RD_ONLY	
8410	FLOAT	Archive_Avg[211 - Average 211]	1	RD_ONLY	
8411	FLOAT	Archive_Avg[212 - Average 212]	1	RD_ONLY	
8412	FLOAT	Archive_Avg[213 - Average 213]	1	RD_ONLY	
8413	FLOAT	Archive_Avg[214 - Average 214]	1	RD_ONLY	
8414	FLOAT	Archive_Avg[215 - Average 215]	1	RD_ONLY	
8415	FLOAT	Archive_Avg[216 - Average 216]	1	RD_ONLY	
8416	FLOAT	Archive_Avg[217 - Average 217]	1	RD_ONLY	
8417	FLOAT	Archive_Avg[218 - Average 218]	1	RD_ONLY	
8418	FLOAT	Archive_Avg[219 - Average 219]	1	RD_ONLY	
8419	FLOAT	Archive_Avg[220 - Average 220]	1	RD_ONLY	
8420	FLOAT	Archive_Avg[221 - Average 221]	1	RD_ONLY	
8421	FLOAT	Archive_Avg[222 - Average 222]	1	RD_ONLY	
8422	FLOAT	Archive_Avg[223 - Average 223]	1	RD_ONLY	
8423	FLOAT	Archive_Avg[224 - Average 224]	1	RD_ONLY	
8424	FLOAT	Archive_Avg[225 - Average 225]	1	RD_ONLY	
8425	FLOAT	Archive_Avg[226 - Average 226]	1	RD_ONLY	
8426	FLOAT	Archive_Avg[227 - Average 227]	1	RD_ONLY	
8427	FLOAT	Archive_Avg[228 - Average 228]	1	RD_ONLY	
8428	FLOAT	Archive_Avg[229 - Average 229]	1	RD_ONLY	
8429	FLOAT	Archive_Avg[230 - Average 230]	1	RD_ONLY	
8430	FLOAT	Archive_Avg[231 - Average 231]	1	RD_ONLY	
8431	FLOAT	Archive_Avg[232 - Average 232]	1	RD_ONLY	
8432	FLOAT	Archive_Avg[233 - Average 233]	1	RD_ONLY	
8433	FLOAT	Archive_Avg[234 - Average 234]	1	RD_ONLY	
8434	FLOAT	Archive_Avg[235 - Average 235]	1	RD_ONLY	
8435	FLOAT	Archive_Avg[236 - Average 236]	1	RD_ONLY	
8436	FLOAT	Archive_Avg[237 - Average 237]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8437	FLOAT	Archive_Avg[238 - Average 238]	1	RD_ONLY	
8438	FLOAT	Archive_Avg[239 - Average 239]	1	RD_ONLY	
8439	FLOAT	Archive_Avg[240 - Average 240]	1	RD_ONLY	
8440	FLOAT	Archive_Avg[241 - Average 241]	1	RD_ONLY	
8441	FLOAT	Archive_Avg[242 - Average 242]	1	RD_ONLY	
8442	FLOAT	Archive_Avg[243 - Average 243]	1	RD_ONLY	
8443	FLOAT	Archive_Avg[244 - Average 244]	1	RD_ONLY	
8444	FLOAT	Archive_Avg[245 - Average 245]	1	RD_ONLY	
8445	FLOAT	Archive_Avg[246 - Average 246]	1	RD_ONLY	
8446	FLOAT	Archive_Avg[247 - Average 247]	1	RD_ONLY	
8447	FLOAT	Archive_Avg[248 - Average 248]	1	RD_ONLY	
8448	FLOAT	Archive_Avg[249 - Average 249]	1	RD_ONLY	
8449	FLOAT	Archive_Avg[250 - Average 250]	1	RD_ONLY	
8450	FLOAT	Unused		RD_ONLY	
8451	FLOAT	Unused		RD_ONLY	
8452	FLOAT	Unused		RD_ONLY	
8453	FLOAT	Unused		RD_ONLY	
8454	FLOAT	Archive_Max[1 - Average 1]	1	RD_ONLY	
8455	FLOAT	Archive_Max[2 - Average 2]	1	RD_ONLY	
8456	FLOAT	Archive_Max[3 - Average 3]	1	RD_ONLY	
8457	FLOAT	Archive_Max[4 - Average 4]	1	RD_ONLY	
8458	FLOAT	Archive_Max[5 - Average 5]	1	RD_ONLY	
8459	FLOAT	Archive_Max[6 - Average 6]	1	RD_ONLY	
8460	FLOAT	Archive_Max[7 - Average 7]	1	RD_ONLY	
8461	FLOAT	Archive_Max[8 - Average 8]	1	RD_ONLY	
8462	FLOAT	Archive_Max[9 - Average 9]	1	RD_ONLY	
8463	FLOAT	Archive_Max[10 - Average 10]	1	RD_ONLY	
8464	FLOAT	Archive_Max[11 - Average 11]	1	RD_ONLY	
8465	FLOAT	Archive_Max[12 - Average 12]	1	RD_ONLY	
8466	FLOAT	Archive_Max[13 - Average 13]	1	RD_ONLY	
8467	FLOAT	Archive_Max[14 - Average 14]	1	RD_ONLY	
8468	FLOAT	Archive_Max[15 - Average 15]	1	RD_ONLY	
8469	FLOAT	Archive_Max[16 - Average 16]	1	RD_ONLY	
8470	FLOAT	Archive_Max[17 - Average 17]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8471	FLOAT	Archive_Max[18 - Average 18]	1	RD_ONLY	
8472	FLOAT	Archive_Max[19 - Average 19]	1	RD_ONLY	
8473	FLOAT	Archive_Max[20 - Average 20]	1	RD_ONLY	
8474	FLOAT	Archive_Max[21 - Average 21]	1	RD_ONLY	
8475	FLOAT	Archive_Max[22 - Average 22]	1	RD_ONLY	
8476	FLOAT	Archive_Max[23 - Average 23]	1	RD_ONLY	
8477	FLOAT	Archive_Max[24 - Average 24]	1	RD_ONLY	
8478	FLOAT	Archive_Max[25 - Average 25]	1	RD_ONLY	
8479	FLOAT	Archive_Max[26 - Average 26]	1	RD_ONLY	
8480	FLOAT	Archive_Max[27 - Average 27]	1	RD_ONLY	
8481	FLOAT	Archive_Max[28 - Average 28]	1	RD_ONLY	
8482	FLOAT	Archive_Max[29 - Average 29]	1	RD_ONLY	
8483	FLOAT	Archive_Max[30 - Average 30]	1	RD_ONLY	
8484	FLOAT	Archive_Max[31 - Average 31]	1	RD_ONLY	
8485	FLOAT	Archive_Max[32 - Average 32]	1	RD_ONLY	
8486	FLOAT	Archive_Max[33 - Average 33]	1	RD_ONLY	
8487	FLOAT	Archive_Max[34 - Average 34]	1	RD_ONLY	
8488	FLOAT	Archive_Max[35 - Average 35]	1	RD_ONLY	
8489	FLOAT	Archive_Max[36 - Average 36]	1	RD_ONLY	
8490	FLOAT	Archive_Max[37 - Average 37]	1	RD_ONLY	
8491	FLOAT	Archive_Max[38 - Average 38]	1	RD_ONLY	
8492	FLOAT	Archive_Max[39 - Average 39]	1	RD_ONLY	
8493	FLOAT	Archive_Max[40 - Average 40]	1	RD_ONLY	
8494	FLOAT	Archive_Max[41 - Average 41]	1	RD_ONLY	
8495	FLOAT	Archive_Max[42 - Average 42]	1	RD_ONLY	
8496	FLOAT	Archive_Max[43 - Average 43]	1	RD_ONLY	
8497	FLOAT	Archive_Max[44 - Average 44]	1	RD_ONLY	
8498	FLOAT	Archive_Max[45 - Average 45]	1	RD_ONLY	
8499	FLOAT	Archive_Max[46 - Average 46]	1	RD_ONLY	
8500	FLOAT	Archive_Max[47 - Average 47]	1	RD_ONLY	
8501	FLOAT	Archive_Max[48 - Average 48]	1	RD_ONLY	
8502	FLOAT	Archive_Max[49 - Average 49]	1	RD_ONLY	
8503	FLOAT	Archive_Max[50 - Average 50]	1	RD_ONLY	
8504	FLOAT	Archive_Max[51 - Average 51]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8505	FLOAT	Archive_Max[52 - Average 52]	1	RD_ONLY	
8506	FLOAT	Archive_Max[53 - Average 53]	1	RD_ONLY	
8507	FLOAT	Archive_Max[54 - Average 54]	1	RD_ONLY	
8508	FLOAT	Archive_Max[55 - Average 55]	1	RD_ONLY	
8509	FLOAT	Archive_Max[56 - Average 56]	1	RD_ONLY	
8510	FLOAT	Archive_Max[57 - Average 57]	1	RD_ONLY	
8511	FLOAT	Archive_Max[58 - Average 58]	1	RD_ONLY	
8512	FLOAT	Archive_Max[59 - Average 59]	1	RD_ONLY	
8513	FLOAT	Archive_Max[60 - Average 60]	1	RD_ONLY	
8514	FLOAT	Archive_Max[61 - Average 61]	1	RD_ONLY	
8515	FLOAT	Archive_Max[62 - Average 62]	1	RD_ONLY	
8516	FLOAT	Archive_Max[63 - Average 63]	1	RD_ONLY	
8517	FLOAT	Archive_Max[64 - Average 64]	1	RD_ONLY	
8518	FLOAT	Archive_Max[65 - Average 65]	1	RD_ONLY	
8519	FLOAT	Archive_Max[66 - Average 66]	1	RD_ONLY	
8520	FLOAT	Archive_Max[67 - Average 67]	1	RD_ONLY	
8521	FLOAT	Archive_Max[68 - Average 68]	1	RD_ONLY	
8522	FLOAT	Archive_Max[69 - Average 69]	1	RD_ONLY	
8523	FLOAT	Archive_Max[70 - Average 70]	1	RD_ONLY	
8524	FLOAT	Archive_Max[71 - Average 71]	1	RD_ONLY	
8525	FLOAT	Archive_Max[72 - Average 72]	1	RD_ONLY	
8526	FLOAT	Archive_Max[73 - Average 73]	1	RD_ONLY	
8527	FLOAT	Archive_Max[74 - Average 74]	1	RD_ONLY	
8528	FLOAT	Archive_Max[75 - Average 75]	1	RD_ONLY	
8529	FLOAT	Archive_Max[76 - Average 76]	1	RD_ONLY	
8530	FLOAT	Archive_Max[77 - Average 77]	1	RD_ONLY	
8531	FLOAT	Archive_Max[78 - Average 78]	1	RD_ONLY	
8532	FLOAT	Archive_Max[79 - Average 79]	1	RD_ONLY	
8533	FLOAT	Archive_Max[80 - Average 80]	1	RD_ONLY	
8534	FLOAT	Archive_Max[81 - Average 81]	1	RD_ONLY	
8535	FLOAT	Archive_Max[82 - Average 82]	1	RD_ONLY	
8536	FLOAT	Archive_Max[83 - Average 83]	1	RD_ONLY	
8537	FLOAT	Archive_Max[84 - Average 84]	1	RD_ONLY	
8538	FLOAT	Archive_Max[85 - Average 85]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8539	FLOAT	Archive_Max[86 - Average 86]	1	RD_ONLY	
8540	FLOAT	Archive_Max[87 - Average 87]	1	RD_ONLY	
8541	FLOAT	Archive_Max[88 - Average 88]	1	RD_ONLY	
8542	FLOAT	Archive_Max[89 - Average 89]	1	RD_ONLY	
8543	FLOAT	Archive_Max[90 - Average 90]	1	RD_ONLY	
8544	FLOAT	Archive_Max[91 - Average 91]	1	RD_ONLY	
8545	FLOAT	Archive_Max[92 - Average 92]	1	RD_ONLY	
8546	FLOAT	Archive_Max[93 - Average 93]	1	RD_ONLY	
8547	FLOAT	Archive_Max[94 - Average 94]	1	RD_ONLY	
8548	FLOAT	Archive_Max[95 - Average 95]	1	RD_ONLY	
8549	FLOAT	Archive_Max[96 - Average 96]	1	RD_ONLY	
8550	FLOAT	Archive_Max[97 - Average 97]	1	RD_ONLY	
8551	FLOAT	Archive_Max[98 - Average 98]	1	RD_ONLY	
8552	FLOAT	Archive_Max[99 - Average 99]	1	RD_ONLY	
8553	FLOAT	Archive_Max[100 - Average 100]	1	RD_ONLY	
8554	FLOAT	Archive_Max[101 - Average 101]	1	RD_ONLY	
8555	FLOAT	Archive_Max[102 - Average 102]	1	RD_ONLY	
8556	FLOAT	Archive_Max[103 - Average 103]	1	RD_ONLY	
8557	FLOAT	Archive_Max[104 - Average 104]	1	RD_ONLY	
8558	FLOAT	Archive_Max[105 - Average 105]	1	RD_ONLY	
8559	FLOAT	Archive_Max[106 - Average 106]	1	RD_ONLY	
8560	FLOAT	Archive_Max[107 - Average 107]	1	RD_ONLY	
8561	FLOAT	Archive_Max[108 - Average 108]	1	RD_ONLY	
8562	FLOAT	Archive_Max[109 - Average 109]	1	RD_ONLY	
8563	FLOAT	Archive_Max[110 - Average 110]	1	RD_ONLY	
8564	FLOAT	Archive_Max[111 - Average 111]	1	RD_ONLY	
8565	FLOAT	Archive_Max[112 - Average 112]	1	RD_ONLY	
8566	FLOAT	Archive_Max[113 - Average 113]	1	RD_ONLY	
8567	FLOAT	Archive_Max[114 - Average 114]	1	RD_ONLY	
8568	FLOAT	Archive_Max[115 - Average 115]	1	RD_ONLY	
8569	FLOAT	Archive_Max[116 - Average 116]	1	RD_ONLY	
8570	FLOAT	Archive_Max[117 - Average 117]	1	RD_ONLY	
8571	FLOAT	Archive_Max[118 - Average 118]	1	RD_ONLY	
8572	FLOAT	Archive_Max[119 - Average 119]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8573	FLOAT	Archive_Max[120 - Average 120]	1	RD_ONLY	
8574	FLOAT	Archive_Max[121 - Average 121]	1	RD_ONLY	
8575	FLOAT	Archive_Max[122 - Average 122]	1	RD_ONLY	
8576	FLOAT	Archive_Max[123 - Average 123]	1	RD_ONLY	
8577	FLOAT	Archive_Max[124 - Average 124]	1	RD_ONLY	
8578	FLOAT	Archive_Max[125 - Average 125]	1	RD_ONLY	
8579	FLOAT	Archive_Max[126 - Average 126]	1	RD_ONLY	
8580	FLOAT	Archive_Max[127 - Average 127]	1	RD_ONLY	
8581	FLOAT	Archive_Max[128 - Average 128]	1	RD_ONLY	
8582	FLOAT	Archive_Max[129 - Average 129]	1	RD_ONLY	
8583	FLOAT	Archive_Max[130 - Average 130]	1	RD_ONLY	
8584	FLOAT	Archive_Max[131 - Average 131]	1	RD_ONLY	
8585	FLOAT	Archive_Max[132 - Average 132]	1	RD_ONLY	
8586	FLOAT	Archive_Max[133 - Average 133]	1	RD_ONLY	
8587	FLOAT	Archive_Max[134 - Average 134]	1	RD_ONLY	
8588	FLOAT	Archive_Max[135 - Average 135]	1	RD_ONLY	
8589	FLOAT	Archive_Max[136 - Average 136]	1	RD_ONLY	
8590	FLOAT	Archive_Max[137 - Average 137]	1	RD_ONLY	
8591	FLOAT	Archive_Max[138 - Average 138]	1	RD_ONLY	
8592	FLOAT	Archive_Max[139 - Average 139]	1	RD_ONLY	
8593	FLOAT	Archive_Max[140 - Average 140]	1	RD_ONLY	
8594	FLOAT	Archive_Max[141 - Average 141]	1	RD_ONLY	
8595	FLOAT	Archive_Max[142 - Average 142]	1	RD_ONLY	
8596	FLOAT	Archive_Max[143 - Average 143]	1	RD_ONLY	
8597	FLOAT	Archive_Max[144 - Average 144]	1	RD_ONLY	
8598	FLOAT	Archive_Max[145 - Average 145]	1	RD_ONLY	
8599	FLOAT	Archive_Max[146 - Average 146]	1	RD_ONLY	
8600	FLOAT	Archive_Max[147 - Average 147]	1	RD_ONLY	
8601	FLOAT	Archive_Max[148 - Average 148]	1	RD_ONLY	
8602	FLOAT	Archive_Max[149 - Average 149]	1	RD_ONLY	
8603	FLOAT	Archive_Max[150 - Average 150]	1	RD_ONLY	
8604	FLOAT	Archive_Max[151 - Average 151]	1	RD_ONLY	
8605	FLOAT	Archive_Max[152 - Average 152]	1	RD_ONLY	
8606	FLOAT	Archive_Max[153 - Average 153]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8607	FLOAT	Archive_Max[154 - Average 154]	1	RD_ONLY	
8608	FLOAT	Archive_Max[155 - Average 155]	1	RD_ONLY	
8609	FLOAT	Archive_Max[156 - Average 156]	1	RD_ONLY	
8610	FLOAT	Archive_Max[157 - Average 157]	1	RD_ONLY	
8611	FLOAT	Archive_Max[158 - Average 158]	1	RD_ONLY	
8612	FLOAT	Archive_Max[159 - Average 159]	1	RD_ONLY	
8613	FLOAT	Archive_Max[160 - Average 160]	1	RD_ONLY	
8614	FLOAT	Archive_Max[161 - Average 161]	1	RD_ONLY	
8615	FLOAT	Archive_Max[162 - Average 162]	1	RD_ONLY	
8616	FLOAT	Archive_Max[163 - Average 163]	1	RD_ONLY	
8617	FLOAT	Archive_Max[164 - Average 164]	1	RD_ONLY	
8618	FLOAT	Archive_Max[165 - Average 165]	1	RD_ONLY	
8619	FLOAT	Archive_Max[166 - Average 166]	1	RD_ONLY	
8620	FLOAT	Archive_Max[167 - Average 167]	1	RD_ONLY	
8621	FLOAT	Archive_Max[168 - Average 168]	1	RD_ONLY	
8622	FLOAT	Archive_Max[169 - Average 169]	1	RD_ONLY	
8623	FLOAT	Archive_Max[170 - Average 170]	1	RD_ONLY	
8624	FLOAT	Archive_Max[171 - Average 171]	1	RD_ONLY	
8625	FLOAT	Archive_Max[172 - Average 172]	1	RD_ONLY	
8626	FLOAT	Archive_Max[173 - Average 173]	1	RD_ONLY	
8627	FLOAT	Archive_Max[174 - Average 174]	1	RD_ONLY	
8628	FLOAT	Archive_Max[175 - Average 175]	1	RD_ONLY	
8629	FLOAT	Archive_Max[176 - Average 176]	1	RD_ONLY	
8630	FLOAT	Archive_Max[177 - Average 177]	1	RD_ONLY	
8631	FLOAT	Archive_Max[178 - Average 178]	1	RD_ONLY	
8632	FLOAT	Archive_Max[179 - Average 179]	1	RD_ONLY	
8633	FLOAT	Archive_Max[180 - Average 180]	1	RD_ONLY	
8634	FLOAT	Archive_Max[181 - Average 181]	1	RD_ONLY	
8635	FLOAT	Archive_Max[182 - Average 182]	1	RD_ONLY	
8636	FLOAT	Archive_Max[183 - Average 183]	1	RD_ONLY	
8637	FLOAT	Archive_Max[184 - Average 184]	1	RD_ONLY	
8638	FLOAT	Archive_Max[185 - Average 185]	1	RD_ONLY	
8639	FLOAT	Archive_Max[186 - Average 186]	1	RD_ONLY	
8640	FLOAT	Archive_Max[187 - Average 187]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8641	FLOAT	Archive_Max[188 - Average 188]	1	RD_ONLY	
8642	FLOAT	Archive_Max[189 - Average 189]	1	RD_ONLY	
8643	FLOAT	Archive_Max[190 - Average 190]	1	RD_ONLY	
8644	FLOAT	Archive_Max[191 - Average 191]	1	RD_ONLY	
8645	FLOAT	Archive_Max[192 - Average 192]	1	RD_ONLY	
8646	FLOAT	Archive_Max[193 - Average 193]	1	RD_ONLY	
8647	FLOAT	Archive_Max[194 - Average 194]	1	RD_ONLY	
8648	FLOAT	Archive_Max[195 - Average 195]	1	RD_ONLY	
8649	FLOAT	Archive_Max[196 - Average 196]	1	RD_ONLY	
8650	FLOAT	Archive_Max[197 - Average 197]	1	RD_ONLY	
8651	FLOAT	Archive_Max[198 - Average 198]	1	RD_ONLY	
8652	FLOAT	Archive_Max[199 - Average 199]	1	RD_ONLY	
8653	FLOAT	Archive_Max[200 - Average 200]	1	RD_ONLY	
8654	FLOAT	Archive_Max[201 - Average 201]	1	RD_ONLY	
8655	FLOAT	Archive_Max[202 - Average 202]	1	RD_ONLY	
8656	FLOAT	Archive_Max[203 - Average 203]	1	RD_ONLY	
8657	FLOAT	Archive_Max[204 - Average 204]	1	RD_ONLY	
8658	FLOAT	Archive_Max[205 - Average 205]	1	RD_ONLY	
8659	FLOAT	Archive_Max[206 - Average 206]	1	RD_ONLY	
8660	FLOAT	Archive_Max[207 - Average 207]	1	RD_ONLY	
8661	FLOAT	Archive_Max[208 - Average 208]	1	RD_ONLY	
8662	FLOAT	Archive_Max[209 - Average 209]	1	RD_ONLY	
8663	FLOAT	Archive_Max[210 - Average 210]	1	RD_ONLY	
8664	FLOAT	Archive_Max[211 - Average 211]	1	RD_ONLY	
8665	FLOAT	Archive_Max[212 - Average 212]	1	RD_ONLY	
8666	FLOAT	Archive_Max[213 - Average 213]	1	RD_ONLY	
8667	FLOAT	Archive_Max[214 - Average 214]	1	RD_ONLY	
8668	FLOAT	Archive_Max[215 - Average 215]	1	RD_ONLY	
8669	FLOAT	Archive_Max[216 - Average 216]	1	RD_ONLY	
8670	FLOAT	Archive_Max[217 - Average 217]	1	RD_ONLY	
8671	FLOAT	Archive_Max[218 - Average 218]	1	RD_ONLY	
8672	FLOAT	Archive_Max[219 - Average 219]	1	RD_ONLY	
8673	FLOAT	Archive_Max[220 - Average 220]	1	RD_ONLY	
8674	FLOAT	Archive_Max[221 - Average 221]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8675	FLOAT	Archive_Max[222 - Average 222]	1	RD_ONLY	
8676	FLOAT	Archive_Max[223 - Average 223]	1	RD_ONLY	
8677	FLOAT	Archive_Max[224 - Average 224]	1	RD_ONLY	
8678	FLOAT	Archive_Max[225 - Average 225]	1	RD_ONLY	
8679	FLOAT	Archive_Max[226 - Average 226]	1	RD_ONLY	
8680	FLOAT	Archive_Max[227 - Average 227]	1	RD_ONLY	
8681	FLOAT	Archive_Max[228 - Average 228]	1	RD_ONLY	
8682	FLOAT	Archive_Max[229 - Average 229]	1	RD_ONLY	
8683	FLOAT	Archive_Max[230 - Average 230]	1	RD_ONLY	
8684	FLOAT	Archive_Max[231 - Average 231]	1	RD_ONLY	
8685	FLOAT	Archive_Max[232 - Average 232]	1	RD_ONLY	
8686	FLOAT	Archive_Max[233 - Average 233]	1	RD_ONLY	
8687	FLOAT	Archive_Max[234 - Average 234]	1	RD_ONLY	
8688	FLOAT	Archive_Max[235 - Average 235]	1	RD_ONLY	
8689	FLOAT	Archive_Max[236 - Average 236]	1	RD_ONLY	
8690	FLOAT	Archive_Max[237 - Average 237]	1	RD_ONLY	
8691	FLOAT	Archive_Max[238 - Average 238]	1	RD_ONLY	
8692	FLOAT	Archive_Max[239 - Average 239]	1	RD_ONLY	
8693	FLOAT	Archive_Max[240 - Average 240]	1	RD_ONLY	
8694	FLOAT	Archive_Max[241 - Average 241]	1	RD_ONLY	
8695	FLOAT	Archive_Max[242 - Average 242]	1	RD_ONLY	
8696	FLOAT	Archive_Max[243 - Average 243]	1	RD_ONLY	
8697	FLOAT	Archive_Max[244 - Average 244]	1	RD_ONLY	
8698	FLOAT	Archive_Max[245 - Average 245]	1	RD_ONLY	
8699	FLOAT	Archive_Max[246 - Average 246]	1	RD_ONLY	
8700	FLOAT	Archive_Max[247 - Average 247]	1	RD_ONLY	
8701	FLOAT	Archive_Max[248 - Average 248]	1	RD_ONLY	
8702	FLOAT	Archive_Max[249 - Average 249]	1	RD_ONLY	
8703	FLOAT	Archive_Max[250 - Average 250]	1	RD_ONLY	
8704	FLOAT	Unused		RD_ONLY	
8705	FLOAT	Unused		RD_ONLY	
8706	FLOAT	Unused		RD_ONLY	
8707	FLOAT	Unused		RD_ONLY	
8708	FLOAT	Archive_Min[1 - Average 1]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8709	FLOAT	Archive_Min[2 - Average 2]	1	RD_ONLY	
8710	FLOAT	Archive_Min[3 - Average 3]	1	RD_ONLY	
8711	FLOAT	Archive_Min[4 - Average 4]	1	RD_ONLY	
8712	FLOAT	Archive_Min[5 - Average 5]	1	RD_ONLY	
8713	FLOAT	Archive_Min[6 - Average 6]	1	RD_ONLY	
8714	FLOAT	Archive_Min[7 - Average 7]	1	RD_ONLY	
8715	FLOAT	Archive_Min[8 - Average 8]	1	RD_ONLY	
8716	FLOAT	Archive_Min[9 - Average 9]	1	RD_ONLY	
8717	FLOAT	Archive_Min[10 - Average 10]	1	RD_ONLY	
8718	FLOAT	Archive_Min[11 - Average 11]	1	RD_ONLY	
8719	FLOAT	Archive_Min[12 - Average 12]	1	RD_ONLY	
8720	FLOAT	Archive_Min[13 - Average 13]	1	RD_ONLY	
8721	FLOAT	Archive_Min[14 - Average 14]	1	RD_ONLY	
8722	FLOAT	Archive_Min[15 - Average 15]	1	RD_ONLY	
8723	FLOAT	Archive_Min[16 - Average 16]	1	RD_ONLY	
8724	FLOAT	Archive_Min[17 - Average 17]	1	RD_ONLY	
8725	FLOAT	Archive_Min[18 - Average 18]	1	RD_ONLY	
8726	FLOAT	Archive_Min[19 - Average 19]	1	RD_ONLY	
8727	FLOAT	Archive_Min[20 - Average 20]	1	RD_ONLY	
8728	FLOAT	Archive_Min[21 - Average 21]	1	RD_ONLY	
8729	FLOAT	Archive_Min[22 - Average 22]	1	RD_ONLY	
8730	FLOAT	Archive_Min[23 - Average 23]	1	RD_ONLY	
8731	FLOAT	Archive_Min[24 - Average 24]	1	RD_ONLY	
8732	FLOAT	Archive_Min[25 - Average 25]	1	RD_ONLY	
8733	FLOAT	Archive_Min[26 - Average 26]	1	RD_ONLY	
8734	FLOAT	Archive_Min[27 - Average 27]	1	RD_ONLY	
8735	FLOAT	Archive_Min[28 - Average 28]	1	RD_ONLY	
8736	FLOAT	Archive_Min[29 - Average 29]	1	RD_ONLY	
8737	FLOAT	Archive_Min[30 - Average 30]	1	RD_ONLY	
8738	FLOAT	Archive_Min[31 - Average 31]	1	RD_ONLY	
8739	FLOAT	Archive_Min[32 - Average 32]	1	RD_ONLY	
8740	FLOAT	Archive_Min[33 - Average 33]	1	RD_ONLY	
8741	FLOAT	Archive_Min[34 - Average 34]	1	RD_ONLY	
8742	FLOAT	Archive_Min[35 - Average 35]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8743	FLOAT	Archive_Min[36 - Average 36]	1	RD_ONLY	
8744	FLOAT	Archive_Min[37 - Average 37]	1	RD_ONLY	
8745	FLOAT	Archive_Min[38 - Average 38]	1	RD_ONLY	
8746	FLOAT	Archive_Min[39 - Average 39]	1	RD_ONLY	
8747	FLOAT	Archive_Min[40 - Average 40]	1	RD_ONLY	
8748	FLOAT	Archive_Min[41 - Average 41]	1	RD_ONLY	
8749	FLOAT	Archive_Min[42 - Average 42]	1	RD_ONLY	
8750	FLOAT	Archive_Min[43 - Average 43]	1	RD_ONLY	
8751	FLOAT	Archive_Min[44 - Average 44]	1	RD_ONLY	
8752	FLOAT	Archive_Min[45 - Average 45]	1	RD_ONLY	
8753	FLOAT	Archive_Min[46 - Average 46]	1	RD_ONLY	
8754	FLOAT	Archive_Min[47 - Average 47]	1	RD_ONLY	
8755	FLOAT	Archive_Min[48 - Average 48]	1	RD_ONLY	
8756	FLOAT	Archive_Min[49 - Average 49]	1	RD_ONLY	
8757	FLOAT	Archive_Min[50 - Average 50]	1	RD_ONLY	
8758	FLOAT	Archive_Min[51 - Average 51]	1	RD_ONLY	
8759	FLOAT	Archive_Min[52 - Average 52]	1	RD_ONLY	
8760	FLOAT	Archive_Min[53 - Average 53]	1	RD_ONLY	
8761	FLOAT	Archive_Min[54 - Average 54]	1	RD_ONLY	
8762	FLOAT	Archive_Min[55 - Average 55]	1	RD_ONLY	
8763	FLOAT	Archive_Min[56 - Average 56]	1	RD_ONLY	
8764	FLOAT	Archive_Min[57 - Average 57]	1	RD_ONLY	
8765	FLOAT	Archive_Min[58 - Average 58]	1	RD_ONLY	
8766	FLOAT	Archive_Min[59 - Average 59]	1	RD_ONLY	
8767	FLOAT	Archive_Min[60 - Average 60]	1	RD_ONLY	
8768	FLOAT	Archive_Min[61 - Average 61]	1	RD_ONLY	
8769	FLOAT	Archive_Min[62 - Average 62]	1	RD_ONLY	
8770	FLOAT	Archive_Min[63 - Average 63]	1	RD_ONLY	
8771	FLOAT	Archive_Min[64 - Average 64]	1	RD_ONLY	
8772	FLOAT	Archive_Min[65 - Average 65]	1	RD_ONLY	
8773	FLOAT	Archive_Min[66 - Average 66]	1	RD_ONLY	
8774	FLOAT	Archive_Min[67 - Average 67]	1	RD_ONLY	
8775	FLOAT	Archive_Min[68 - Average 68]	1	RD_ONLY	
8776	FLOAT	Archive_Min[69 - Average 69]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8777	FLOAT	Archive_Min[70 - Average 70]	1	RD_ONLY	
8778	FLOAT	Archive_Min[71 - Average 71]	1	RD_ONLY	
8779	FLOAT	Archive_Min[72 - Average 72]	1	RD_ONLY	
8780	FLOAT	Archive_Min[73 - Average 73]	1	RD_ONLY	
8781	FLOAT	Archive_Min[74 - Average 74]	1	RD_ONLY	
8782	FLOAT	Archive_Min[75 - Average 75]	1	RD_ONLY	
8783	FLOAT	Archive_Min[76 - Average 76]	1	RD_ONLY	
8784	FLOAT	Archive_Min[77 - Average 77]	1	RD_ONLY	
8785	FLOAT	Archive_Min[78 - Average 78]	1	RD_ONLY	
8786	FLOAT	Archive_Min[79 - Average 79]	1	RD_ONLY	
8787	FLOAT	Archive_Min[80 - Average 80]	1	RD_ONLY	
8788	FLOAT	Archive_Min[81 - Average 81]	1	RD_ONLY	
8789	FLOAT	Archive_Min[82 - Average 82]	1	RD_ONLY	
8790	FLOAT	Archive_Min[83 - Average 83]	1	RD_ONLY	
8791	FLOAT	Archive_Min[84 - Average 84]	1	RD_ONLY	
8792	FLOAT	Archive_Min[85 - Average 85]	1	RD_ONLY	
8793	FLOAT	Archive_Min[86 - Average 86]	1	RD_ONLY	
8794	FLOAT	Archive_Min[87 - Average 87]	1	RD_ONLY	
8795	FLOAT	Archive_Min[88 - Average 88]	1	RD_ONLY	
8796	FLOAT	Archive_Min[89 - Average 89]	1	RD_ONLY	
8797	FLOAT	Archive_Min[90 - Average 90]	1	RD_ONLY	
8798	FLOAT	Archive_Min[91 - Average 91]	1	RD_ONLY	
8799	FLOAT	Archive_Min[92 - Average 92]	1	RD_ONLY	
8800	FLOAT	Archive_Min[93 - Average 93]	1	RD_ONLY	
8801	FLOAT	Archive_Min[94 - Average 94]	1	RD_ONLY	
8802	FLOAT	Archive_Min[95 - Average 95]	1	RD_ONLY	
8803	FLOAT	Archive_Min[96 - Average 96]	1	RD_ONLY	
8804	FLOAT	Archive_Min[97 - Average 97]	1	RD_ONLY	
8805	FLOAT	Archive_Min[98 - Average 98]	1	RD_ONLY	
8806	FLOAT	Archive_Min[99 - Average 99]	1	RD_ONLY	
8807	FLOAT	Archive_Min[100 - Average 100]	1	RD_ONLY	
8808	FLOAT	Archive_Min[101 - Average 101]	1	RD_ONLY	
8809	FLOAT	Archive_Min[102 - Average 102]	1	RD_ONLY	
8810	FLOAT	Archive_Min[103 - Average 103]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8811	FLOAT	Archive_Min[104 - Average 104]	1	RD_ONLY	
8812	FLOAT	Archive_Min[105 - Average 105]	1	RD_ONLY	
8813	FLOAT	Archive_Min[106 - Average 106]	1	RD_ONLY	
8814	FLOAT	Archive_Min[107 - Average 107]	1	RD_ONLY	
8815	FLOAT	Archive_Min[108 - Average 108]	1	RD_ONLY	
8816	FLOAT	Archive_Min[109 - Average 109]	1	RD_ONLY	
8817	FLOAT	Archive_Min[110 - Average 110]	1	RD_ONLY	
8818	FLOAT	Archive_Min[111 - Average 111]	1	RD_ONLY	
8819	FLOAT	Archive_Min[112 - Average 112]	1	RD_ONLY	
8820	FLOAT	Archive_Min[113 - Average 113]	1	RD_ONLY	
8821	FLOAT	Archive_Min[114 - Average 114]	1	RD_ONLY	
8822	FLOAT	Archive_Min[115 - Average 115]	1	RD_ONLY	
8823	FLOAT	Archive_Min[116 - Average 116]	1	RD_ONLY	
8824	FLOAT	Archive_Min[117 - Average 117]	1	RD_ONLY	
8825	FLOAT	Archive_Min[118 - Average 118]	1	RD_ONLY	
8826	FLOAT	Archive_Min[119 - Average 119]	1	RD_ONLY	
8827	FLOAT	Archive_Min[120 - Average 120]	1	RD_ONLY	
8828	FLOAT	Archive_Min[121 - Average 121]	1	RD_ONLY	
8829	FLOAT	Archive_Min[122 - Average 122]	1	RD_ONLY	
8830	FLOAT	Archive_Min[123 - Average 123]	1	RD_ONLY	
8831	FLOAT	Archive_Min[124 - Average 124]	1	RD_ONLY	
8832	FLOAT	Archive_Min[125 - Average 125]	1	RD_ONLY	
8833	FLOAT	Archive_Min[126 - Average 126]	1	RD_ONLY	
8834	FLOAT	Archive_Min[127 - Average 127]	1	RD_ONLY	
8835	FLOAT	Archive_Min[128 - Average 128]	1	RD_ONLY	
8836	FLOAT	Archive_Min[129 - Average 129]	1	RD_ONLY	
8837	FLOAT	Archive_Min[130 - Average 130]	1	RD_ONLY	
8838	FLOAT	Archive_Min[131 - Average 131]	1	RD_ONLY	
8839	FLOAT	Archive_Min[132 - Average 132]	1	RD_ONLY	
8840	FLOAT	Archive_Min[133 - Average 133]	1	RD_ONLY	
8841	FLOAT	Archive_Min[134 - Average 134]	1	RD_ONLY	
8842	FLOAT	Archive_Min[135 - Average 135]	1	RD_ONLY	
8843	FLOAT	Archive_Min[136 - Average 136]	1	RD_ONLY	
8844	FLOAT	Archive_Min[137 - Average 137]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8845	FLOAT	Archive_Min[138 - Average 138]	1	RD_ONLY	
8846	FLOAT	Archive_Min[139 - Average 139]	1	RD_ONLY	
8847	FLOAT	Archive_Min[140 - Average 140]	1	RD_ONLY	
8848	FLOAT	Archive_Min[141 - Average 141]	1	RD_ONLY	
8849	FLOAT	Archive_Min[142 - Average 142]	1	RD_ONLY	
8850	FLOAT	Archive_Min[143 - Average 143]	1	RD_ONLY	
8851	FLOAT	Archive_Min[144 - Average 144]	1	RD_ONLY	
8852	FLOAT	Archive_Min[145 - Average 145]	1	RD_ONLY	
8853	FLOAT	Archive_Min[146 - Average 146]	1	RD_ONLY	
8854	FLOAT	Archive_Min[147 - Average 147]	1	RD_ONLY	
8855	FLOAT	Archive_Min[148 - Average 148]	1	RD_ONLY	
8856	FLOAT	Archive_Min[149 - Average 149]	1	RD_ONLY	
8857	FLOAT	Archive_Min[150 - Average 150]	1	RD_ONLY	
8858	FLOAT	Archive_Min[151 - Average 151]	1	RD_ONLY	
8859	FLOAT	Archive_Min[152 - Average 152]	1	RD_ONLY	
8860	FLOAT	Archive_Min[153 - Average 153]	1	RD_ONLY	
8861	FLOAT	Archive_Min[154 - Average 154]	1	RD_ONLY	
8862	FLOAT	Archive_Min[155 - Average 155]	1	RD_ONLY	
8863	FLOAT	Archive_Min[156 - Average 156]	1	RD_ONLY	
8864	FLOAT	Archive_Min[157 - Average 157]	1	RD_ONLY	
8865	FLOAT	Archive_Min[158 - Average 158]	1	RD_ONLY	
8866	FLOAT	Archive_Min[159 - Average 159]	1	RD_ONLY	
8867	FLOAT	Archive_Min[160 - Average 160]	1	RD_ONLY	
8868	FLOAT	Archive_Min[161 - Average 161]	1	RD_ONLY	
8869	FLOAT	Archive_Min[162 - Average 162]	1	RD_ONLY	
8870	FLOAT	Archive_Min[163 - Average 163]	1	RD_ONLY	
8871	FLOAT	Archive_Min[164 - Average 164]	1	RD_ONLY	
8872	FLOAT	Archive_Min[165 - Average 165]	1	RD_ONLY	
8873	FLOAT	Archive_Min[166 - Average 166]	1	RD_ONLY	
8874	FLOAT	Archive_Min[167 - Average 167]	1	RD_ONLY	
8875	FLOAT	Archive_Min[168 - Average 168]	1	RD_ONLY	
8876	FLOAT	Archive_Min[169 - Average 169]	1	RD_ONLY	
8877	FLOAT	Archive_Min[170 - Average 170]	1	RD_ONLY	
8878	FLOAT	Archive_Min[171 - Average 171]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8879	FLOAT	Archive_Min[172 - Average 172]	1	RD_ONLY	
8880	FLOAT	Archive_Min[173 - Average 173]	1	RD_ONLY	
8881	FLOAT	Archive_Min[174 - Average 174]	1	RD_ONLY	
8882	FLOAT	Archive_Min[175 - Average 175]	1	RD_ONLY	
8883	FLOAT	Archive_Min[176 - Average 176]	1	RD_ONLY	
8884	FLOAT	Archive_Min[177 - Average 177]	1	RD_ONLY	
8885	FLOAT	Archive_Min[178 - Average 178]	1	RD_ONLY	
8886	FLOAT	Archive_Min[179 - Average 179]	1	RD_ONLY	
8887	FLOAT	Archive_Min[180 - Average 180]	1	RD_ONLY	
8888	FLOAT	Archive_Min[181 - Average 181]	1	RD_ONLY	
8889	FLOAT	Archive_Min[182 - Average 182]	1	RD_ONLY	
8890	FLOAT	Archive_Min[183 - Average 183]	1	RD_ONLY	
8891	FLOAT	Archive_Min[184 - Average 184]	1	RD_ONLY	
8892	FLOAT	Archive_Min[185 - Average 185]	1	RD_ONLY	
8893	FLOAT	Archive_Min[186 - Average 186]	1	RD_ONLY	
8894	FLOAT	Archive_Min[187 - Average 187]	1	RD_ONLY	
8895	FLOAT	Archive_Min[188 - Average 188]	1	RD_ONLY	
8896	FLOAT	Archive_Min[189 - Average 189]	1	RD_ONLY	
8897	FLOAT	Archive_Min[190 - Average 190]	1	RD_ONLY	
8898	FLOAT	Archive_Min[191 - Average 191]	1	RD_ONLY	
8899	FLOAT	Archive_Min[192 - Average 192]	1	RD_ONLY	
8900	FLOAT	Archive_Min[193 - Average 193]	1	RD_ONLY	
8901	FLOAT	Archive_Min[194 - Average 194]	1	RD_ONLY	
8902	FLOAT	Archive_Min[195 - Average 195]	1	RD_ONLY	
8903	FLOAT	Archive_Min[196 - Average 196]	1	RD_ONLY	
8904	FLOAT	Archive_Min[197 - Average 197]	1	RD_ONLY	
8905	FLOAT	Archive_Min[198 - Average 198]	1	RD_ONLY	
8906	FLOAT	Archive_Min[199 - Average 199]	1	RD_ONLY	
8907	FLOAT	Archive_Min[200 - Average 200]	1	RD_ONLY	
8908	FLOAT	Archive_Min[201 - Average 201]	1	RD_ONLY	
8909	FLOAT	Archive_Min[202 - Average 202]	1	RD_ONLY	
8910	FLOAT	Archive_Min[203 - Average 203]	1	RD_ONLY	
8911	FLOAT	Archive_Min[204 - Average 204]	1	RD_ONLY	
8912	FLOAT	Archive_Min[205 - Average 205]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8913	FLOAT	Archive_Min[206 - Average 206]	1	RD_ONLY	
8914	FLOAT	Archive_Min[207 - Average 207]	1	RD_ONLY	
8915	FLOAT	Archive_Min[208 - Average 208]	1	RD_ONLY	
8916	FLOAT	Archive_Min[209 - Average 209]	1	RD_ONLY	
8917	FLOAT	Archive_Min[210 - Average 210]	1	RD_ONLY	
8918	FLOAT	Archive_Min[211 - Average 211]	1	RD_ONLY	
8919	FLOAT	Archive_Min[212 - Average 212]	1	RD_ONLY	
8920	FLOAT	Archive_Min[213 - Average 213]	1	RD_ONLY	
8921	FLOAT	Archive_Min[214 - Average 214]	1	RD_ONLY	
8922	FLOAT	Archive_Min[215 - Average 215]	1	RD_ONLY	
8923	FLOAT	Archive_Min[216 - Average 216]	1	RD_ONLY	
8924	FLOAT	Archive_Min[217 - Average 217]	1	RD_ONLY	
8925	FLOAT	Archive_Min[218 - Average 218]	1	RD_ONLY	
8926	FLOAT	Archive_Min[219 - Average 219]	1	RD_ONLY	
8927	FLOAT	Archive_Min[220 - Average 220]	1	RD_ONLY	
8928	FLOAT	Archive_Min[221 - Average 221]	1	RD_ONLY	
8929	FLOAT	Archive_Min[222 - Average 222]	1	RD_ONLY	
8930	FLOAT	Archive_Min[223 - Average 223]	1	RD_ONLY	
8931	FLOAT	Archive_Min[224 - Average 224]	1	RD_ONLY	
8932	FLOAT	Archive_Min[225 - Average 225]	1	RD_ONLY	
8933	FLOAT	Archive_Min[226 - Average 226]	1	RD_ONLY	
8934	FLOAT	Archive_Min[227 - Average 227]	1	RD_ONLY	
8935	FLOAT	Archive_Min[228 - Average 228]	1	RD_ONLY	
8936	FLOAT	Archive_Min[229 - Average 229]	1	RD_ONLY	
8937	FLOAT	Archive_Min[230 - Average 230]	1	RD_ONLY	
8938	FLOAT	Archive_Min[231 - Average 231]	1	RD_ONLY	
8939	FLOAT	Archive_Min[232 - Average 232]	1	RD_ONLY	
8940	FLOAT	Archive_Min[233 - Average 233]	1	RD_ONLY	
8941	FLOAT	Archive_Min[234 - Average 234]	1	RD_ONLY	
8942	FLOAT	Archive_Min[235 - Average 235]	1	RD_ONLY	
8943	FLOAT	Archive_Min[236 - Average 236]	1	RD_ONLY	
8944	FLOAT	Archive_Min[237 - Average 237]	1	RD_ONLY	
8945	FLOAT	Archive_Min[238 - Average 238]	1	RD_ONLY	
8946	FLOAT	Archive_Min[239 - Average 239]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8947	FLOAT	Archive_Min[240 - Average 240]	1	RD_ONLY	
8948	FLOAT	Archive_Min[241 - Average 241]	1	RD_ONLY	
8949	FLOAT	Archive_Min[242 - Average 242]	1	RD_ONLY	
8950	FLOAT	Archive_Min[243 - Average 243]	1	RD_ONLY	
8951	FLOAT	Archive_Min[244 - Average 244]	1	RD_ONLY	
8952	FLOAT	Archive_Min[245 - Average 245]	1	RD_ONLY	
8953	FLOAT	Archive_Min[246 - Average 246]	1	RD_ONLY	
8954	FLOAT	Archive_Min[247 - Average 247]	1	RD_ONLY	
8955	FLOAT	Archive_Min[248 - Average 248]	1	RD_ONLY	
8956	FLOAT	Archive_Min[249 - Average 249]	1	RD_ONLY	
8957	FLOAT	Archive_Min[250 - Average 250]	1	RD_ONLY	
8958	FLOAT	Unused		RD_ONLY	
8959	FLOAT	Unused		RD_ONLY	
8960	FLOAT	Unused		RD_ONLY	
8961	FLOAT	Unused		RD_ONLY	
8962	FLOAT	Unused		RD_ONLY	
8963	FLOAT	Clear All Alarms		RD_WR	
8964	FLOAT	Acknowledge All Alarms		RD_WR	
9006	INT	Current Time(time_t)		RD_WR	MM
9007	INT	Current Time(time_t)		RD_WR	DD
9008	INT	Current Time(time_t)		RD_WR	YYYY
9009	INT	Current Time(time_t)		RD_WR	hh
9010	INT	Current Time(time_t)		RD_WR	mm
9011	INT	Current Time(time_t)		RD_WR	ss
9012	INT	Unused		RD_ONLY	
9013	INT	Modbus Id[1 - Port 0]		RD_ONLY	
9014	INT	Site Id		RD_WR	
9022	INT	Analysis Time		RD_ONLY	
9023	INT	Unused		RD_ONLY	
9024	INT	Cycle Time		RD_ONLY	
9025	INT	Unused		RD_ONLY	
9026	INT	Run Time		RD_ONLY	
9027	INT	Unused		RD_ONLY	
9028	INT	Current Stream		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
9029	INT	Unused		RD_ONLY	
9030	INT	GC Control_Analyser Control (Write Reg 9030)		RD_WR	
9031	INT	Unused		RD_ONLY	
9032	INT	GC Calibrating		RD_ONLY	
9033	INT	Unused		RD_ONLY	
9034	INT	Active Alarm Flag		RD_ONLY	
9035	INT	UnAck Alarm Flag		RD_ONLY	
9036	INT	Hourly Average Reset time		RD_ONLY	YY
9037	INT	Hourly Average Reset time		RD_ONLY	MM
9038	INT	Hourly Average Reset time		RD_ONLY	DD
9039	INT	Hourly Average Reset time		RD_ONLY	hh
9040	INT	Hourly Average Reset time		RD_ONLY	mm
9041	INT	Daily Average Reset time		RD_ONLY	YY
9042	INT	Daily Average Reset time		RD_ONLY	MM
9043	INT	Daily Average Reset time		RD_ONLY	DD
9044	INT	Daily Average Reset time		RD_ONLY	hh
9045	INT	Daily Average Reset time		RD_ONLY	mm
9046	INT	Weekly Average Reset time		RD_ONLY	YY
9047	INT	Weekly Average Reset time		RD_ONLY	MM
9048	INT	Weekly Average Reset time		RD_ONLY	DD
9049	INT	Weekly Average Reset time		RD_ONLY	hh
9050	INT	Weekly Average Reset time		RD_ONLY	mm
9051	INT	Monthly Average Reset time		RD_ONLY	YY
9052	INT	Monthly Average Reset time		RD_ONLY	MM
9053	INT	Monthly Average Reset time		RD_ONLY	DD
9054	INT	Monthly Average Reset time		RD_ONLY	hh
9055	INT	Monthly Average Reset time		RD_ONLY	mm
9056	INT	Variable Average Reset time		RD_ONLY	YY
9057	INT	Variable Average Reset time		RD_ONLY	MM
9058	INT	Variable Average Reset time		RD_ONLY	DD
9059	INT	Variable Average Reset time		RD_ONLY	hh
9060	INT	Variable Average Reset time		RD_ONLY	mm

3001..3016/3017..3032 (Component Code): Component Codes for components whose mole % results are available in Registers 7001..7016.

3033 (Run Time in 1/30th Sec): Current GC Run Time. If Run Time = 200 seconds, then this register reads **6000**.

3034 (Last Analy_Stream Number): Stream that was analyzed last.

3035 (Last Analy_CDT Stream Mask):

- Bit 0: Holds **1** if Stream 1 uses CDT1, **0** otherwise
- Bit 1: Holds **1** if Stream 2 uses CDT1, **0** otherwise
- Bit 2: Holds **1** if Stream 3 uses CDT1, **0** otherwise
- ...
- Bit 15: Holds **1** if Stream 16 uses CDT1, **0** otherwise

3036..3040 (Current GC Time): Holds the current GC Time. Can be written to update GC date/time.

3041..3045 (Last Analy_Start Time): Sample inject time for the stream that was analyzed last.

3046..3047 (Alarm Bitmaps): Boolean alarm conditions. **1** – Alarm Active, **0** – Alarm Inactive.

3046 Bit 14 (Analyzer Failure): This bit is set to **1** if any of the Carrier Pressure/Low Pressure Limit Switch alarms are active.

3048 (Stream 1 Active Low Limit Alarms):

- Bit 0: Holds **1** if, User Limit Alarm 1 is associated with Stream 1 and if a Low Limit condition is currently active. This bit holds **0** if either User Limit Alarm 1 is not associated with Stream 1 or no Low Limit alarm condition exists.
- Bit 1: Holds **1** if, User Limit Alarm 2 is associated with Stream 1 and if a Low Limit condition is currently active. This bit holds **0** if either User Limit Alarm 2 is not associated with Stream 1 or no Low Limit alarm condition exists.
- ...
- Bit 15: Holds **1** if, User Limit Alarm 16 is associated with Stream 1 and if a Low Limit condition is currently active. This bit holds **0** if either User Limit Alarm 16 is not associated with Stream 1 or no Low Limit alarm condition exists.

3049 (Stream 1 Active High Limit Alarms):

- Bit 0: Holds **1** if, User Limit Alarm 1 is associated with Stream 1 and if a High Limit condition is currently active. This bit holds **0** if either User Limit Alarm 1 is not associated with Stream 1 or no High Limit alarm condition exists.
- Bit 1: Holds **1** if, User Limit Alarm 2 is associated with Stream 1 and if a High Limit condition is currently active. This bit holds **0** if either User Limit Alarm 2 is not associated with Stream 1 or no High Limit alarm condition exists.
- ...
- Bit 15: Holds **1** if, User Limit Alarm 16 is associated with Stream 1 and if a High Limit condition is currently active. This bit holds **0** if either User Limit Alarm 16 is not associated with Stream 1 or no High Limit alarm condition exists.

3050 .. 3057 (Stream 2..5 Active High/Low Limit Alarms): These registers hold limit alarm status for Streams 2 through 5. The implementation of these registers is similar to the Stream 1 Active Low/High Alarms (Registers 3048/3049).

3058 (New Data Flag): This flag is set to **1** when new data is available in the Last Analysis Results registers. This is a read-write register, so a Modbus Master can clear the flag once the new results are read.

3059 (Anly/Calib Flag): This flag is set to **1** to indicate the last analysis results were from an Analysis run. This flag is set to **0** to indicate the last analysis results were from a Calibration run. A Modbus Master can use Registers 3058 and 3059 to determine when new analysis results are available on the GC.

5001 (Last Analy_Cycle Time (1/30th sec)): Cycle time for last analysis in 1/30th seconds. For example, if cycle time is 300 seconds, this register reads **9000**.

5002 (Last Cal_Cycle Time (1/30th sec)): Cycle time for last calibration run in 1/30th seconds. For example, if cycle time is 300 seconds, this register reads **9000**.

7001..7016 (Last Analy Mole %): These registers hold the mole % Results for the last analysis run. The order of components in these registers can be determined by reading Register 3001..3016 which contain the component codes.

7017..7032 (Last Analy Weight %): These registers hold the weight % results for the last analysis run. The order of components in these registers can be determined by reading Register 3001..3016 which contain the component codes.

7033..7039, 7054: Last analysis stream results

7040..7044: User calculation results 1..5

7055..7069: Current running average for Averages 1 through 15

7070..7084: Most recent archive average for Averages 1 through 15

7085..7086: Current analog input values for Analog Input 1 and 2

7087..7094: Last Calibration Stream Results

7095..7110/7111..7126: Response factors used for last analysis run

7127..7162: Current running average for Averages 1 through 36

7163..7198: Maximum sample value during current averaging period for Averages 1 through 36

7199..7234: Minimum sample value during current averaging period for Averages 1 through 36

7235..7270: Most recent archived average for Averages 1 through 36

7271..7306: Maximum sample value in the most recent archived average for Averages 1 through 36.

7307..7342: Minimum sample value in the most recent archived average for Averages 1 through 36.

7343..7378: Second most recent archived average for Averages 1 through 36

7379..7414: Maximum sample value in the second most recent archived average for Averages 1 through 36.

7415..7450: Minimum sample value in the second most recent archived average for Averages 1 through 36.

7451..7486: Third most recent archived average for Averages 1 through 36

7487..7522: Maximum sample value in the third most recent archived average for Averages 1 through 36.

7523..7558: Minimum sample value in the third most recent archived average for Averages 1 through 36.

7560..7563/7564..7567: Analog Input Current Value for AI 1 through 4.

7621..7646: Stream 1 results

7651..7676: Stream 2 results

7681..7706: Stream 3 results

7711..7736: Stream 4 results

7741..7766: Stream 5 results

7771..7796: Stream 6 results

7801..7826: Stream 7 results

7831..7856: Stream 8 results

7861..7886: Stream 9 results

7891..7916: Stream 10 results

7921..7946: Stream 11 results

7951..7976: Stream 12 results

7996..8006: Remote control registers

8200..8449: Most recent archived average for Averages 1 through 250.

8454..8703: Maximum sample value in the most recent archived average for Averages 1 through 250.

8708..8957: Minimum sample value in the most recent archived average for Averages 1 through 250.

8963 (Clear All Alarms): Write **1** to this register to clear all active alarms.

8964 (Acknowledge All Alarms): Write **1** to this register to acknowledge all alarms.

9006..9011: GC System Date/Time Read/Write Registers.

9013 (Modbus Id[Port 0]): Modbus ID for Serial Port 0.

9014 (Site ID): GC Site ID read/write register.

9022 (Analysis Time): Analysis time

9024 (Cycle Time): Cycle time

9026 (Run Time): Run rime

9028 (Current Stream): Stream number

9030 (Analyzer Control): Read-write remote control register (9030)

9032 (GC Calibrating): Tells you if the GC is calibrating. A value of **1** means GC is calibrating, **0** otherwise.

9034 (Active Alarm Flag): Tells you if the GC has any active alarms. A value of **1** indicates that there are active alarms, **0** otherwise.

9035 (UnAck Alarm Flag): Tells you if the GC has any unacknowledged alarms. A value of **1** indicates that there are unacknowledged alarms, **0** otherwise.

9036..9040 (Hourly Average Reset Time): Date/time when hourly average results were archived.

9041..9045 (Daily Average Reset Time): Date/time when daily average results were archived.

9046..9047 (Weekly Average Reset Time): Date/time when weekly average results were archived.

9051..9055 (Monthly Average Reset Time): Date/time when monthly average results were archived.

9056..9060 (Variable Average Reset Time): Date/time when variable average results were archived.

F.3 SIM_2251 C9 + Hydrocarbon Dew point map

This map file is an extension of the SIM2251 map file with the following additional registers.

Register #	Data type	Variable	Access
3101	INT	1 - Stream 1_Dew Status 1	RD_ONLY
3102	INT	1 - Stream 1_Dew Status 2	RD_ONLY
3103	INT	1 - Stream 1_Dew Status 3	RD_ONLY
3104	INT	1 - Stream 1_Dew Status 4	RD_ONLY
3105	INT	1 - Stream 1_Cri Status	RD_ONLY
3106	INT	2 - Calibration_Dew Status 1	RD_ONLY
3107	INT	2 - Calibration_Dew Status 2	RD_ONLY
3108	INT	2 - Calibration_Dew Status 3	RD_ONLY
3109	INT	2 - Calibration_Dew Status 4	RD_ONLY
3110	INT	2 - Calibration_Cri Status	RD_ONLY
3111	INT	3 - Stream 3_Dew Status 1	RD_ONLY
3112	INT	3 - Stream 3_Dew Status 2	RD_ONLY
3113	INT	3 - Stream 3_Dew Status 3	RD_ONLY
3114	INT	3 - Stream 3_Dew Status 4	RD_ONLY
3115	INT	3 - Stream 3_Cri Status	RD_ONLY
3116	INT	4 - Stream 4_Dew Status 1	RD_ONLY
3117	INT	4 - Stream 4_Dew Status 2	RD_ONLY
3118	INT	4 - Stream 4_Dew Status 3	RD_ONLY
3119	INT	4 - Stream 4_Dew Status 4	RD_ONLY
3120	INT	4 - Stream 4_Cri Status	RD_ONLY
3121	INT	5 - Stream 5_Dew Status 1	RD_ONLY
3122	INT	5 - Stream 5_Dew Status 2	RD_ONLY
3123	INT	5 - Stream 5_Dew Status 3	RD_ONLY
3124	INT	5 - Stream 5_Dew Status 4	RD_ONLY
3125	INT	5 - Stream 5_Cri Status	RD_ONLY
3126	INT	6 - Stream 6_Dew Status 1	RD_ONLY
3127	INT	6 - Stream 6_Dew Status 2	RD_ONLY
3128	INT	6 - Stream 6_Dew Status 3	RD_ONLY
3129	INT	6 - Stream 6_Dew Status 4	RD_ONLY
3130	INT	6 - Stream 6_Cri Status	RD_ONLY
3131	INT	7 - Stream 7_Dew Status 1	RD_ONLY

Register #	Data type	Variable	Access
3132	INT	7 - Stream 7_Dew Status 2	RD_ONLY
3133	INT	7 - Stream 7_Dew Status 3	RD_ONLY
3134	INT	7 - Stream 7_Dew Status 4	RD_ONLY
3135	INT	7 - Stream 7_Cri Status	RD_ONLY
3136	INT	8 - Stream 8_Dew Status 1	RD_ONLY
3137	INT	8 - Stream 8_Dew Status 2	RD_ONLY
3138	INT	8 - Stream 8_Dew Status 3	RD_ONLY
3139	INT	8 - Stream 8_Dew Status 4	RD_ONLY
3140	INT	8 - Stream 8_Cri Status	RD_ONLY
8100	FLOAT	Dew point Configuration 1_Pressure 1	RD_WR
8101	FLOAT	Dew point Configuration 1_Pressure 2	RD_WR
8102	FLOAT	Dew point Configuration 1_Pressure 3	RD_WR
8103	FLOAT	Dew point Configuration 1_Pressure 4	RD_WR
8104	FLOAT	Dewpoint Configuration 2_Pressure 1	RD_WR
8105	FLOAT	Dew point Configuration 2_Pressure 2	RD_WR
8106	FLOAT	Dew point Configuration 3_Pressure 1	RD_WR
8107	FLOAT	Dew point Configuration 3_Pressure 2	RD_WR
8108	FLOAT	Dew point Configuration 4_Pressure 1	RD_WR
8109	FLOAT	Dew point Configuration 4_Pressure 2	RD_WR
8110	FLOAT	1 - Stream 1_Dewpoint Temp 1	RD_ONLY
8111	FLOAT	1 - Stream 1_Dewpoint Temp 2	RD_ONLY
8112	FLOAT	1 - Stream 1_Dewpoint Temp 3	RD_ONLY
8113	FLOAT	1 - Stream 1_Dewpoint Temp 4	RD_ONLY
8114	FLOAT	1 - Stream 1_Dewpoint Pres 1	RD_ONLY
8115	FLOAT	1 - Stream 1_Dewpoint Pres 2	RD_ONLY
8116	FLOAT	1 - Stream 1_Dewpoint Pres 3	RD_ONLY
8117	FLOAT	1 - Stream 1_Dewpoint Pres 4	RD_ONLY
8118	FLOAT	1 - Stream 1_CricondenTherm Temp	RD_ONLY
8119	FLOAT	1 - Stream 1_CricondenTherm Pres	RD_ONLY
8120	FLOAT	2 - Calibration_Dewpoint Temp 1	RD_ONLY
8121	FLOAT	2 - Calibration_Dewpoint Temp 2	RD_ONLY
8122	FLOAT	2 - Calibration_Dewpoint Temp 3	RD_ONLY
8123	FLOAT	2 - Calibration_Dewpoint Temp 4	RD_ONLY
8124	FLOAT	2 - Calibration_Dewpoint Pres 1	RD_ONLY

Register #	Data type	Variable	Access
8125	FLOAT	2 - Calibration_Dewpoint Pres 2	RD_ONLY
8126	FLOAT	2 - Calibration_Dewpoint Pres 3	RD_ONLY
8127	FLOAT	2 - Calibration_Dewpoint Pres 4	RD_ONLY
8128	FLOAT	2 - Calibration_CricondenTherm Temp	RD_ONLY
8129	FLOAT	2 - Calibration_CricondenTherm Pres	RD_ONLY
8130	FLOAT	3 - Stream 3_Dewpoint Temp 1	RD_ONLY
8131	FLOAT	3 - Stream 3_Dewpoint Temp 2	RD_ONLY
8132	FLOAT	3 - Stream 3_Dewpoint Temp 3	RD_ONLY
8133	FLOAT	3 - Stream 3_Dewpoint Temp 4	RD_ONLY
8134	FLOAT	3 - Stream 3_Dewpoint Pres 1	RD_ONLY
8135	FLOAT	3 - Stream 3_Dewpoint Pres 2	RD_ONLY
8136	FLOAT	3 - Stream 3_Dewpoint Pres 3	RD_ONLY
8137	FLOAT	3 - Stream 3_Dewpoint Pres 4	RD_ONLY
8138	FLOAT	3 - Stream 3_CricondenTherm Temp	RD_ONLY
8139	FLOAT	3 - Stream 3_CricondenTherm Pres	RD_ONLY
8140	FLOAT	4 - Stream 4_Dewpoint Temp 1	RD_ONLY
8141	FLOAT	4 - Stream 4_Dewpoint Temp 2	RD_ONLY
8142	FLOAT	4 - Stream 4_Dewpoint Temp 3	RD_ONLY
8143	FLOAT	4 - Stream 4_Dewpoint Temp 4	RD_ONLY
8144	FLOAT	4 - Stream 4_Dewpoint Pres 1	RD_ONLY
8145	FLOAT	4 - Stream 4_Dewpoint Pres 2	RD_ONLY
8146	FLOAT	4 - Stream 4_Dewpoint Pres 3	RD_ONLY
8147	FLOAT	4 - Stream 4_Dewpoint Pres 4	RD_ONLY
8148	FLOAT	4 - Stream 4_CricondenTherm Temp	RD_ONLY
8149	FLOAT	4 - Stream 4_CricondenTherm Pres	RD_ONLY
8150	FLOAT	5 - Stream 5_Dewpoint Temp 1	RD_ONLY
8151	FLOAT	5 - Stream 5_Dewpoint Temp 2	RD_ONLY
8152	FLOAT	5 - Stream 5_Dewpoint Temp 3	RD_ONLY
8153	FLOAT	5 - Stream 5_Dewpoint Temp 4	RD_ONLY
8154	FLOAT	5 - Stream 5_Dewpoint Pres 1	RD_ONLY
8155	FLOAT	5 - Stream 5_Dewpoint Pres 2	RD_ONLY
8156	FLOAT	5 - Stream 5_Dewpoint Pres 3	RD_ONLY
8157	FLOAT	5 - Stream 5_Dewpoint Pres 4	RD_ONLY
8158	FLOAT	5 - Stream 5_CricondenTherm Temp	RD_ONLY

Register #	Data type	Variable	Access
8159	FLOAT	5 - Stream 5_CricondenTherm Pres	RD_ONLY
8160	FLOAT	6 - Stream 6_Dewpoint Temp 1	RD_ONLY
8161	FLOAT	6 - Stream 6_Dewpoint Temp 2	RD_ONLY
8162	FLOAT	6 - Stream 6_Dewpoint Temp 3	RD_ONLY
8163	FLOAT	6 - Stream 6_Dewpoint Temp 4	RD_ONLY
8164	FLOAT	6 - Stream 6_Dewpoint Pres 1	RD_ONLY
8165	FLOAT	6 - Stream 6_Dewpoint Pres 2	RD_ONLY
8166	FLOAT	6 - Stream 6_Dewpoint Pres 3	RD_ONLY
8167	FLOAT	6 - Stream 6_Dewpoint Pres 4	RD_ONLY
8168	FLOAT	6 - Stream 6_CricondenTherm Temp	RD_ONLY
8169	FLOAT	6 - Stream 6_CricondenTherm Pres	RD_ONLY
8170	FLOAT	7 - Stream 7_Dewpoint Temp 1	RD_ONLY
8171	FLOAT	7 - Stream 7_Dewpoint Temp 2	RD_ONLY
8172	FLOAT	7 - Stream 7_Dewpoint Temp 3	RD_ONLY
8173	FLOAT	7 - Stream 7_Dewpoint Temp 4	RD_ONLY
8174	FLOAT	7 - Stream 7_Dewpoint Pres 1	RD_ONLY
8175	FLOAT	7 - Stream 7_Dewpoint Pres 2	RD_ONLY
8176	FLOAT	7 - Stream 7_Dewpoint Pres 3	RD_ONLY
8177	FLOAT	7 - Stream 7_Dewpoint Pres 4	RD_ONLY
8178	FLOAT	7 - Stream 7_CricondenTherm Temp	RD_ONLY
8179	FLOAT	7 - Stream 7_CricondenTherm Pres	RD_ONLY
8180	FLOAT	8 - Stream 8_Dewpoint Temp 1	RD_ONLY
8181	FLOAT	8 - Stream 8_Dewpoint Temp 2	RD_ONLY
8182	FLOAT	8 - Stream 8_Dewpoint Temp 3	RD_ONLY
8183	FLOAT	8 - Stream 8_Dewpoint Temp 4	RD_ONLY
8184	FLOAT	8 - Stream 8_Dewpoint Pres 1	RD_ONLY
8185	FLOAT	8 - Stream 8_Dewpoint Pres 2	RD_ONLY
8186	FLOAT	8 - Stream 8_Dewpoint Pres 3	RD_ONLY
8187	FLOAT	8 - Stream 8_Dewpoint Pres 4	RD_ONLY
8188	FLOAT	8 - Stream 8_CricondenTherm Temp	RD_ONLY
8189	FLOAT	8 - Stream 8_CricondenTherm Pres	RD_ONLY

3101...3140 (Dew point status): Dew point calculation status for Streams 1 to 8 (read only). Here are the possible values for these registers and their descriptions.

8100...8109 (Dew point pressure setpoints): Pressure setpoints at which dewpoint calculation results are performed (read-write). The setpoint can be changed through a Modbus Master.

8110...8189 (Dew point results): Dew point temperature and pressure, cricondentherm temperature and pressure.

Value	Description	Remarks
0	OK	Calculation is valid
1	Error 1	No valid solution to gas equation found
2	Error 2	Mole% values are all zero – if analysis is **OK** check Numeric data
3	Error 3	Calculated fugacities too large – probably unrealistic composition
4	Error 4	Single phase – no liquid phase at this pressure
5	Error 5	Pressure value (from operator or Modbus) is negative
6	Error 6	(Cricondentherm only) – no maximum found – next analysis normally OK
7	Error 7	Single phase – no gas phase at this pressure

F.4 User Modbus mapping template

Register #	Data type	Variable	Access	Format
1	BOOLEAN	Unused	RD_ONLY	
2	BOOLEAN	Unused	RD_ONLY	
3	BOOLEAN	Unused	RD_ONLY	
4	BOOLEAN	Unused	RD_ONLY	
5	BOOLEAN	Unused	RD_ONLY	
6	BOOLEAN	Unused	RD_ONLY	
7	BOOLEAN	Unused	RD_ONLY	
8	BOOLEAN	Unused	RD_ONLY	
9	BOOLEAN	Unused	RD_ONLY	
10	BOOLEAN	System Alarm_Alarm On - Current Analysis_Heater 1 Out Of Range	RD_ONLY	
11	BOOLEAN	System Alarm_Alarm On - Current Analysis_Heater 2 Out Of Range	RD_ONLY	
12	BOOLEAN	System Alarm_Alarm On - Current Analysis_Heater 3 Out Of Range	RD_ONLY	
13	BOOLEAN	System Alarm_Alarm On - Current Analysis_Heater 4 Out Of Range	RD_ONLY	

Register #	Data type	Variable	Access	Format
14	BOOLEAN	Unused	RD_ONLY	
15	BOOLEAN	Unused	RD_ONLY	
16	BOOLEAN	System Alarm_Alarm On - Current Analysis_Flame Out	RD_ONLY	
17	BOOLEAN	System Alarm_Alarm On - Current Analysis_Warm Start Failed	RD_ONLY	
18	BOOLEAN	Unused	RD_ONLY	
19	BOOLEAN	Calibration Failed	RD_ONLY	
20	BOOLEAN	System Alarm_Alarm On - Current Analysis_Low Carrier Pressure 1	RD_ONLY	
21	BOOLEAN	System Alarm_Alarm On - Current Analysis_Low Carrier Pressure 2	RD_ONLY	
22	BOOLEAN	System Alarm_Alarm On - Current Analysis_No Sample Flow 1	RD_ONLY	
23	BOOLEAN	System Alarm_Alarm On - Current Analysis_No Sample Flow 2	RD_ONLY	
24	BOOLEAN	System Alarm_Alarm On - Current Analysis_Maintenance Mode	RD_ONLY	
25	BOOLEAN	Calibration Failed	RD_ONLY	
26	BOOLEAN	Unused	RD_ONLY	
27	BOOLEAN	Unused	RD_ONLY	
28	BOOLEAN	Unused	RD_ONLY	
29	BOOLEAN	Unused	RD_ONLY	
30	BOOLEAN	Unused	RD_ONLY	
31	BOOLEAN	System Alarm_Alarm On - Current Analysis_Detector 1 Scaling Factor Failure	RD_ONLY	
32	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 1 High Signal	RD_ONLY	
33	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 2 High Signal	RD_ONLY	
34	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 3 High Signal	RD_ONLY	
35	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 4 High Signal	RD_ONLY	
36	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 5 High Signal	RD_ONLY	
37	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 6 High Signal	RD_ONLY	
38	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 7 High Signal	RD_ONLY	

Register #	Data type	Variable	Access	Format
39	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 8 High Signal	RD_ONLY	
40	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 9 High Signal	RD_ONLY	
41	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 10 High Signal	RD_ONLY	
42	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 11 High Signal	RD_ONLY	
43	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 12 High Signal	RD_ONLY	
44	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 13 High Signal	RD_ONLY	
45	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 14 High Signal	RD_ONLY	
46	BOOLEAN	Unused	RD_ONLY	
47	BOOLEAN	Unused	RD_ONLY	
48	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 1 Low Signal	RD_ONLY	
49	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 2 Low Signal	RD_ONLY	
50	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 3 Low Signal	RD_ONLY	
51	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 4 Low Signal	RD_ONLY	
52	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 5 Low Signal	RD_ONLY	
53	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 6 Low Signal	RD_ONLY	
54	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 7 Low Signal	RD_ONLY	
55	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 8 Low Signal	RD_ONLY	
56	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 9 Low Signal	RD_ONLY	
57	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 10 Low Signal	RD_ONLY	
58	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 11 Low Signal	RD_ONLY	
59	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 12 Low Signal	RD_ONLY	
60	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 13 Low Signal	RD_ONLY	

Register #	Data type	Variable	Access	Format
61	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 14 Low Signal	RD_ONLY	
62	BOOLEAN	Unused	RD_ONLY	
63	BOOLEAN	Unused	RD_ONLY	
64	BOOLEAN	Analyzer Failure	RD_ONLY	
65	BOOLEAN	System Alarm_Alarm On - Current Analysis_Power Failure	RD_ONLY	
66	BOOLEAN	Unused	RD_ONLY	
67	BOOLEAN	System Alarm_Alarm On - Current Analysis_Low Battery Voltage	RD_ONLY	
68	BOOLEAN	System Alarm_Alarm On - Current Analysis_GC Idle	RD_ONLY	
69	BOOLEAN	Unused	RD_ONLY	
70	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 1 High Signal	RD_ONLY	
71	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 2 High Signal	RD_ONLY	
72	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 3 High Signal	RD_ONLY	
73	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 4 High Signal	RD_ONLY	
74	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 1 Low Signal	RD_ONLY	
75	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 2 Low Signal	RD_ONLY	
76	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 3 Low Signal	RD_ONLY	
77	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 4 Low Signal	RD_ONLY	
78	BOOLEAN	Unused	RD_ONLY	
79	BOOLEAN	Unused	RD_ONLY	
80	BOOLEAN	Unused	RD_ONLY	
81	BOOLEAN	Unused	RD_ONLY	
82	BOOLEAN	Unused	RD_ONLY	
83	BOOLEAN	Unused	RD_ONLY	
84	BOOLEAN	Unused	RD_ONLY	
85	BOOLEAN	Alarm On[1 - Alarm 1]	RD_ONLY	
86	BOOLEAN	Alarm On[2 - Alarm 2]	RD_ONLY	
87	BOOLEAN	Alarm On[3 - Alarm 3]	RD_ONLY	
88	BOOLEAN	Alarm On[4 - Alarm 4]	RD_ONLY	

Register #	Data type	Variable	Access	Format
89	BOOLEAN	Alarm On[5 - Alarm 5]	RD_ONLY	
90	BOOLEAN	Alarm On[6 - Alarm 6]	RD_ONLY	
91	BOOLEAN	Alarm On[7 - Alarm 7]	RD_ONLY	
92	BOOLEAN	Alarm On[8 - Alarm 8]	RD_ONLY	
93	BOOLEAN	Alarm On[9 - Alarm 9]	RD_ONLY	
94	BOOLEAN	Alarm On[10 - Alarm 10]	RD_ONLY	
95	BOOLEAN	Alarm On[11 - Alarm 11]	RD_ONLY	
96	BOOLEAN	Alarm On[12 - Alarm 12]	RD_ONLY	
97	BOOLEAN	Alarm On[13 - Alarm 13]	RD_ONLY	
98	BOOLEAN	Alarm On[14 - Alarm 14]	RD_ONLY	
99	BOOLEAN	Alarm On[15 - Alarm 15]	RD_ONLY	
100	BOOLEAN	Alarm On[16 - Alarm 16]	RD_ONLY	
101	BOOLEAN	Alarm On[17 - Alarm 17]	RD_ONLY	
102	BOOLEAN	Alarm On[18 - Alarm 18]	RD_ONLY	
103	BOOLEAN	Alarm On[19 - Alarm 19]	RD_ONLY	
104	BOOLEAN	Alarm On[20 - Alarm 20]	RD_ONLY	
105	BOOLEAN	1 - Stream 1_Stream Toggle	RD_ONLY	
106	BOOLEAN	2 - Stream 2_Stream Toggle	RD_ONLY	
107	BOOLEAN	3 - Stream 3_Stream Toggle	RD_ONLY	
108	BOOLEAN	4 - Stream 4_Stream Toggle	RD_ONLY	
109	BOOLEAN	5 - Stream 5_Stream Toggle	RD_ONLY	
110	BOOLEAN	6 - Stream 6_Stream Toggle	RD_ONLY	
111	BOOLEAN	7 - Stream 7_Stream Toggle	RD_ONLY	
112	BOOLEAN	8 - Stream 8_Stream Toggle	RD_ONLY	
113	BOOLEAN	Current Value[1 - Discrete Output 1]	RD_ONLY	
114	BOOLEAN	Current Value[2 - Discrete Output 2]	RD_ONLY	
115	BOOLEAN	Current Value[3 - Discrete Output 3]	RD_ONLY	
116	BOOLEAN	Current Value[4 - Discrete Output 4]	RD_ONLY	
117	BOOLEAN	Current Value[5 - Discrete Output 5]	RD_ONLY	
118	BOOLEAN	Switch[1 - Discrete Output 1]	RD_WR	
119	BOOLEAN	Switch[2 - Discrete Output 2]	RD_WR	
120	BOOLEAN	Switch[3 - Discrete Output 3]	RD_WR	
121	BOOLEAN	Switch[4 - Discrete Output 4]	RD_WR	
122	BOOLEAN	Switch[5 - Discrete Output 5]	RD_WR	

Register #	Data type	Variable	Access	Format
123	INT	Switch[1 - Discrete Output 1]	RD_WR	
124	INT	Switch[2 - Discrete Output 2]	RD_WR	
125	INT	Switch[3 - Discrete Output 3]	RD_WR	
126	INT	Switch[4 - Discrete Output 4]	RD_WR	
127	INT	Switch[5 - Discrete Output 5]	RD_WR	
9006	INT	Current Time(time_t)	RD_WR	MM
9007	INT	Current Time(time_t)	RD_WR	DD
9008	INT	Current Time(time_t)	RD_WR	YYYY
9009	INT	Current Time(time_t)	RD_WR	hh
9010	INT	Current Time(time_t)	RD_WR	mm
9011	INT	Current Time(time_t)	RD_WR	ss
9012	INT	Unused	RD_ONLY	
9013	INT	Modbus Id[1 - Port 0]	RD_ONLY	
9014	INT	Site Id	RD_WR	
9022	INT	Analysis Time	RD_ONLY	
9023	INT	Unused	RD_ONLY	
9024	INT	Cycle Time	RD_ONLY	
9025	INT	Unused	RD_ONLY	
9026	INT	Run Time	RD_ONLY	
9027	INT	Unused	RD_ONLY	
9028	INT	Current Stream	RD_ONLY	
9029	INT	Unused	RD_ONLY	
9030	INT	GC Control_Analyzer Control (Write Reg 9030)	RD_WR	
9031	INT	Unused	RD_ONLY	
9032	INT	GC Calibrating	RD_ONLY	
9033	INT	Unused	RD_ONLY	
9034	INT	Active Alarm Flag	RD_ONLY	
9035	INT	UnAck Alarm Flag	RD_ONLY	
9036	INT	Hourly Average Reset time	RD_ONLY	YY
9037	INT	Hourly Average Reset time	RD_ONLY	MM
9038	INT	Hourly Average Reset time	RD_ONLY	DD
9039	INT	Hourly Average Reset time	RD_ONLY	hh
9040	INT	Hourly Average Reset time	RD_ONLY	mm
9041	INT	Daily Average Reset time	RD_ONLY	YY

Register #	Data type	Variable	Access	Format
9042	INT	Daily Average Reset time	RD_ONLY	MM
9043	INT	Daily Average Reset time	RD_ONLY	DD
9044	INT	Daily Average Reset time	RD_ONLY	hh
9045	INT	Daily Average Reset time	RD_ONLY	mm
9046	INT	Weekly Average Reset time	RD_ONLY	YY
9047	INT	Weekly Average Reset time	RD_ONLY	MM
9048	INT	Weekly Average Reset time	RD_ONLY	DD
9049	INT	Weekly Average Reset time	RD_ONLY	hh
9050	INT	Weekly Average Reset time	RD_ONLY	mm
9051	INT	Monthly Average Reset time	RD_ONLY	YY
9052	INT	Monthly Average Reset time	RD_ONLY	MM
9053	INT	Monthly Average Reset time	RD_ONLY	DD
9054	INT	Monthly Average Reset time	RD_ONLY	hh
9055	INT	Monthly Average Reset time	RD_ONLY	mm
9056	INT	Variable Average Reset time	RD_ONLY	YY
9057	INT	Variable Average Reset time	RD_ONLY	MM
9058	INT	Variable Average Reset time	RD_ONLY	DD
9059	INT	Variable Average Reset time	RD_ONLY	hh
9060	INT	Variable Average Reset time	RD_ONLY	mm

10...13 (Heater 1...4 out of range): **1** if heater is out of range, **0** otherwise

16 (FID flame out): **1** if FID flame has gone out, **0** otherwise

17 (Warmstart failed): **1** if GC warmstart was unable to stabilize temperature/pressure in analytical oven within pre-defined warmstart duration, **0** otherwise

19 (Calibration failed): **1** if last calibration sequence failed, **0** otherwise

20...21 (Low carrier pressure 1...2): **1** if the carrier pressure is low, **0** otherwise

22...23 (No sample flow 1...2): **1** if there is no sample flow in the sample conditioning system, **0** otherwise

24 (Maintenance mode): **1** if a technician has put the GC into *Maintenance* mode to perform repairs, **0** otherwise

25 (Calibration failed): **1** if last calibration sequence failed, **0** otherwise

31 (Preamp scaling factor): **1** if there is an electronics failure on the preamp board, **0** otherwise

32...45 (Analog output high signal 1...14): **1** if the variable associated with analog output has a value that is greater than the zero scale value assigned to the analog output, **0** otherwise

48...61 (Analog output low signal 1...14): **1** if the variable associated with analog output has a value that is lesser than the zero scale value assigned to the analog output, **0** otherwise

64 (Analyzer failure): **1** indicates that the carrier pressure is either too low or the GC cannot control the carrier pressure to the desired setpoint, **0** otherwise

65 (Power failure): **1** indicates that the GC lost power and is currently executing the warmstart sequence, **0** otherwise

67 (Low battery voltage): **1** indicates that the battery used to back up configuration and real-time clock on the main CPU board is low, **0** otherwise

68 (GC idle): **1** indicates that the GC is not performing an analysis, **0** otherwise

Note
If the GC is halted by the operator using MON2020, then the *Idle* alarm is not raised. It is raised only if the GC goes into the *Idle* state due to alarm condition that has the Halt on Alarm flag enabled.

Note
If the GC is halted by the operator using MON2020 and if he disconnects from the GC without restarting normal operation, then the GC *Idle* alarm is raised.

70...77 (Analog input low signal 1...8): **1** indicates that the analog input is sensing a current that is lower than 4 mA, **0** otherwise

85...104 (User limit alarm 1...20): **1** indicates that the user limit alarm is active, **0** otherwise

105...112 (Stream toggle 1...5): Each time new results are available for a particular stream, this flag is toggled.

113...117 (Discrete output 1...5 current value): Current state of the discrete output, **1** indicates that it is *On*; **0** indicates it is *Off*.

118...122 (Switch discrete output 1...5): Read/write register for changing the state of the discrete output. Write **1** to this register to set output state to *On*, **0** to set output state to *Off*.

123...127 (Switch discrete output 1...5): Read/write register for changing the state of the discrete output. Write **1** to this register to set output state to *On*, **0** to set output state to *Off*, and **2** to set the register to *Auto* mode.

9006...9011: GC system date/time read-write registers

9013 (Modbus ID [Port 0]): Modbus ID for serial port 0

9014 (Site ID): GC site ID read/write register

9022 (Analysis time): Analysis time

9024 (Cycle time): Cycle time

9026 (Run time): Run time

9028 (Current stream): Stream number

9030 (Analyzer control): User Modbus mapping template

9032 (GC calibrating): Tells you if the GC is calibrating. A value of **1** means GC is calibrating, **0** otherwise.

9034 (Active alarm flag): Tells you if the GC has any active alarms. A value of **1** indicates that there are active alarms, **0** otherwise.

9035 (UnAck alarm flag): Tells you if the GC has any unacknowledged alarms. A value of **1** indicates that there are unacknowledged alarms, **0** otherwise.

9036...9040 (Hourly average reset time): Date/time when hourly average results was archived

9041...9045 (Daily average reset time): Date/time when daily average results was archived

9046...9047 (Weekly average reset time): Date/time when weekly average result was archived

9051...9055 (Monthly average reset time): Date/time when monthly average results was archived

9056...9060 (Variable average reset time): Date/time when variable average results was archived

F.5 SIM_2251 UK (with ISO results)

Register #	Data type	Variable	Record #	Access	Format
1001	BOOLEAN	Current Value[1 - Discrete Output 1]		RD_ONLY	
1002	BOOLEAN	Current Value[2 - Discrete Output 2]		RD_ONLY	
1003	BOOLEAN	Current Value[3 - Discrete Output 3]		RD_ONLY	
1004	BOOLEAN	Current Value[4 - Discrete Output 4]		RD_ONLY	
1005	BOOLEAN	Current Value[5 - Discrete Output 5]		RD_ONLY	
1006	BOOLEAN	Current Value[1 - Discrete Input 1]		RD_ONLY	
1007	BOOLEAN	Current Value[2 - Discrete Input 2]		RD_ONLY	
1008	BOOLEAN	Current Value[3 - Discrete Input 3]		RD_ONLY	
1009	BOOLEAN	Current Value[4 - Discrete Input 4]		RD_ONLY	
1010	BOOLEAN	Current Value[5 - Discrete Input 5]		RD_ONLY	
3001	INT	Last Analy_Component Code(UK)[1 - Component 1]		RD_ONLY	
3002	INT	Last Analy_Component Code(UK)[2 - Component 2]		RD_ONLY	
3003	INT	Last Analy_Component Code(UK)[3 - Component 3]		RD_ONLY	
3004	INT	Last Analy_Component Code(UK)[4 - Component 4]		RD_ONLY	
3005	INT	Last Analy_Component Code(UK)[5 - Component 5]		RD_ONLY	
3006	INT	Last Analy_Component Code(UK)[6 - Component 6]		RD_ONLY	
3007	INT	Last Analy_Component Code(UK)[7 - Component 7]		RD_ONLY	
3008	INT	Last Analy_Component Code(UK)[8 - Component 8]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
3009	INT	Last Analy_Component Code(UK)[9 - Component 9]		RD_ONLY	
3010	INT	Last Analy_Component Code(UK)[10 - Component 10]		RD_ONLY	
3011	INT	Last Analy_Component Code(UK)[11 - Component 11]		RD_ONLY	
3012	INT	Last Analy_Component Code(UK)[12 - Component 12]		RD_ONLY	
3013	INT	Last Analy_Component Code(UK)[13 - Component 13]		RD_ONLY	
3014	INT	Last Analy_Component Code(UK)[14 - Component 14]		RD_ONLY	
3015	INT	Last Analy_Component Code(UK)[15 - Component 15]		RD_ONLY	
3016	INT	Last Analy_Component Code(UK)[16 - Component 16]		RD_ONLY	
3017	INT	Last Analy_Component Code(UK)[1 - Component 1]		RD_ONLY	
3018	INT	Last Analy_Component Code(UK)[2 - Component 2]		RD_ONLY	
3019	INT	Last Analy_Component Code(UK)[3 - Component 3]		RD_ONLY	
3020	INT	Last Analy_Component Code(UK)[4 - Component 4]		RD_ONLY	
3021	INT	Last Analy_Component Code(UK)[5 - Component 5]		RD_ONLY	
3022	INT	Last Analy_Component Code(UK)[6 - Component 6]		RD_ONLY	
3023	INT	Last Analy_Component Code(UK)[7 - Component 7]		RD_ONLY	
3024	INT	Last Analy_Component Code(UK)[8 - Component 8]		RD_ONLY	
3025	INT	Last Analy_Component Code(UK)[9 - Component 9]		RD_ONLY	
3026	INT	Last Analy_Component Code(UK)[10 - Component 10]		RD_ONLY	
3027	INT	Last Analy_Component Code(UK)[11 - Component 11]		RD_ONLY	
3028	INT	Last Analy_Component Code(UK)[12 - Component 12]		RD_ONLY	
3029	INT	Last Analy_Component Code(UK)[13 - Component 13]		RD_ONLY	
3030	INT	Last Analy_Component Code(UK)[14 - Component 14]		RD_ONLY	
3031	INT	Last Analy_Component Code(UK)[15 - Component 15]		RD_ONLY	
3032	INT	Last Analy_Component Code(UK)[16 - Component 16]		RD_ONLY	
3033	INT	Run Time(1/30th Sec)		RD_ONLY	
3034	INT	Last Analy_Stream Number		RD_ONLY	
3035	INT	Last Analy_CDT Stream Mask		RD_ONLY	
3036	INT	Current Time(time_t)		RD_WR	MM
3037	INT	Current Time(time_t)		RD_WR	DD
3038	INT	Current Time(time_t)		RD_WR	YY
3039	INT	Current Time(time_t)		RD_WR	hh
3040	INT	Current Time(time_t)		RD_WR	mm
3041	INT	Last Analy_Start Time		RD_ONLY	MM
3042	INT	Last Analy_Start Time		RD_ONLY	DD

Register #	Data type	Variable	Record #	Access	Format
3043	INT	Last Analy_Start Time		RD_ONLY	YY
3044	INT	Last Analy_Start Time		RD_ONLY	hh
3045	INT	Last Analy_Start Time		RD_ONLY	mm
3046	Bitmap(INT)	0:Unused, 1:Unused, 2:System Alarm_Alarm On - Last Analysis_Analog Input 1 Low Signal, 3:System Alarm_Alarm On - Last Analysis_Analog Input 1 High Signal, 4:System Alarm_Alarm On - Last Analysis_Analog Input 2 Low Signal, 5:System Alarm_Alarm On - Last Analysis_Analog Input 2 High Signal, 6:Unused, 7:Unused, 8:System Alarm_Alarm On - Last Analysis_Analog Output 1 Low Signal, 9:System Alarm_Alarm On - Last Analysis_Analog Output 1 High Signal, 10:System Alarm_Alarm On - Last Analysis_Analog Output 2 Low Signal, 11:System Alarm_Alarm On - Last Analysis_Analog Output 2 High Signal, 12:System Alarm_Alarm On - Last Analysis_Analog Output 3 Low Signal, 13:System Alarm_Alarm On - Last Analysis_Analog Output 3 High Signal, 14:Analyzer Failure, 15:Unused		RD_ONLY	
3047	Bitmap(INT)	0:System Alarm_Alarm On - Current Analysis_Power Failure, 1:Calibration Failed, 2:Preamp Failure, 3:Unused, 4:Unused, 5:Unused, 6:Unused, 7:Unused, 8:Unused, 9:Unused, 10:Unused, 11:Unused, 12:Unused, 13:Unused, 14:Unused, 15:Unused		RD_ONLY	
3048	INT	1 - Stream 1_Active Low Limit Alarms		RD_ONLY	
3049	INT	1 - Stream 1_Active High Limit Alarms		RD_ONLY	
3050	INT	2 - Stream 2_Active Low Limit Alarms		RD_ONLY	
3051	INT	2 - Stream 2_Active High Limit Alarms		RD_ONLY	
3052	INT	3 - Stream 3_Active Low Limit Alarms		RD_ONLY	
3053	INT	3 - Stream 3_Active High Limit Alarms		RD_ONLY	
3054	INT	4 - Stream 4_Active Low Limit Alarms		RD_ONLY	
3055	INT	4 - Stream 4_Active High Limit Alarms		RD_ONLY	
3056	INT	5 - Stream 5_Active Low Limit Alarms		RD_ONLY	
3057	INT	5 - Stream 5_Active High Limit Alarms		RD_ONLY	
3058	INT	New Data Flag		RD_WR	
3059	INT	Analy/Calib Flag		RD_ONLY	
3060	INT	Daily Avg Updated		RD_WR	
3061	INT	Last Stream		RD_ONLY	
3062	INT	2 - Stream 2_New Data Available		RD_WR	
3063	INT	3 - Stream 3_New Data Available		RD_WR	
3064	INT	4 - Stream 4_New Data Available		RD_WR	
3065	INT	5 - Stream 5_New Data Available		RD_WR	

Register #	Data type	Variable	Record #	Access	Format
3066	INT	Component Data 1_Reference Code[1]		RD_ONLY	
3067	INT	Component Data 1_Reference Code[2]		RD_ONLY	
3068	INT	Component Data 1_Reference Code[3]		RD_ONLY	
3069	INT	Component Data 1_Reference Code[4]		RD_ONLY	
3070	INT	Component Data 1_Reference Code[5]		RD_ONLY	
3071	INT	Component Data 1_Reference Code[6]		RD_ONLY	
3072	INT	Component Data 1_Reference Code[7]		RD_ONLY	
3073	INT	Component Data 1_Reference Code[8]		RD_ONLY	
3074	INT	Component Data 1_Reference Code[9]		RD_ONLY	
3075	INT	Component Data 1_Reference Code[10]		RD_ONLY	
3076	INT	Component Data 1_Reference Code[11]		RD_ONLY	
3077	INT	Component Data 1_Reference Code[12]		RD_ONLY	
3078	INT	Component Data 1_Reference Code[13]		RD_ONLY	
3079	INT	Component Data 1_Reference Code[14]		RD_ONLY	
3080	INT	Component Data 1_Reference Code[15]		RD_ONLY	
3081	INT	Component Data 1_Reference Code[16]		RD_ONLY	
3082	INT	Component Data 2_Reference Code[1]		RD_ONLY	
3083	INT	Component Data 2_Reference Code[2]		RD_ONLY	
3084	INT	Component Data 2_Reference Code[3]		RD_ONLY	
3085	INT	Component Data 2_Reference Code[4]		RD_ONLY	
3086	INT	Component Data 2_Reference Code[5]		RD_ONLY	
3087	INT	Component Data 2_Reference Code[6]		RD_ONLY	
3088	INT	Component Data 2_Reference Code[7]		RD_ONLY	
3089	INT	Component Data 2_Reference Code[8]		RD_ONLY	
3090	INT	Component Data 2_Reference Code[9]		RD_ONLY	
3091	INT	Component Data 2_Reference Code[10]		RD_ONLY	
3092	INT	Component Data 2_Reference Code[11]		RD_ONLY	
3093	INT	Component Data 2_Reference Code[12]		RD_ONLY	
3094	INT	Component Data 2_Reference Code[13]		RD_ONLY	
3095	INT	Component Data 2_Reference Code[14]		RD_ONLY	
3096	INT	Component Data 2_Reference Code[15]		RD_ONLY	
3097	INT	Component Data 2_Reference Code[16]		RD_ONLY	
3098	INT	Calculations Configuration_Primary CV Units		RD_ONLY	
3099	INT	Last Run Data Valid 1		RD_WR	

Register #	Data type	Variable	Record #	Access	Format
3100	INT	Last Run Data Valid 2		RD_WR	
3101	INT	Last Run Data Valid 3		RD_WR	
3102	INT	Last Run Data Valid 4		RD_WR	
3103	INT	Last FCalib_New RF Update Flag[1 - Component 1]		RD_ONLY	
3104	INT	Last FCalib_New RF Update Flag[2 - Component 2]		RD_ONLY	
3105	INT	Last FCalib_New RF Update Flag[3 - Component 3]		RD_ONLY	
3106	INT	Last FCalib_New RF Update Flag[4 - Component 4]		RD_ONLY	
3107	INT	Last FCalib_New RF Update Flag[5 - Component 5]		RD_ONLY	
3108	INT	Last FCalib_New RF Update Flag[6 - Component 6]		RD_ONLY	
3109	INT	Last FCalib_New RF Update Flag[7 - Component 7]		RD_ONLY	
3110	INT	Last FCalib_New RF Update Flag[8 - Component 8]		RD_ONLY	
3111	INT	Last FCalib_New RF Update Flag[9 - Component 9]		RD_ONLY	
3112	INT	Last FCalib_New RF Update Flag[10 - Component 10]		RD_ONLY	
3113	INT	Last FCalib_New RF Update Flag[11 - Component 11]		RD_ONLY	
3114	INT	Last FCalib_New RF Update Flag[12 - Component 12]		RD_ONLY	
3115	INT	Last FCalib_New RF Update Flag[13 - Component 13]		RD_ONLY	
3116	INT	Last FCalib_New RF Update Flag[14 - Component 14]		RD_ONLY	
3117	INT	Last FCalib_New RF Update Flag[15 - Component 15]		RD_ONLY	
3118	INT	Last FCalib_New RF Update Flag[16 - Component 16]		RD_ONLY	
3119	INT	Last FCalib_New RF Update Flag[17 - Component 17]		RD_ONLY	
3120	INT	Last FCalib_New RF Update Flag[18 - Component 18]		RD_ONLY	
3121	INT	Last FCalib_New RF Update Flag[19 - Component 19]		RD_ONLY	
3122	INT	Last FCalib_New RF Update Flag[20 - Component 20]		RD_ONLY	
3123	INT	Last FCalib_New RF Update Flag[1 - Component 1]		RD_ONLY	
3124	INT	Last FCalib_New RF Update Flag[2 - Component 2]		RD_ONLY	
3125	INT	Last FCalib_New RF Update Flag[3 - Component 3]		RD_ONLY	
3126	INT	Last FCalib_New RF Update Flag[4 - Component 4]		RD_ONLY	
3127	INT	Last FCalib_New RF Update Flag[5 - Component 5]		RD_ONLY	
3128	INT	Last FCalib_New RF Update Flag[6 - Component 6]		RD_ONLY	
3129	INT	Last FCalib_New RF Update Flag[7 - Component 7]		RD_ONLY	
3130	INT	Last FCalib_New RF Update Flag[8 - Component 8]		RD_ONLY	
3131	INT	Last FCalib_New RF Update Flag[9 - Component 9]		RD_ONLY	
3132	INT	Last FCalib_New RF Update Flag[10 - Component 10]		RD_ONLY	
3133	INT	Last FCalib_New RF Update Flag[11 - Component 11]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
3134	INT	Last FCalib_New RF Update Flag[12 - Component 12]		RD_ONLY	
3135	INT	Last FCalib_New RF Update Flag[13 - Component 13]		RD_ONLY	
3136	INT	Last FCalib_New RF Update Flag[14 - Component 14]		RD_ONLY	
3137	INT	Last FCalib_New RF Update Flag[15 - Component 15]		RD_ONLY	
3138	INT	Last FCalib_New RF Update Flag[16 - Component 16]		RD_ONLY	
3139	INT	Last FCalib_New RF Update Flag[17 - Component 17]		RD_ONLY	
3140	INT	Last FCalib_New RF Update Flag[18 - Component 18]		RD_ONLY	
3141	INT	Last FCalib_New RF Update Flag[19 - Component 19]		RD_ONLY	
3142	INT	Last FCalib_New RF Update Flag[20 - Component 20]		RD_ONLY	
3143	INT	Last FCalib_New RF Update Flag[1 - Component 1]		RD_ONLY	
3144	INT	Last FCalib_New RF Update Flag[2 - Component 2]		RD_ONLY	
3145	INT	Last FCalib_New RF Update Flag[3 - Component 3]		RD_ONLY	
3146	INT	Last FCalib_New RF Update Flag[4 - Component 4]		RD_ONLY	
3147	INT	Last FCalib_New RF Update Flag[5 - Component 5]		RD_ONLY	
3148	INT	Last FCalib_New RF Update Flag[6 - Component 6]		RD_ONLY	
3149	INT	Last FCalib_New RF Update Flag[7 - Component 7]		RD_ONLY	
3150	INT	Last FCalib_New RF Update Flag[8 - Component 8]		RD_ONLY	
3151	INT	Last FCalib_New RF Update Flag[9 - Component 9]		RD_ONLY	
3152	INT	Last FCalib_New RF Update Flag[10 - Component 10]		RD_ONLY	
3153	INT	Last FCalib_New RF Update Flag[11 - Component 11]		RD_ONLY	
3154	INT	Last FCalib_New RF Update Flag[12 - Component 12]		RD_ONLY	
3155	INT	Last FCalib_New RF Update Flag[13 - Component 13]		RD_ONLY	
3156	INT	Last FCalib_New RF Update Flag[14 - Component 14]		RD_ONLY	
3157	INT	Last FCalib_New RF Update Flag[15 - Component 15]		RD_ONLY	
3158	INT	Last FCalib_New RF Update Flag[16 - Component 16]		RD_ONLY	
3159	INT	Last FCalib_New RF Update Flag[17 - Component 17]		RD_ONLY	
3160	INT	Last FCalib_New RF Update Flag[18 - Component 18]		RD_ONLY	
3161	INT	Last FCalib_New RF Update Flag[19 - Component 19]		RD_ONLY	
3162	INT	Last FCalib_New RF Update Flag[20 - Component 20]		RD_ONLY	
3163	INT	Last FCalib_New RF Update Flag[1 - Component 1]		RD_ONLY	
3164	INT	Last FCalib_New RF Update Flag[2 - Component 2]		RD_ONLY	
3165	INT	Last FCalib_New RF Update Flag[3 - Component 3]		RD_ONLY	
3166	INT	Last FCalib_New RF Update Flag[4 - Component 4]		RD_ONLY	
3167	INT	Last FCalib_New RF Update Flag[5 - Component 5]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
3168	INT	Last FCalib_New RF Update Flag[6 - Component 6]		RD_ONLY	
3169	INT	Last FCalib_New RF Update Flag[7 - Component 7]		RD_ONLY	
3170	INT	Last FCalib_New RF Update Flag[8 - Component 8]		RD_ONLY	
3171	INT	Last FCalib_New RF Update Flag[9 - Component 9]		RD_ONLY	
3172	INT	Last FCalib_New RF Update Flag[10 - Component 10]		RD_ONLY	
3173	INT	Last FCalib_New RF Update Flag[11 - Component 11]		RD_ONLY	
3174	INT	Last FCalib_New RF Update Flag[12 - Component 12]		RD_ONLY	
3175	INT	Last FCalib_New RF Update Flag[13 - Component 13]		RD_ONLY	
3176	INT	Last FCalib_New RF Update Flag[14 - Component 14]		RD_ONLY	
3177	INT	Last FCalib_New RF Update Flag[15 - Component 15]		RD_ONLY	
3178	INT	Last FCalib_New RF Update Flag[16 - Component 16]		RD_ONLY	
3179	INT	Last FCalib_New RF Update Flag[17 - Component 17]		RD_ONLY	
3180	INT	Last FCalib_New RF Update Flag[18 - Component 18]		RD_ONLY	
3181	INT	Last FCalib_New RF Update Flag[19 - Component 19]		RD_ONLY	
3182	INT	Last FCalib_New RF Update Flag[20 - Component 20]		RD_ONLY	
5001	LONG	Last Analy_Cycle Time (1/30th sec)		RD_ONLY	
5002	LONG	Last Calib_Calib Time(1/30th sec)		RD_ONLY	
7001	FLOAT	Last Analy_Mole %[1 - Component 1]		RD_ONLY	
7002	FLOAT	Last Analy_Mole %[2 - Component 2]		RD_ONLY	
7003	FLOAT	Last Analy_Mole %[3 - Component 3]		RD_ONLY	
7004	FLOAT	Last Analy_Mole %[4 - Component 4]		RD_ONLY	
7005	FLOAT	Last Analy_Mole %[5 - Component 5]		RD_ONLY	
7006	FLOAT	Last Analy_Mole %[6 - Component 6]		RD_ONLY	
7007	FLOAT	Last Analy_Mole %[7 - Component 7]		RD_ONLY	
7008	FLOAT	Last Analy_Mole %[8 - Component 8]		RD_ONLY	
7009	FLOAT	Last Analy_Mole %[9 - Component 9]		RD_ONLY	
7010	FLOAT	Last Analy_Mole %[10 - Component 10]		RD_ONLY	
7011	FLOAT	Last Analy_Mole %[11 - Component 11]		RD_ONLY	
7012	FLOAT	Last Analy_Mole %[12 - Component 12]		RD_ONLY	
7013	FLOAT	Last Analy_Mole %[13 - Component 13]		RD_ONLY	
7014	FLOAT	Last Analy_Mole %[14 - Component 14]		RD_ONLY	
7015	FLOAT	Last Analy_Mole %[15 - Component 15]		RD_ONLY	
7016	FLOAT	Last Analy_Mole %[16 - Component 16]		RD_ONLY	
7017	FLOAT	Last Analy_Weight %[1 - Component 1]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7018	FLOAT	Last Analy_Weight %[2 - Component 2]		RD_ONLY	
7019	FLOAT	Last Analy_Weight %[3 - Component 3]		RD_ONLY	
7020	FLOAT	Last Analy_Weight %[4 - Component 4]		RD_ONLY	
7021	FLOAT	Last Analy_Weight %[5 - Component 5]		RD_ONLY	
7022	FLOAT	Last Analy_Weight %[6 - Component 6]		RD_ONLY	
7023	FLOAT	Last Analy_Weight %[7 - Component 7]		RD_ONLY	
7024	FLOAT	Last Analy_Weight %[8 - Component 8]		RD_ONLY	
7025	FLOAT	Last Analy_Weight %[9 - Component 9]		RD_ONLY	
7026	FLOAT	Last Analy_Weight %[10 - Component 10]		RD_ONLY	
7027	FLOAT	Last Analy_Weight %[11 - Component 11]		RD_ONLY	
7028	FLOAT	Last Analy_Weight %[12 - Component 12]		RD_ONLY	
7029	FLOAT	Last Analy_Weight %[13 - Component 13]		RD_ONLY	
7030	FLOAT	Last Analy_Weight %[14 - Component 14]		RD_ONLY	
7031	FLOAT	Last Analy_Weight %[15 - Component 15]		RD_ONLY	
7032	FLOAT	Last Analy_Weight %[16 - Component 16]		RD_ONLY	
7033	FLOAT	Last Analy_ISO CV Sup Dry - Pri		RD_ONLY	
7034	FLOAT	Last Analy_ISO CV Sup Sat - Pri		RD_ONLY	
7035	FLOAT	Last Analy_ISO Real Rel Den Gas - Pri		RD_ONLY	
7036	FLOAT	Last Analy_ISO Z Factor - Pri		RD_ONLY	
7037	FLOAT	Last Analy_ISO Wobbe Index Sup - Pri		RD_ONLY	
7038	FLOAT	Last Analy_Total Unnormalized Conc		RD_ONLY	
7039	FLOAT	Last Analy_ISO Avg Molar Mass		RD_ONLY	
7040	FLOAT	Calc Result[1 - User Cal 1]		RD_ONLY	
7041	FLOAT	Calc Result[2 - User Cal 2]		RD_ONLY	
7042	FLOAT	Calc Result[3 - User Cal 3]		RD_ONLY	
7043	FLOAT	Calc Result[4 - User Cal 4]		RD_ONLY	
7044	FLOAT	Calc Result[5 - User Cal 5]		RD_ONLY	
7045	FLOAT	Unused		RD_ONLY	
7046	FLOAT	Last Analy_ISO CV Sup Dry - Sec		RD_ONLY	
7047	FLOAT	Last Analy_ISO CV Sup Sat - Sec		RD_ONLY	
7048	FLOAT	Last Analy_ISO CV Inf Dry - Sec		RD_ONLY	
7049	FLOAT	Last Analy_ISO CV Inf Sat - Sec		RD_ONLY	
7050	FLOAT	Last Analy_ISO Z Factor - Sec		RD_ONLY	
7051	FLOAT	Last Analy_ISO Real Rel Den Gas - Sec		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7052	FLOAT	Last Analy_ISO Gas Den kg/m3 - Sec		RD_ONLY	
7053	FLOAT	Last Analy_ISO Wobbe Index Sup - Sec		RD_ONLY	
7054	FLOAT	Last Analy_ISO Wobbe Index Inf - Sec		RD_ONLY	
7055	FLOAT	Avg[1 - Average 1]		RD_ONLY	
7056	FLOAT	Avg[2 - Average 2]		RD_ONLY	
7057	FLOAT	Avg[3 - Average 3]		RD_ONLY	
7058	FLOAT	Avg[4 - Average 4]		RD_ONLY	
7059	FLOAT	Avg[5 - Average 5]		RD_ONLY	
7060	FLOAT	Avg[6 - Average 6]		RD_ONLY	
7061	FLOAT	Avg[7 - Average 7]		RD_ONLY	
7062	FLOAT	Avg[8 - Average 8]		RD_ONLY	
7063	FLOAT	Avg[9 - Average 9]		RD_ONLY	
7064	FLOAT	Avg[10 - Average 10]		RD_ONLY	
7065	FLOAT	Avg[11 - Average 11]		RD_ONLY	
7066	FLOAT	Avg[12 - Average 12]		RD_ONLY	
7067	FLOAT	Avg[13 - Average 13]		RD_ONLY	
7068	FLOAT	Avg[14 - Average 14]		RD_ONLY	
7069	FLOAT	Avg[15 - Average 15]		RD_ONLY	
7070	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
7071	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
7072	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
7073	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
7074	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
7075	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
7076	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
7077	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
7078	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
7079	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
7080	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
7081	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
7082	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
7083	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
7084	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
7085	FLOAT	Current Value[1 - Analog Input 1]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7086	FLOAT	Current Value[2 - Analog Input 2]		RD_ONLY	
7087	FLOAT	Last Analy_ISO CV Inf Dry - Pri		RD_ONLY	
7088	FLOAT	Last Analy_ISO CV Inf Sat - Pri		RD_ONLY	
7089	FLOAT	Last Analy_ISO Wobbe Index Inf - Pri		RD_ONLY	
7090	FLOAT	Last Analy_ISO Gas Den kg/m3 - Pri		RD_ONLY	
7091	FLOAT	Last FCalib_Total Calibration Runs		RD_ONLY	
7092	FLOAT	Last FCalib_Total Average Runs		RD_ONLY	
7093	FLOAT	Auto Calibration Start Time		RD_ONLY	hhmm
7094	FLOAT	GC Control_Stream Sequence Select		RD_WR	
7095	FLOAT	Last Analy_Response Factor[1 - Component 1]		RD_ONLY	
7096	FLOAT	Last Analy_Response Factor[2 - Component 2]		RD_ONLY	
7097	FLOAT	Last Analy_Response Factor[3 - Component 3]		RD_ONLY	
7098	FLOAT	Last Analy_Response Factor[4 - Component 4]		RD_ONLY	
7099	FLOAT	Last Analy_Response Factor[5 - Component 5]		RD_ONLY	
7100	FLOAT	Last Analy_Response Factor[6 - Component 6]		RD_ONLY	
7101	FLOAT	Last Analy_Response Factor[7 - Component 7]		RD_ONLY	
7102	FLOAT	Last Analy_Response Factor[8 - Component 8]		RD_ONLY	
7103	FLOAT	Last Analy_Response Factor[9 - Component 9]		RD_ONLY	
7104	FLOAT	Last Analy_Response Factor[10 - Component 10]		RD_ONLY	
7105	FLOAT	Last Analy_Response Factor[11 - Component 11]		RD_ONLY	
7106	FLOAT	Last Analy_Response Factor[12 - Component 12]		RD_ONLY	
7107	FLOAT	Last Analy_Response Factor[13 - Component 13]		RD_ONLY	
7108	FLOAT	Last Analy_Response Factor[14 - Component 14]		RD_ONLY	
7109	FLOAT	Last Analy_Response Factor[15 - Component 15]		RD_ONLY	
7110	FLOAT	Last Analy_Response Factor[16 - Component 16]		RD_ONLY	
7111	FLOAT	Last FCalib_ISO CV Sup Dry - Pri		RD_ONLY	
7112	FLOAT	Last FCalib_ISO CV Sup Sat - Pri		RD_ONLY	
7113	FLOAT	Last FCalib_ISO CV Inf Dry - Pri		RD_ONLY	
7114	FLOAT	Last FCalib_ISO CV Inf Sat - Pri		RD_ONLY	
7115	FLOAT	Last FCalib_ISO Z Factor - Pri		RD_ONLY	
7116	FLOAT	Last FCalib_ISO Real Rel Den Gas - Pri		RD_ONLY	
7117	FLOAT	Last FCalib_ISO Gas Den kg/m3 - Pri		RD_ONLY	
7118	FLOAT	Last FCalib_ISO Wobbe Index Sup - Pri		RD_ONLY	
7119	FLOAT	Last FCalib_ISO Wobbe Index Inf - Pri		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7120	FLOAT	Last FCalib_ISO Avg Molar Mass		RD_ONLY	
7121	FLOAT	Last FCalib_Total Unnormalized Conc		RD_ONLY	
7122	FLOAT	Last Calib_Stream Number		RD_ONLY	
7123	FLOAT	Last Analy_GS(M)R Incomp Combustion Factor		RD_ONLY	
7124	FLOAT	Last Analy_GS(M)R Soot Index		RD_ONLY	
7125	FLOAT	Last Analy_Ratio of Latent Heat Cap		RD_ONLY	
7126	FLOAT	Avg[1 - Average 1]		RD_ONLY	
7127	FLOAT	Avg[2 - Average 2]		RD_ONLY	
7128	FLOAT	Avg[3 - Average 3]		RD_ONLY	
7129	FLOAT	Avg[4 - Average 4]		RD_ONLY	
7130	FLOAT	Avg[5 - Average 5]		RD_ONLY	
7131	FLOAT	Avg[6 - Average 6]		RD_ONLY	
7132	FLOAT	Avg[7 - Average 7]		RD_ONLY	
7133	FLOAT	Avg[8 - Average 8]		RD_ONLY	
7134	FLOAT	Avg[9 - Average 9]		RD_ONLY	
7135	FLOAT	Avg[10 - Average 10]		RD_ONLY	
7136	FLOAT	Avg[11 - Average 11]		RD_ONLY	
7137	FLOAT	Avg[12 - Average 12]		RD_ONLY	
7138	FLOAT	Avg[13 - Average 13]		RD_ONLY	
7139	FLOAT	Avg[14 - Average 14]		RD_ONLY	
7140	FLOAT	Avg[15 - Average 15]		RD_ONLY	
7141	FLOAT	Avg[16 - Average 16]		RD_ONLY	
7142	FLOAT	Avg[17 - Average 17]		RD_ONLY	
7143	FLOAT	Avg[18 - Average 18]		RD_ONLY	
7144	FLOAT	Avg[19 - Average 19]		RD_ONLY	
7145	FLOAT	Avg[20 - Average 20]		RD_ONLY	
7146	FLOAT	Avg[21 - Average 21]		RD_ONLY	
7147	FLOAT	Avg[22 - Average 22]		RD_ONLY	
7148	FLOAT	Avg[23 - Average 23]		RD_ONLY	
7149	FLOAT	Avg[24 - Average 24]		RD_ONLY	
7150	FLOAT	Avg[25 - Average 25]		RD_ONLY	
7151	FLOAT	Avg[26 - Average 26]		RD_ONLY	
7152	FLOAT	Avg[27 - Average 27]		RD_ONLY	
7153	FLOAT	Avg[28 - Average 28]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7154	FLOAT	Avg[29 - Average 29]		RD_ONLY	
7155	FLOAT	Avg[30 - Average 30]		RD_ONLY	
7156	FLOAT	Avg[31 - Average 31]		RD_ONLY	
7157	FLOAT	Avg[32 - Average 32]		RD_ONLY	
7158	FLOAT	Avg[33 - Average 33]		RD_ONLY	
7159	FLOAT	Avg[34 - Average 34]		RD_ONLY	
7160	FLOAT	Avg[35 - Average 35]		RD_ONLY	
7161	FLOAT	Avg[36 - Average 36]		RD_ONLY	
7162	FLOAT	Max[1 - Average 1]		RD_ONLY	
7163	FLOAT	Max[2 - Average 2]		RD_ONLY	
7164	FLOAT	Max[3 - Average 3]		RD_ONLY	
7165	FLOAT	Max[4 - Average 4]		RD_ONLY	
7166	FLOAT	Max[5 - Average 5]		RD_ONLY	
7167	FLOAT	Max[6 - Average 6]		RD_ONLY	
7168	FLOAT	Max[7 - Average 7]		RD_ONLY	
7169	FLOAT	Max[8 - Average 8]		RD_ONLY	
7170	FLOAT	Max[9 - Average 9]		RD_ONLY	
7171	FLOAT	Max[10 - Average 10]		RD_ONLY	
7172	FLOAT	Max[11 - Average 11]		RD_ONLY	
7173	FLOAT	Max[12 - Average 12]		RD_ONLY	
7174	FLOAT	Max[13 - Average 13]		RD_ONLY	
7175	FLOAT	Max[14 - Average 14]		RD_ONLY	
7176	FLOAT	Max[15 - Average 15]		RD_ONLY	
7177	FLOAT	Max[16 - Average 16]		RD_ONLY	
7178	FLOAT	Max[17 - Average 17]		RD_ONLY	
7179	FLOAT	Max[18 - Average 18]		RD_ONLY	
7180	FLOAT	Max[19 - Average 19]		RD_ONLY	
7181	FLOAT	Max[20 - Average 20]		RD_ONLY	
7182	FLOAT	Max[21 - Average 21]		RD_ONLY	
7183	FLOAT	Max[22 - Average 22]		RD_ONLY	
7184	FLOAT	Max[23 - Average 23]		RD_ONLY	
7185	FLOAT	Max[24 - Average 24]		RD_ONLY	
7186	FLOAT	Max[25 - Average 25]		RD_ONLY	
7187	FLOAT	Max[26 - Average 26]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7188	FLOAT	Max[27 - Average 27]		RD_ONLY	
7189	FLOAT	Max[28 - Average 28]		RD_ONLY	
7190	FLOAT	Max[29 - Average 29]		RD_ONLY	
7191	FLOAT	Max[30 - Average 30]		RD_ONLY	
7192	FLOAT	Max[31 - Average 31]		RD_ONLY	
7193	FLOAT	Max[32 - Average 32]		RD_ONLY	
7194	FLOAT	Max[33 - Average 33]		RD_ONLY	
7195	FLOAT	Max[34 - Average 34]		RD_ONLY	
7196	FLOAT	Max[35 - Average 35]		RD_ONLY	
7197	FLOAT	Max[36 - Average 36]		RD_ONLY	
7198	FLOAT	Min[1 - Average 1]		RD_ONLY	
7199	FLOAT	Min[2 - Average 2]		RD_ONLY	
7200	FLOAT	Min[3 - Average 3]		RD_ONLY	
7201	FLOAT	Min[4 - Average 4]		RD_ONLY	
7202	FLOAT	Min[5 - Average 5]		RD_ONLY	
7203	FLOAT	Min[6 - Average 6]		RD_ONLY	
7204	FLOAT	Min[7 - Average 7]		RD_ONLY	
7205	FLOAT	Min[8 - Average 8]		RD_ONLY	
7206	FLOAT	Min[9 - Average 9]		RD_ONLY	
7207	FLOAT	Min[10 - Average 10]		RD_ONLY	
7208	FLOAT	Min[11 - Average 11]		RD_ONLY	
7209	FLOAT	Min[12 - Average 12]		RD_ONLY	
7210	FLOAT	Min[13 - Average 13]		RD_ONLY	
7211	FLOAT	Min[14 - Average 14]		RD_ONLY	
7212	FLOAT	Min[15 - Average 15]		RD_ONLY	
7213	FLOAT	Min[16 - Average 16]		RD_ONLY	
7214	FLOAT	Min[17 - Average 17]		RD_ONLY	
7215	FLOAT	Min[18 - Average 18]		RD_ONLY	
7216	FLOAT	Min[19 - Average 19]		RD_ONLY	
7217	FLOAT	Min[20 - Average 20]		RD_ONLY	
7218	FLOAT	Min[21 - Average 21]		RD_ONLY	
7219	FLOAT	Min[22 - Average 22]		RD_ONLY	
7220	FLOAT	Min[23 - Average 23]		RD_ONLY	
7221	FLOAT	Min[24 - Average 24]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7222	FLOAT	Min[25 - Average 25]		RD_ONLY	
7223	FLOAT	Min[26 - Average 26]		RD_ONLY	
7224	FLOAT	Min[27 - Average 27]		RD_ONLY	
7225	FLOAT	Min[28 - Average 28]		RD_ONLY	
7226	FLOAT	Min[29 - Average 29]		RD_ONLY	
7227	FLOAT	Min[30 - Average 30]		RD_ONLY	
7228	FLOAT	Min[31 - Average 31]		RD_ONLY	
7229	FLOAT	Min[32 - Average 32]		RD_ONLY	
7230	FLOAT	Min[33 - Average 33]		RD_ONLY	
7231	FLOAT	Min[34 - Average 34]		RD_ONLY	
7232	FLOAT	Min[35 - Average 35]		RD_ONLY	
7233	FLOAT	Min[36 - Average 36]		RD_ONLY	
7234	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
7235	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
7236	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
7237	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
7238	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
7239	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
7240	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
7241	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
7242	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
7243	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
7244	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
7245	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
7246	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
7247	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
7248	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
7249	FLOAT	Archive_Avg[16 - Average 16]	1	RD_ONLY	
7250	FLOAT	Archive_Avg[17 - Average 17]	1	RD_ONLY	
7251	FLOAT	Archive_Avg[18 - Average 18]	1	RD_ONLY	
7252	FLOAT	Archive_Avg[19 - Average 19]	1	RD_ONLY	
7253	FLOAT	Archive_Avg[20 - Average 20]	1	RD_ONLY	
7254	FLOAT	Archive_Avg[21 - Average 21]	1	RD_ONLY	
7255	FLOAT	Archive_Avg[22 - Average 22]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7256	FLOAT	Archive_Avg[23 - Average 23]	1	RD_ONLY	
7257	FLOAT	Archive_Avg[24 - Average 24]	1	RD_ONLY	
7258	FLOAT	Archive_Avg[25 - Average 25]	1	RD_ONLY	
7259	FLOAT	Archive_Avg[26 - Average 26]	1	RD_ONLY	
7260	FLOAT	Archive_Avg[27 - Average 27]	1	RD_ONLY	
7261	FLOAT	Archive_Avg[28 - Average 28]	1	RD_ONLY	
7262	FLOAT	Archive_Avg[29 - Average 29]	1	RD_ONLY	
7263	FLOAT	Archive_Avg[30 - Average 30]	1	RD_ONLY	
7264	FLOAT	Archive_Avg[31 - Average 31]	1	RD_ONLY	
7265	FLOAT	Archive_Avg[32 - Average 32]	1	RD_ONLY	
7266	FLOAT	Archive_Avg[33 - Average 33]	1	RD_ONLY	
7267	FLOAT	Archive_Avg[34 - Average 34]	1	RD_ONLY	
7268	FLOAT	Archive_Avg[35 - Average 35]	1	RD_ONLY	
7269	FLOAT	Archive_Avg[36 - Average 36]	1	RD_ONLY	
7270	FLOAT	Archive_Max[1 - Average 1]	1	RD_ONLY	
7271	FLOAT	Archive_Max[2 - Average 2]	1	RD_ONLY	
7272	FLOAT	Archive_Max[3 - Average 3]	1	RD_ONLY	
7273	FLOAT	Archive_Max[4 - Average 4]	1	RD_ONLY	
7274	FLOAT	Archive_Max[5 - Average 5]	1	RD_ONLY	
7275	FLOAT	Archive_Max[6 - Average 6]	1	RD_ONLY	
7276	FLOAT	Archive_Max[7 - Average 7]	1	RD_ONLY	
7277	FLOAT	Archive_Max[8 - Average 8]	1	RD_ONLY	
7278	FLOAT	Archive_Max[9 - Average 9]	1	RD_ONLY	
7279	FLOAT	Archive_Max[10 - Average 10]	1	RD_ONLY	
7280	FLOAT	Archive_Max[11 - Average 11]	1	RD_ONLY	
7281	FLOAT	Archive_Max[12 - Average 12]	1	RD_ONLY	
7282	FLOAT	Archive_Max[13 - Average 13]	1	RD_ONLY	
7283	FLOAT	Archive_Max[14 - Average 14]	1	RD_ONLY	
7284	FLOAT	Archive_Max[15 - Average 15]	1	RD_ONLY	
7285	FLOAT	Archive_Max[16 - Average 16]	1	RD_ONLY	
7286	FLOAT	Archive_Max[17 - Average 17]	1	RD_ONLY	
7287	FLOAT	Archive_Max[18 - Average 18]	1	RD_ONLY	
7288	FLOAT	Archive_Max[19 - Average 19]	1	RD_ONLY	
7289	FLOAT	Archive_Max[20 - Average 20]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7290	FLOAT	Archive_Max[21 - Average 21]	1	RD_ONLY	
7291	FLOAT	Archive_Max[22 - Average 22]	1	RD_ONLY	
7292	FLOAT	Archive_Max[23 - Average 23]	1	RD_ONLY	
7293	FLOAT	Archive_Max[24 - Average 24]	1	RD_ONLY	
7294	FLOAT	Archive_Max[25 - Average 25]	1	RD_ONLY	
7295	FLOAT	Archive_Max[26 - Average 26]	1	RD_ONLY	
7296	FLOAT	Archive_Max[27 - Average 27]	1	RD_ONLY	
7297	FLOAT	Archive_Max[28 - Average 28]	1	RD_ONLY	
7298	FLOAT	Archive_Max[29 - Average 29]	1	RD_ONLY	
7299	FLOAT	Archive_Max[30 - Average 30]	1	RD_ONLY	
7300	FLOAT	Archive_Max[31 - Average 31]	1	RD_ONLY	
7301	FLOAT	Archive_Max[32 - Average 32]	1	RD_ONLY	
7302	FLOAT	Archive_Max[33 - Average 33]	1	RD_ONLY	
7303	FLOAT	Archive_Max[34 - Average 34]	1	RD_ONLY	
7304	FLOAT	Archive_Max[35 - Average 35]	1	RD_ONLY	
7305	FLOAT	Archive_Max[36 - Average 36]	1	RD_ONLY	
7306	FLOAT	Archive_Min[1 - Average 1]	1	RD_ONLY	
7307	FLOAT	Archive_Min[2 - Average 2]	1	RD_ONLY	
7308	FLOAT	Archive_Min[3 - Average 3]	1	RD_ONLY	
7309	FLOAT	Archive_Min[4 - Average 4]	1	RD_ONLY	
7310	FLOAT	Archive_Min[5 - Average 5]	1	RD_ONLY	
7311	FLOAT	Archive_Min[6 - Average 6]	1	RD_ONLY	
7312	FLOAT	Archive_Min[7 - Average 7]	1	RD_ONLY	
7313	FLOAT	Archive_Min[8 - Average 8]	1	RD_ONLY	
7314	FLOAT	Archive_Min[9 - Average 9]	1	RD_ONLY	
7315	FLOAT	Archive_Min[10 - Average 10]	1	RD_ONLY	
7316	FLOAT	Archive_Min[11 - Average 11]	1	RD_ONLY	
7317	FLOAT	Archive_Min[12 - Average 12]	1	RD_ONLY	
7318	FLOAT	Archive_Min[13 - Average 13]	1	RD_ONLY	
7319	FLOAT	Archive_Min[14 - Average 14]	1	RD_ONLY	
7320	FLOAT	Archive_Min[15 - Average 15]	1	RD_ONLY	
7321	FLOAT	Archive_Min[16 - Average 16]	1	RD_ONLY	
7322	FLOAT	Archive_Min[17 - Average 17]	1	RD_ONLY	
7323	FLOAT	Archive_Min[18 - Average 18]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7324	FLOAT	Archive_Min[19 - Average 19]	1	RD_ONLY	
7325	FLOAT	Archive_Min[20 - Average 20]	1	RD_ONLY	
7326	FLOAT	Archive_Min[21 - Average 21]	1	RD_ONLY	
7327	FLOAT	Archive_Min[22 - Average 22]	1	RD_ONLY	
7328	FLOAT	Archive_Min[23 - Average 23]	1	RD_ONLY	
7329	FLOAT	Archive_Min[24 - Average 24]	1	RD_ONLY	
7330	FLOAT	Archive_Min[25 - Average 25]	1	RD_ONLY	
7331	FLOAT	Archive_Min[26 - Average 26]	1	RD_ONLY	
7332	FLOAT	Archive_Min[27 - Average 27]	1	RD_ONLY	
7333	FLOAT	Archive_Min[28 - Average 28]	1	RD_ONLY	
7334	FLOAT	Archive_Min[29 - Average 29]	1	RD_ONLY	
7335	FLOAT	Archive_Min[30 - Average 30]	1	RD_ONLY	
7336	FLOAT	Archive_Min[31 - Average 31]	1	RD_ONLY	
7337	FLOAT	Archive_Min[32 - Average 32]	1	RD_ONLY	
7338	FLOAT	Archive_Min[33 - Average 33]	1	RD_ONLY	
7339	FLOAT	Archive_Min[34 - Average 34]	1	RD_ONLY	
7340	FLOAT	Archive_Min[35 - Average 35]	1	RD_ONLY	
7341	FLOAT	Archive_Min[36 - Average 36]	1	RD_ONLY	
7342	FLOAT	Archive_Avg[1 - Average 1]	2	RD_ONLY	
7343	FLOAT	Archive_Avg[2 - Average 2]	2	RD_ONLY	
7344	FLOAT	Archive_Avg[3 - Average 3]	2	RD_ONLY	
7345	FLOAT	Archive_Avg[4 - Average 4]	2	RD_ONLY	
7346	FLOAT	Archive_Avg[5 - Average 5]	2	RD_ONLY	
7347	FLOAT	Archive_Avg[6 - Average 6]	2	RD_ONLY	
7348	FLOAT	Archive_Avg[7 - Average 7]	2	RD_ONLY	
7349	FLOAT	Archive_Avg[8 - Average 8]	2	RD_ONLY	
7350	FLOAT	Archive_Avg[9 - Average 9]	2	RD_ONLY	
7351	FLOAT	Archive_Avg[10 - Average 10]	2	RD_ONLY	
7352	FLOAT	Archive_Avg[11 - Average 11]	2	RD_ONLY	
7353	FLOAT	Archive_Avg[12 - Average 12]	2	RD_ONLY	
7354	FLOAT	Archive_Avg[13 - Average 13]	2	RD_ONLY	
7355	FLOAT	Archive_Avg[14 - Average 14]	2	RD_ONLY	
7356	FLOAT	Archive_Avg[15 - Average 15]	2	RD_ONLY	
7357	FLOAT	Archive_Avg[16 - Average 16]	2	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7358	FLOAT	Archive_Avg[17 - Average 17]	2	RD_ONLY	
7359	FLOAT	Archive_Avg[18 - Average 18]	2	RD_ONLY	
7360	FLOAT	Archive_Avg[19 - Average 19]	2	RD_ONLY	
7361	FLOAT	Archive_Avg[20 - Average 20]	2	RD_ONLY	
7362	FLOAT	Archive_Avg[21 - Average 21]	2	RD_ONLY	
7363	FLOAT	Archive_Avg[22 - Average 22]	2	RD_ONLY	
7364	FLOAT	Archive_Avg[23 - Average 23]	2	RD_ONLY	
7365	FLOAT	Archive_Avg[24 - Average 24]	2	RD_ONLY	
7366	FLOAT	Archive_Avg[25 - Average 25]	2	RD_ONLY	
7367	FLOAT	Archive_Avg[26 - Average 26]	2	RD_ONLY	
7368	FLOAT	Archive_Avg[27 - Average 27]	2	RD_ONLY	
7369	FLOAT	Archive_Avg[28 - Average 28]	2	RD_ONLY	
7370	FLOAT	Archive_Avg[29 - Average 29]	2	RD_ONLY	
7371	FLOAT	Archive_Avg[30 - Average 30]	2	RD_ONLY	
7372	FLOAT	Archive_Avg[31 - Average 31]	2	RD_ONLY	
7373	FLOAT	Archive_Avg[32 - Average 32]	2	RD_ONLY	
7374	FLOAT	Archive_Avg[33 - Average 33]	2	RD_ONLY	
7375	FLOAT	Archive_Avg[34 - Average 34]	2	RD_ONLY	
7376	FLOAT	Archive_Avg[35 - Average 35]	2	RD_ONLY	
7377	FLOAT	Archive_Avg[36 - Average 36]	2	RD_ONLY	
7378	FLOAT	Archive_Max[1 - Average 1]	2	RD_ONLY	
7379	FLOAT	Archive_Max[2 - Average 2]	2	RD_ONLY	
7380	FLOAT	Archive_Max[3 - Average 3]	2	RD_ONLY	
7381	FLOAT	Archive_Max[4 - Average 4]	2	RD_ONLY	
7382	FLOAT	Archive_Max[5 - Average 5]	2	RD_ONLY	
7383	FLOAT	Archive_Max[6 - Average 6]	2	RD_ONLY	
7384	FLOAT	Archive_Max[7 - Average 7]	2	RD_ONLY	
7385	FLOAT	Archive_Max[8 - Average 8]	2	RD_ONLY	
7386	FLOAT	Archive_Max[9 - Average 9]	2	RD_ONLY	
7387	FLOAT	Archive_Max[10 - Average 10]	2	RD_ONLY	
7388	FLOAT	Archive_Max[11 - Average 11]	2	RD_ONLY	
7389	FLOAT	Archive_Max[12 - Average 12]	2	RD_ONLY	
7390	FLOAT	Archive_Max[13 - Average 13]	2	RD_ONLY	
7391	FLOAT	Archive_Max[14 - Average 14]	2	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7392	FLOAT	Archive_Max[15 - Average 15]	2	RD_ONLY	
7393	FLOAT	Archive_Max[16 - Average 16]	2	RD_ONLY	
7394	FLOAT	Archive_Max[17 - Average 17]	2	RD_ONLY	
7395	FLOAT	Archive_Max[18 - Average 18]	2	RD_ONLY	
7396	FLOAT	Archive_Max[19 - Average 19]	2	RD_ONLY	
7397	FLOAT	Archive_Max[20 - Average 20]	2	RD_ONLY	
7398	FLOAT	Archive_Max[21 - Average 21]	2	RD_ONLY	
7399	FLOAT	Archive_Max[22 - Average 22]	2	RD_ONLY	
7400	FLOAT	Archive_Max[23 - Average 23]	2	RD_ONLY	
7401	FLOAT	Archive_Max[24 - Average 24]	2	RD_ONLY	
7402	FLOAT	Archive_Max[25 - Average 25]	2	RD_ONLY	
7403	FLOAT	Archive_Max[26 - Average 26]	2	RD_ONLY	
7404	FLOAT	Archive_Max[27 - Average 27]	2	RD_ONLY	
7405	FLOAT	Archive_Max[28 - Average 28]	2	RD_ONLY	
7406	FLOAT	Archive_Max[29 - Average 29]	2	RD_ONLY	
7407	FLOAT	Archive_Max[30 - Average 30]	2	RD_ONLY	
7408	FLOAT	Archive_Max[31 - Average 31]	2	RD_ONLY	
7409	FLOAT	Archive_Max[32 - Average 32]	2	RD_ONLY	
7410	FLOAT	Archive_Max[33 - Average 33]	2	RD_ONLY	
7411	FLOAT	Archive_Max[34 - Average 34]	2	RD_ONLY	
7412	FLOAT	Archive_Max[35 - Average 35]	2	RD_ONLY	
7413	FLOAT	Archive_Max[36 - Average 36]	2	RD_ONLY	
7414	FLOAT	Archive_Min[1 - Average 1]	2	RD_ONLY	
7415	FLOAT	Archive_Min[2 - Average 2]	2	RD_ONLY	
7416	FLOAT	Archive_Min[3 - Average 3]	2	RD_ONLY	
7417	FLOAT	Archive_Min[4 - Average 4]	2	RD_ONLY	
7418	FLOAT	Archive_Min[5 - Average 5]	2	RD_ONLY	
7419	FLOAT	Archive_Min[6 - Average 6]	2	RD_ONLY	
7420	FLOAT	Archive_Min[7 - Average 7]	2	RD_ONLY	
7421	FLOAT	Archive_Min[8 - Average 8]	2	RD_ONLY	
7422	FLOAT	Archive_Min[9 - Average 9]	2	RD_ONLY	
7423	FLOAT	Archive_Min[10 - Average 10]	2	RD_ONLY	
7424	FLOAT	Archive_Min[11 - Average 11]	2	RD_ONLY	
7425	FLOAT	Archive_Min[12 - Average 12]	2	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7426	FLOAT	Archive_Min[13 - Average 13]	2	RD_ONLY	
7427	FLOAT	Archive_Min[14 - Average 14]	2	RD_ONLY	
7428	FLOAT	Archive_Min[15 - Average 15]	2	RD_ONLY	
7429	FLOAT	Archive_Min[16 - Average 16]	2	RD_ONLY	
7430	FLOAT	Archive_Min[17 - Average 17]	2	RD_ONLY	
7431	FLOAT	Archive_Min[18 - Average 18]	2	RD_ONLY	
7432	FLOAT	Archive_Min[19 - Average 19]	2	RD_ONLY	
7433	FLOAT	Archive_Min[20 - Average 20]	2	RD_ONLY	
7434	FLOAT	Archive_Min[21 - Average 21]	2	RD_ONLY	
7435	FLOAT	Archive_Min[22 - Average 22]	2	RD_ONLY	
7436	FLOAT	Archive_Min[23 - Average 23]	2	RD_ONLY	
7437	FLOAT	Archive_Min[24 - Average 24]	2	RD_ONLY	
7438	FLOAT	Archive_Min[25 - Average 25]	2	RD_ONLY	
7439	FLOAT	Archive_Min[26 - Average 26]	2	RD_ONLY	
7440	FLOAT	Archive_Min[27 - Average 27]	2	RD_ONLY	
7441	FLOAT	Archive_Min[28 - Average 28]	2	RD_ONLY	
7442	FLOAT	Archive_Min[29 - Average 29]	2	RD_ONLY	
7443	FLOAT	Archive_Min[30 - Average 30]	2	RD_ONLY	
7444	FLOAT	Archive_Min[31 - Average 31]	2	RD_ONLY	
7445	FLOAT	Archive_Min[32 - Average 32]	2	RD_ONLY	
7446	FLOAT	Archive_Min[33 - Average 33]	2	RD_ONLY	
7447	FLOAT	Archive_Min[34 - Average 34]	2	RD_ONLY	
7448	FLOAT	Archive_Min[35 - Average 35]	2	RD_ONLY	
7449	FLOAT	Archive_Min[36 - Average 36]	2	RD_ONLY	
7450	FLOAT	Archive_Avg[1 - Average 1]	3	RD_ONLY	
7451	FLOAT	Archive_Avg[2 - Average 2]	3	RD_ONLY	
7452	FLOAT	Archive_Avg[3 - Average 3]	3	RD_ONLY	
7453	FLOAT	Archive_Avg[4 - Average 4]	3	RD_ONLY	
7454	FLOAT	Archive_Avg[5 - Average 5]	3	RD_ONLY	
7455	FLOAT	Archive_Avg[6 - Average 6]	3	RD_ONLY	
7456	FLOAT	Archive_Avg[7 - Average 7]	3	RD_ONLY	
7457	FLOAT	Archive_Avg[8 - Average 8]	3	RD_ONLY	
7458	FLOAT	Archive_Avg[9 - Average 9]	3	RD_ONLY	
7459	FLOAT	Archive_Avg[10 - Average 10]	3	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7460	FLOAT	Archive_Avg[11 - Average 11]	3	RD_ONLY	
7461	FLOAT	Archive_Avg[12 - Average 12]	3	RD_ONLY	
7462	FLOAT	Archive_Avg[13 - Average 13]	3	RD_ONLY	
7463	FLOAT	Archive_Avg[14 - Average 14]	3	RD_ONLY	
7464	FLOAT	Archive_Avg[15 - Average 15]	3	RD_ONLY	
7465	FLOAT	Archive_Avg[16 - Average 16]	3	RD_ONLY	
7466	FLOAT	Archive_Avg[17 - Average 17]	3	RD_ONLY	
7467	FLOAT	Archive_Avg[18 - Average 18]	3	RD_ONLY	
7468	FLOAT	Archive_Avg[19 - Average 19]	3	RD_ONLY	
7469	FLOAT	Archive_Avg[20 - Average 20]	3	RD_ONLY	
7470	FLOAT	Archive_Avg[21 - Average 21]	3	RD_ONLY	
7471	FLOAT	Archive_Avg[22 - Average 22]	3	RD_ONLY	
7472	FLOAT	Archive_Avg[23 - Average 23]	3	RD_ONLY	
7473	FLOAT	Archive_Avg[24 - Average 24]	3	RD_ONLY	
7474	FLOAT	Archive_Avg[25 - Average 25]	3	RD_ONLY	
7475	FLOAT	Archive_Avg[26 - Average 26]	3	RD_ONLY	
7476	FLOAT	Archive_Avg[27 - Average 27]	3	RD_ONLY	
7477	FLOAT	Archive_Avg[28 - Average 28]	3	RD_ONLY	
7478	FLOAT	Archive_Avg[29 - Average 29]	3	RD_ONLY	
7479	FLOAT	Archive_Avg[30 - Average 30]	3	RD_ONLY	
7480	FLOAT	Archive_Avg[31 - Average 31]	3	RD_ONLY	
7481	FLOAT	Archive_Avg[32 - Average 32]	3	RD_ONLY	
7482	FLOAT	Archive_Avg[33 - Average 33]	3	RD_ONLY	
7483	FLOAT	Archive_Avg[34 - Average 34]	3	RD_ONLY	
7484	FLOAT	Archive_Avg[35 - Average 35]	3	RD_ONLY	
7485	FLOAT	Archive_Avg[36 - Average 36]	3	RD_ONLY	
7486	FLOAT	Archive_Max[1 - Average 1]	3	RD_ONLY	
7487	FLOAT	Archive_Max[2 - Average 2]	3	RD_ONLY	
7488	FLOAT	Archive_Max[3 - Average 3]	3	RD_ONLY	
7489	FLOAT	Archive_Max[4 - Average 4]	3	RD_ONLY	
7490	FLOAT	Archive_Max[5 - Average 5]	3	RD_ONLY	
7491	FLOAT	Archive_Max[6 - Average 6]	3	RD_ONLY	
7492	FLOAT	Archive_Max[7 - Average 7]	3	RD_ONLY	
7493	FLOAT	Archive_Max[8 - Average 8]	3	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7494	FLOAT	Archive_Max[9 - Average 9]	3	RD_ONLY	
7495	FLOAT	Archive_Max[10 - Average 10]	3	RD_ONLY	
7496	FLOAT	Archive_Max[11 - Average 11]	3	RD_ONLY	
7497	FLOAT	Archive_Max[12 - Average 12]	3	RD_ONLY	
7498	FLOAT	Archive_Max[13 - Average 13]	3	RD_ONLY	
7499	FLOAT	Archive_Max[14 - Average 14]	3	RD_ONLY	
7500	FLOAT	Archive_Max[15 - Average 15]	3	RD_ONLY	
7501	FLOAT	Archive_Max[16 - Average 16]	3	RD_ONLY	
7502	FLOAT	Archive_Max[17 - Average 17]	3	RD_ONLY	
7503	FLOAT	Archive_Max[18 - Average 18]	3	RD_ONLY	
7504	FLOAT	Archive_Max[19 - Average 19]	3	RD_ONLY	
7505	FLOAT	Archive_Max[20 - Average 20]	3	RD_ONLY	
7506	FLOAT	Archive_Max[21 - Average 21]	3	RD_ONLY	
7507	FLOAT	Archive_Max[22 - Average 22]	3	RD_ONLY	
7508	FLOAT	Archive_Max[23 - Average 23]	3	RD_ONLY	
7509	FLOAT	Archive_Max[24 - Average 24]	3	RD_ONLY	
7510	FLOAT	Archive_Max[25 - Average 25]	3	RD_ONLY	
7511	FLOAT	Archive_Max[26 - Average 26]	3	RD_ONLY	
7512	FLOAT	Archive_Max[27 - Average 27]	3	RD_ONLY	
7513	FLOAT	Archive_Max[28 - Average 28]	3	RD_ONLY	
7514	FLOAT	Archive_Max[29 - Average 29]	3	RD_ONLY	
7515	FLOAT	Archive_Max[30 - Average 30]	3	RD_ONLY	
7516	FLOAT	Archive_Max[31 - Average 31]	3	RD_ONLY	
7517	FLOAT	Archive_Max[32 - Average 32]	3	RD_ONLY	
7518	FLOAT	Archive_Max[33 - Average 33]	3	RD_ONLY	
7519	FLOAT	Archive_Max[34 - Average 34]	3	RD_ONLY	
7520	FLOAT	Archive_Max[35 - Average 35]	3	RD_ONLY	
7521	FLOAT	Archive_Max[36 - Average 36]	3	RD_ONLY	
7522	FLOAT	Archive_Min[1 - Average 1]	3	RD_ONLY	
7523	FLOAT	Archive_Min[2 - Average 2]	3	RD_ONLY	
7524	FLOAT	Archive_Min[3 - Average 3]	3	RD_ONLY	
7525	FLOAT	Archive_Min[4 - Average 4]	3	RD_ONLY	
7526	FLOAT	Archive_Min[5 - Average 5]	3	RD_ONLY	
7527	FLOAT	Archive_Min[6 - Average 6]	3	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7528	FLOAT	Archive_Min[7 - Average 7]	3	RD_ONLY	
7529	FLOAT	Archive_Min[8 - Average 8]	3	RD_ONLY	
7530	FLOAT	Archive_Min[9 - Average 9]	3	RD_ONLY	
7531	FLOAT	Archive_Min[10 - Average 10]	3	RD_ONLY	
7532	FLOAT	Archive_Min[11 - Average 11]	3	RD_ONLY	
7533	FLOAT	Archive_Min[12 - Average 12]	3	RD_ONLY	
7534	FLOAT	Archive_Min[13 - Average 13]	3	RD_ONLY	
7535	FLOAT	Archive_Min[14 - Average 14]	3	RD_ONLY	
7536	FLOAT	Archive_Min[15 - Average 15]	3	RD_ONLY	
7537	FLOAT	Archive_Min[16 - Average 16]	3	RD_ONLY	
7538	FLOAT	Archive_Min[17 - Average 17]	3	RD_ONLY	
7539	FLOAT	Archive_Min[18 - Average 18]	3	RD_ONLY	
7540	FLOAT	Archive_Min[19 - Average 19]	3	RD_ONLY	
7541	FLOAT	Archive_Min[20 - Average 20]	3	RD_ONLY	
7542	FLOAT	Archive_Min[21 - Average 21]	3	RD_ONLY	
7543	FLOAT	Archive_Min[22 - Average 22]	3	RD_ONLY	
7544	FLOAT	Archive_Min[23 - Average 23]	3	RD_ONLY	
7545	FLOAT	Archive_Min[24 - Average 24]	3	RD_ONLY	
7546	FLOAT	Archive_Min[25 - Average 25]	3	RD_ONLY	
7547	FLOAT	Archive_Min[26 - Average 26]	3	RD_ONLY	
7548	FLOAT	Archive_Min[27 - Average 27]	3	RD_ONLY	
7549	FLOAT	Archive_Min[28 - Average 28]	3	RD_ONLY	
7550	FLOAT	Archive_Min[29 - Average 29]	3	RD_ONLY	
7551	FLOAT	Archive_Min[30 - Average 30]	3	RD_ONLY	
7552	FLOAT	Archive_Min[31 - Average 31]	3	RD_ONLY	
7553	FLOAT	Archive_Min[32 - Average 32]	3	RD_ONLY	
7554	FLOAT	Archive_Min[33 - Average 33]	3	RD_ONLY	
7555	FLOAT	Archive_Min[34 - Average 34]	3	RD_ONLY	
7556	FLOAT	Archive_Min[35 - Average 35]	3	RD_ONLY	
7557	FLOAT	Archive_Min[36 - Average 36]	3	RD_ONLY	
7558	FLOAT	Component Data 1_Multi-level Calib 'a'[1]		RD_ONLY	
7559	FLOAT	Component Data 1_Multi-level Calib 'a'[2]		RD_ONLY	
7560	FLOAT	Component Data 1_Multi-level Calib 'a'[3]		RD_ONLY	
7561	FLOAT	Component Data 1_Multi-level Calib 'a'[4]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7562	FLOAT	Component Data 1_Multi-level Calib 'a'[5]		RD_ONLY	
7563	FLOAT	Component Data 1_Multi-level Calib 'a'[6]		RD_ONLY	
7564	FLOAT	Component Data 1_Multi-level Calib 'a'[7]		RD_ONLY	
7565	FLOAT	Component Data 1_Multi-level Calib 'a'[8]		RD_ONLY	
7566	FLOAT	Component Data 1_Multi-level Calib 'a'[9]		RD_ONLY	
7567	FLOAT	Component Data 1_Multi-level Calib 'a'[10]		RD_ONLY	
7568	FLOAT	Component Data 1_Multi-level Calib 'a'[11]		RD_ONLY	
7569	FLOAT	Component Data 1_Multi-level Calib 'a'[12]		RD_ONLY	
7570	FLOAT	Component Data 1_Multi-level Calib 'a'[13]		RD_ONLY	
7571	FLOAT	Component Data 1_Multi-level Calib 'a'[14]		RD_ONLY	
7572	FLOAT	Component Data 1_Multi-level Calib 'a'[15]		RD_ONLY	
7573	FLOAT	Component Data 1_Multi-level Calib 'a'[16]		RD_ONLY	
7574	FLOAT	Component Data 1_Multi-level Calib 'b'[1]		RD_ONLY	
7575	FLOAT	Component Data 1_Multi-level Calib 'b'[2]		RD_ONLY	
7576	FLOAT	Component Data 1_Multi-level Calib 'b'[3]		RD_ONLY	
7577	FLOAT	Component Data 1_Multi-level Calib 'b'[4]		RD_ONLY	
7578	FLOAT	Component Data 1_Multi-level Calib 'b'[5]		RD_ONLY	
7579	FLOAT	Component Data 1_Multi-level Calib 'b'[6]		RD_ONLY	
7580	FLOAT	Component Data 1_Multi-level Calib 'b'[7]		RD_ONLY	
7581	FLOAT	Component Data 1_Multi-level Calib 'b'[8]		RD_ONLY	
7582	FLOAT	Component Data 1_Multi-level Calib 'b'[9]		RD_ONLY	
7583	FLOAT	Component Data 1_Multi-level Calib 'b'[10]		RD_ONLY	
7584	FLOAT	Component Data 1_Multi-level Calib 'b'[11]		RD_ONLY	
7585	FLOAT	Component Data 1_Multi-level Calib 'b'[12]		RD_ONLY	
7586	FLOAT	Component Data 1_Multi-level Calib 'b'[13]		RD_ONLY	
7587	FLOAT	Component Data 1_Multi-level Calib 'b'[14]		RD_ONLY	
7588	FLOAT	Component Data 1_Multi-level Calib 'b'[15]		RD_ONLY	
7589	FLOAT	Component Data 1_Multi-level Calib 'b'[16]		RD_ONLY	
7590	FLOAT	Component Data 1_Multi-level Calib 'c'[1]		RD_ONLY	
7591	FLOAT	Component Data 1_Multi-level Calib 'c'[2]		RD_ONLY	
7592	FLOAT	Component Data 1_Multi-level Calib 'c'[3]		RD_ONLY	
7593	FLOAT	Component Data 1_Multi-level Calib 'c'[4]		RD_ONLY	
7594	FLOAT	Component Data 1_Multi-level Calib 'c'[5]		RD_ONLY	
7595	FLOAT	Component Data 1_Multi-level Calib 'c'[6]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7596	FLOAT	Component Data 1_Multi-level Calib 'c'[7]		RD_ONLY	
7597	FLOAT	Component Data 1_Multi-level Calib 'c'[8]		RD_ONLY	
7598	FLOAT	Component Data 1_Multi-level Calib 'c'[9]		RD_ONLY	
7599	FLOAT	Component Data 1_Multi-level Calib 'c'[10]		RD_ONLY	
7600	FLOAT	Component Data 1_Multi-level Calib 'c'[11]		RD_ONLY	
7601	FLOAT	Component Data 1_Multi-level Calib 'c'[12]		RD_ONLY	
7602	FLOAT	Component Data 1_Multi-level Calib 'c'[13]		RD_ONLY	
7603	FLOAT	Component Data 1_Multi-level Calib 'c'[14]		RD_ONLY	
7604	FLOAT	Component Data 1_Multi-level Calib 'c'[15]		RD_ONLY	
7605	FLOAT	Component Data 1_Multi-level Calib 'c'[16]		RD_ONLY	
7606	FLOAT	Component Data 1_Multi-level Calib 'd'[1]		RD_ONLY	
7607	FLOAT	Component Data 1_Multi-level Calib 'd'[2]		RD_ONLY	
7608	FLOAT	Component Data 1_Multi-level Calib 'd'[3]		RD_ONLY	
7609	FLOAT	Component Data 1_Multi-level Calib 'd'[4]		RD_ONLY	
7610	FLOAT	Component Data 1_Multi-level Calib 'd'[5]		RD_ONLY	
7611	FLOAT	Component Data 1_Multi-level Calib 'd'[6]		RD_ONLY	
7612	FLOAT	Component Data 1_Multi-level Calib 'd'[7]		RD_ONLY	
7613	FLOAT	Component Data 1_Multi-level Calib 'd'[8]		RD_ONLY	
7614	FLOAT	Component Data 1_Multi-level Calib 'd'[9]		RD_ONLY	
7615	FLOAT	Component Data 1_Multi-level Calib 'd'[10]		RD_ONLY	
7616	FLOAT	Component Data 1_Multi-level Calib 'd'[11]		RD_ONLY	
7617	FLOAT	Component Data 1_Multi-level Calib 'd'[12]		RD_ONLY	
7618	FLOAT	Component Data 1_Multi-level Calib 'd'[13]		RD_ONLY	
7619	FLOAT	Component Data 1_Multi-level Calib 'd'[14]		RD_ONLY	
7620	FLOAT	Component Data 1_Multi-level Calib 'd'[15]		RD_ONLY	
7621	FLOAT	Component Data 1_Multi-level Calib 'd'[16]		RD_ONLY	
7622	FLOAT	Component Data 1_Rel Resp Factor[1]		RD_ONLY	
7623	FLOAT	Component Data 1_Rel Resp Factor[2]		RD_ONLY	
7624	FLOAT	Component Data 1_Rel Resp Factor[3]		RD_ONLY	
7625	FLOAT	Component Data 1_Rel Resp Factor[4]		RD_ONLY	
7626	FLOAT	Component Data 1_Rel Resp Factor[5]		RD_ONLY	
7627	FLOAT	Component Data 1_Rel Resp Factor[6]		RD_ONLY	
7628	FLOAT	Component Data 1_Rel Resp Factor[7]		RD_ONLY	
7629	FLOAT	Component Data 1_Rel Resp Factor[8]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7630	FLOAT	Component Data 1_Rel Resp Factor[9]		RD_ONLY	
7631	FLOAT	Component Data 1_Rel Resp Factor[10]		RD_ONLY	
7632	FLOAT	Component Data 1_Rel Resp Factor[11]		RD_ONLY	
7633	FLOAT	Component Data 1_Rel Resp Factor[12]		RD_ONLY	
7634	FLOAT	Component Data 1_Rel Resp Factor[13]		RD_ONLY	
7635	FLOAT	Component Data 1_Rel Resp Factor[14]		RD_ONLY	
7636	FLOAT	Component Data 1_Rel Resp Factor[15]		RD_ONLY	
7637	FLOAT	Component Data 1_Rel Resp Factor[16]		RD_ONLY	
7638	FLOAT	Component Data 2_Multi-level Calib 'a'[1]		RD_ONLY	
7639	FLOAT	Component Data 2_Multi-level Calib 'a'[2]		RD_ONLY	
7640	FLOAT	Component Data 2_Multi-level Calib 'a'[3]		RD_ONLY	
7641	FLOAT	Component Data 2_Multi-level Calib 'a'[4]		RD_ONLY	
7642	FLOAT	Component Data 2_Multi-level Calib 'a'[5]		RD_ONLY	
7643	FLOAT	Component Data 2_Multi-level Calib 'a'[6]		RD_ONLY	
7644	FLOAT	Component Data 2_Multi-level Calib 'a'[7]		RD_ONLY	
7645	FLOAT	Component Data 2_Multi-level Calib 'a'[8]		RD_ONLY	
7646	FLOAT	Component Data 2_Multi-level Calib 'a'[9]		RD_ONLY	
7647	FLOAT	Component Data 2_Multi-level Calib 'a'[10]		RD_ONLY	
7648	FLOAT	Component Data 2_Multi-level Calib 'a'[11]		RD_ONLY	
7649	FLOAT	Component Data 2_Multi-level Calib 'a'[12]		RD_ONLY	
7650	FLOAT	Component Data 2_Multi-level Calib 'a'[13]		RD_ONLY	
7651	FLOAT	Component Data 2_Multi-level Calib 'a'[14]		RD_ONLY	
7652	FLOAT	Component Data 2_Multi-level Calib 'a'[15]		RD_ONLY	
7653	FLOAT	Component Data 2_Multi-level Calib 'a'[16]		RD_ONLY	
7654	FLOAT	Component Data 2_Multi-level Calib 'b'[1]		RD_ONLY	
7655	FLOAT	Component Data 2_Multi-level Calib 'b'[2]		RD_ONLY	
7656	FLOAT	Component Data 2_Multi-level Calib 'b'[3]		RD_ONLY	
7657	FLOAT	Component Data 2_Multi-level Calib 'b'[4]		RD_ONLY	
7658	FLOAT	Component Data 2_Multi-level Calib 'b'[5]		RD_ONLY	
7659	FLOAT	Component Data 2_Multi-level Calib 'b'[6]		RD_ONLY	
7660	FLOAT	Component Data 2_Multi-level Calib 'b'[7]		RD_ONLY	
7661	FLOAT	Component Data 2_Multi-level Calib 'b'[8]		RD_ONLY	
7662	FLOAT	Component Data 2_Multi-level Calib 'b'[9]		RD_ONLY	
7663	FLOAT	Component Data 2_Multi-level Calib 'b'[10]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7664	FLOAT	Component Data 2_Multi-level Calib 'b'[11]		RD_ONLY	
7665	FLOAT	Component Data 2_Multi-level Calib 'b'[12]		RD_ONLY	
7666	FLOAT	Component Data 2_Multi-level Calib 'b'[13]		RD_ONLY	
7667	FLOAT	Component Data 2_Multi-level Calib 'b'[14]		RD_ONLY	
7668	FLOAT	Component Data 2_Multi-level Calib 'b'[15]		RD_ONLY	
7669	FLOAT	Component Data 2_Multi-level Calib 'b'[16]		RD_ONLY	
7670	FLOAT	Component Data 2_Multi-level Calib 'c'[1]		RD_ONLY	
7671	FLOAT	Component Data 2_Multi-level Calib 'c'[2]		RD_ONLY	
7672	FLOAT	Component Data 2_Multi-level Calib 'c'[3]		RD_ONLY	
7673	FLOAT	Component Data 2_Multi-level Calib 'c'[4]		RD_ONLY	
7674	FLOAT	Component Data 2_Multi-level Calib 'c'[5]		RD_ONLY	
7675	FLOAT	Component Data 2_Multi-level Calib 'c'[6]		RD_ONLY	
7676	FLOAT	Component Data 2_Multi-level Calib 'c'[7]		RD_ONLY	
7677	FLOAT	Component Data 2_Multi-level Calib 'c'[8]		RD_ONLY	
7678	FLOAT	Component Data 2_Multi-level Calib 'c'[9]		RD_ONLY	
7679	FLOAT	Component Data 2_Multi-level Calib 'c'[10]		RD_ONLY	
7680	FLOAT	Component Data 2_Multi-level Calib 'c'[11]		RD_ONLY	
7681	FLOAT	Component Data 2_Multi-level Calib 'c'[12]		RD_ONLY	
7682	FLOAT	Component Data 2_Multi-level Calib 'c'[13]		RD_ONLY	
7683	FLOAT	Component Data 2_Multi-level Calib 'c'[14]		RD_ONLY	
7684	FLOAT	Component Data 2_Multi-level Calib 'c'[15]		RD_ONLY	
7685	FLOAT	Component Data 2_Multi-level Calib 'c'[16]		RD_ONLY	
7686	FLOAT	Component Data 2_Multi-level Calib 'd'[1]		RD_ONLY	
7687	FLOAT	Component Data 2_Multi-level Calib 'd'[2]		RD_ONLY	
7688	FLOAT	Component Data 2_Multi-level Calib 'd'[3]		RD_ONLY	
7689	FLOAT	Component Data 2_Multi-level Calib 'd'[4]		RD_ONLY	
7690	FLOAT	Component Data 2_Multi-level Calib 'd'[5]		RD_ONLY	
7691	FLOAT	Component Data 2_Multi-level Calib 'd'[6]		RD_ONLY	
7692	FLOAT	Component Data 2_Multi-level Calib 'd'[7]		RD_ONLY	
7693	FLOAT	Component Data 2_Multi-level Calib 'd'[8]		RD_ONLY	
7694	FLOAT	Component Data 2_Multi-level Calib 'd'[9]		RD_ONLY	
7695	FLOAT	Component Data 2_Multi-level Calib 'd'[10]		RD_ONLY	
7696	FLOAT	Component Data 2_Multi-level Calib 'd'[11]		RD_ONLY	
7697	FLOAT	Component Data 2_Multi-level Calib 'd'[12]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7698	FLOAT	Component Data 2_Multi-level Calib 'd'[13]		RD_ONLY	
7699	FLOAT	Component Data 2_Multi-level Calib 'd'[14]		RD_ONLY	
7700	FLOAT	Component Data 2_Multi-level Calib 'd'[15]		RD_ONLY	
7701	FLOAT	Component Data 2_Multi-level Calib 'd'[16]		RD_ONLY	
7702	FLOAT	Component Data 2_Rel Resp Factor[1]		RD_ONLY	
7703	FLOAT	Component Data 2_Rel Resp Factor[2]		RD_ONLY	
7704	FLOAT	Component Data 2_Rel Resp Factor[3]		RD_ONLY	
7705	FLOAT	Component Data 2_Rel Resp Factor[4]		RD_ONLY	
7706	FLOAT	Component Data 2_Rel Resp Factor[5]		RD_ONLY	
7707	FLOAT	Component Data 2_Rel Resp Factor[6]		RD_ONLY	
7708	FLOAT	Component Data 2_Rel Resp Factor[7]		RD_ONLY	
7709	FLOAT	Component Data 2_Rel Resp Factor[8]		RD_ONLY	
7710	FLOAT	Component Data 2_Rel Resp Factor[9]		RD_ONLY	
7711	FLOAT	Component Data 2_Rel Resp Factor[10]		RD_ONLY	
7712	FLOAT	Component Data 2_Rel Resp Factor[11]		RD_ONLY	
7713	FLOAT	Component Data 2_Rel Resp Factor[12]		RD_ONLY	
7714	FLOAT	Component Data 2_Rel Resp Factor[13]		RD_ONLY	
7715	FLOAT	Component Data 2_Rel Resp Factor[14]		RD_ONLY	
7716	FLOAT	Component Data 2_Rel Resp Factor[15]		RD_ONLY	
7717	FLOAT	Component Data 2_Rel Resp Factor[16]		RD_ONLY	
7718	FLOAT	Avg[1 - Average 1]		RD_ONLY	
7719	FLOAT	Avg[2 - Average 2]		RD_ONLY	
7720	FLOAT	Avg[3 - Average 3]		RD_ONLY	
7721	FLOAT	Avg[4 - Average 4]		RD_ONLY	
7722	FLOAT	Avg[5 - Average 5]		RD_ONLY	
7723	FLOAT	Avg[6 - Average 6]		RD_ONLY	
7724	FLOAT	Avg[7 - Average 7]		RD_ONLY	
7725	FLOAT	Avg[8 - Average 8]		RD_ONLY	
7726	FLOAT	Avg[9 - Average 9]		RD_ONLY	
7727	FLOAT	Avg[10 - Average 10]		RD_ONLY	
7728	FLOAT	Avg[11 - Average 11]		RD_ONLY	
7729	FLOAT	Avg[12 - Average 12]		RD_ONLY	
7730	FLOAT	Avg[13 - Average 13]		RD_ONLY	
7731	FLOAT	Avg[14 - Average 14]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7732	FLOAT	Avg[15 - Average 15]		RD_ONLY	
7733	FLOAT	Avg[16 - Average 16]		RD_ONLY	
7734	FLOAT	Avg[17 - Average 17]		RD_ONLY	
7735	FLOAT	Avg[18 - Average 18]		RD_ONLY	
7736	FLOAT	Avg[19 - Average 19]		RD_ONLY	
7737	FLOAT	Avg[20 - Average 20]		RD_ONLY	
7738	FLOAT	Avg[21 - Average 21]		RD_ONLY	
7739	FLOAT	Avg[22 - Average 22]		RD_ONLY	
7740	FLOAT	Avg[23 - Average 23]		RD_ONLY	
7741	FLOAT	Avg[24 - Average 24]		RD_ONLY	
7742	FLOAT	Avg[25 - Average 25]		RD_ONLY	
7743	FLOAT	Avg[26 - Average 26]		RD_ONLY	
7744	FLOAT	Avg[27 - Average 27]		RD_ONLY	
7745	FLOAT	Avg[28 - Average 28]		RD_ONLY	
7746	FLOAT	Avg[29 - Average 29]		RD_ONLY	
7747	FLOAT	Avg[30 - Average 30]		RD_ONLY	
7748	FLOAT	Avg[31 - Average 31]		RD_ONLY	
7749	FLOAT	Avg[32 - Average 32]		RD_ONLY	
7750	FLOAT	Avg[33 - Average 33]		RD_ONLY	
7751	FLOAT	Avg[34 - Average 34]		RD_ONLY	
7752	FLOAT	Avg[35 - Average 35]		RD_ONLY	
7753	FLOAT	Avg[36 - Average 36]		RD_ONLY	
7754	FLOAT	Avg[37 - Average 37]		RD_ONLY	
7755	FLOAT	Avg[38 - Average 38]		RD_ONLY	
7756	FLOAT	Avg[39 - Average 39]		RD_ONLY	
7757	FLOAT	Avg[40 - Average 40]		RD_ONLY	
7758	FLOAT	Avg[41 - Average 41]		RD_ONLY	
7759	FLOAT	Avg[42 - Average 42]		RD_ONLY	
7760	FLOAT	Avg[43 - Average 43]		RD_ONLY	
7761	FLOAT	Avg[44 - Average 44]		RD_ONLY	
7762	FLOAT	Avg[45 - Average 45]		RD_ONLY	
7763	FLOAT	Avg[46 - Average 46]		RD_ONLY	
7764	FLOAT	Avg[47 - Average 47]		RD_ONLY	
7765	FLOAT	Avg[48 - Average 48]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7766	FLOAT	Avg[49 - Average 49]		RD_ONLY	
7767	FLOAT	Avg[50 - Average 50]		RD_ONLY	
7768	FLOAT	Avg[51 - Average 51]		RD_ONLY	
7769	FLOAT	Avg[52 - Average 52]		RD_ONLY	
7770	FLOAT	Avg[53 - Average 53]		RD_ONLY	
7771	FLOAT	Avg[54 - Average 54]		RD_ONLY	
7772	FLOAT	Avg[55 - Average 55]		RD_ONLY	
7773	FLOAT	Avg[56 - Average 56]		RD_ONLY	
7774	FLOAT	Avg[57 - Average 57]		RD_ONLY	
7775	FLOAT	Avg[58 - Average 58]		RD_ONLY	
7776	FLOAT	Avg[59 - Average 59]		RD_ONLY	
7777	FLOAT	Avg[60 - Average 60]		RD_ONLY	
7778	FLOAT	Avg[61 - Average 61]		RD_ONLY	
7779	FLOAT	Avg[62 - Average 62]		RD_ONLY	
7780	FLOAT	Avg[63 - Average 63]		RD_ONLY	
7781	FLOAT	Avg[64 - Average 64]		RD_ONLY	
7782	FLOAT	Avg[65 - Average 65]		RD_ONLY	
7783	FLOAT	Avg[66 - Average 66]		RD_ONLY	
7784	FLOAT	Avg[67 - Average 67]		RD_ONLY	
7785	FLOAT	Avg[68 - Average 68]		RD_ONLY	
7786	FLOAT	Avg[69 - Average 69]		RD_ONLY	
7787	FLOAT	Avg[70 - Average 70]		RD_ONLY	
7788	FLOAT	Avg[71 - Average 71]		RD_ONLY	
7789	FLOAT	Avg[72 - Average 72]		RD_ONLY	
7790	FLOAT	Avg[73 - Average 73]		RD_ONLY	
7791	FLOAT	Avg[74 - Average 74]		RD_ONLY	
7792	FLOAT	Avg[75 - Average 75]		RD_ONLY	
7793	FLOAT	Avg[76 - Average 76]		RD_ONLY	
7794	FLOAT	Avg[77 - Average 77]		RD_ONLY	
7795	FLOAT	Avg[78 - Average 78]		RD_ONLY	
7796	FLOAT	Avg[79 - Average 79]		RD_ONLY	
7797	FLOAT	Avg[80 - Average 80]		RD_ONLY	
7798	FLOAT	Avg[81 - Average 81]		RD_ONLY	
7799	FLOAT	Avg[82 - Average 82]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7800	FLOAT	Avg[83 - Average 83]		RD_ONLY	
7801	FLOAT	Avg[84 - Average 84]		RD_ONLY	
7802	FLOAT	Avg[85 - Average 85]		RD_ONLY	
7803	FLOAT	Avg[86 - Average 86]		RD_ONLY	
7804	FLOAT	Avg[87 - Average 87]		RD_ONLY	
7805	FLOAT	Avg[88 - Average 88]		RD_ONLY	
7806	FLOAT	Avg[89 - Average 89]		RD_ONLY	
7807	FLOAT	Avg[90 - Average 90]		RD_ONLY	
7808	FLOAT	Avg[91 - Average 91]		RD_ONLY	
7809	FLOAT	Avg[92 - Average 92]		RD_ONLY	
7810	FLOAT	Avg[93 - Average 93]		RD_ONLY	
7811	FLOAT	Avg[94 - Average 94]		RD_ONLY	
7812	FLOAT	Avg[95 - Average 95]		RD_ONLY	
7813	FLOAT	Avg[96 - Average 96]		RD_ONLY	
7814	FLOAT	Avg[97 - Average 97]		RD_ONLY	
7815	FLOAT	Avg[98 - Average 98]		RD_ONLY	
7816	FLOAT	Avg[99 - Average 99]		RD_ONLY	
7817	FLOAT	Avg[100 - Average 100]		RD_ONLY	
7818	FLOAT	Avg[101 - Average 101]		RD_ONLY	
7819	FLOAT	Avg[102 - Average 102]		RD_ONLY	
7820	FLOAT	Avg[103 - Average 103]		RD_ONLY	
7821	FLOAT	Avg[104 - Average 104]		RD_ONLY	
7822	FLOAT	Avg[105 - Average 105]		RD_ONLY	
7823	FLOAT	Avg[106 - Average 106]		RD_ONLY	
7824	FLOAT	Avg[107 - Average 107]		RD_ONLY	
7825	FLOAT	Avg[108 - Average 108]		RD_ONLY	
7826	FLOAT	Avg[109 - Average 109]		RD_ONLY	
7827	FLOAT	Avg[110 - Average 110]		RD_ONLY	
7828	FLOAT	Avg[111 - Average 111]		RD_ONLY	
7829	FLOAT	Avg[112 - Average 112]		RD_ONLY	
7830	FLOAT	Avg[113 - Average 113]		RD_ONLY	
7831	FLOAT	Avg[114 - Average 114]		RD_ONLY	
7832	FLOAT	Avg[115 - Average 115]		RD_ONLY	
7833	FLOAT	Avg[116 - Average 116]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7834	FLOAT	Avg[117 - Average 117]		RD_ONLY	
7835	FLOAT	Avg[118 - Average 118]		RD_ONLY	
7836	FLOAT	Avg[119 - Average 119]		RD_ONLY	
7837	FLOAT	Avg[120 - Average 120]		RD_ONLY	
7838	FLOAT	Avg[121 - Average 121]		RD_ONLY	
7839	FLOAT	Avg[122 - Average 122]		RD_ONLY	
7840	FLOAT	Avg[123 - Average 123]		RD_ONLY	
7841	FLOAT	Avg[124 - Average 124]		RD_ONLY	
7842	FLOAT	Avg[125 - Average 125]		RD_ONLY	
7843	FLOAT	Avg[126 - Average 126]		RD_ONLY	
7844	FLOAT	Avg[127 - Average 127]		RD_ONLY	
7845	FLOAT	Avg[128 - Average 128]		RD_ONLY	
7846	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
7847	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
7848	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
7849	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
7850	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
7851	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
7852	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
7853	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
7854	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
7855	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
7856	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
7857	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
7858	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
7859	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
7860	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
7861	FLOAT	Archive_Avg[16 - Average 16]	1	RD_ONLY	
7862	FLOAT	Archive_Avg[17 - Average 17]	1	RD_ONLY	
7863	FLOAT	Archive_Avg[18 - Average 18]	1	RD_ONLY	
7864	FLOAT	Archive_Avg[19 - Average 19]	1	RD_ONLY	
7865	FLOAT	Archive_Avg[20 - Average 20]	1	RD_ONLY	
7866	FLOAT	Archive_Avg[21 - Average 21]	1	RD_ONLY	
7867	FLOAT	Archive_Avg[22 - Average 22]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7868	FLOAT	Archive_Avg[23 - Average 23]	1	RD_ONLY	
7869	FLOAT	Archive_Avg[24 - Average 24]	1	RD_ONLY	
7870	FLOAT	Archive_Avg[25 - Average 25]	1	RD_ONLY	
7871	FLOAT	Archive_Avg[26 - Average 26]	1	RD_ONLY	
7872	FLOAT	Archive_Avg[27 - Average 27]	1	RD_ONLY	
7873	FLOAT	Archive_Avg[28 - Average 28]	1	RD_ONLY	
7874	FLOAT	Archive_Avg[29 - Average 29]	1	RD_ONLY	
7875	FLOAT	Archive_Avg[30 - Average 30]	1	RD_ONLY	
7876	FLOAT	Archive_Avg[31 - Average 31]	1	RD_ONLY	
7877	FLOAT	Archive_Avg[32 - Average 32]	1	RD_ONLY	
7878	FLOAT	Archive_Avg[33 - Average 33]	1	RD_ONLY	
7879	FLOAT	Archive_Avg[34 - Average 34]	1	RD_ONLY	
7880	FLOAT	Archive_Avg[35 - Average 35]	1	RD_ONLY	
7881	FLOAT	Archive_Avg[36 - Average 36]	1	RD_ONLY	
7882	FLOAT	Archive_Avg[37 - Average 37]	1	RD_ONLY	
7883	FLOAT	Archive_Avg[38 - Average 38]	1	RD_ONLY	
7884	FLOAT	Archive_Avg[39 - Average 39]	1	RD_ONLY	
7885	FLOAT	Archive_Avg[40 - Average 40]	1	RD_ONLY	
7886	FLOAT	Archive_Avg[41 - Average 41]	1	RD_ONLY	
7887	FLOAT	Archive_Avg[42 - Average 42]	1	RD_ONLY	
7888	FLOAT	Archive_Avg[43 - Average 43]	1	RD_ONLY	
7889	FLOAT	Archive_Avg[44 - Average 44]	1	RD_ONLY	
7890	FLOAT	Archive_Avg[45 - Average 45]	1	RD_ONLY	
7891	FLOAT	Archive_Avg[46 - Average 46]	1	RD_ONLY	
7892	FLOAT	Archive_Avg[47 - Average 47]	1	RD_ONLY	
7893	FLOAT	Archive_Avg[48 - Average 48]	1	RD_ONLY	
7894	FLOAT	Archive_Avg[49 - Average 49]	1	RD_ONLY	
7895	FLOAT	Archive_Avg[50 - Average 50]	1	RD_ONLY	
7896	FLOAT	Archive_Avg[51 - Average 51]	1	RD_ONLY	
7897	FLOAT	Archive_Avg[52 - Average 52]	1	RD_ONLY	
7898	FLOAT	Archive_Avg[53 - Average 53]	1	RD_ONLY	
7899	FLOAT	Archive_Avg[54 - Average 54]	1	RD_ONLY	
7900	FLOAT	Archive_Avg[55 - Average 55]	1	RD_ONLY	
7901	FLOAT	Archive_Avg[56 - Average 56]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7902	FLOAT	Archive_Avg[57 - Average 57]	1	RD_ONLY	
7903	FLOAT	Archive_Avg[58 - Average 58]	1	RD_ONLY	
7904	FLOAT	Archive_Avg[59 - Average 59]	1	RD_ONLY	
7905	FLOAT	Archive_Avg[60 - Average 60]	1	RD_ONLY	
7906	FLOAT	Archive_Avg[61 - Average 61]	1	RD_ONLY	
7907	FLOAT	Archive_Avg[62 - Average 62]	1	RD_ONLY	
7908	FLOAT	Archive_Avg[63 - Average 63]	1	RD_ONLY	
7909	FLOAT	Archive_Avg[64 - Average 64]	1	RD_ONLY	
7910	FLOAT	Archive_Avg[65 - Average 65]	1	RD_ONLY	
7911	FLOAT	Archive_Avg[66 - Average 66]	1	RD_ONLY	
7912	FLOAT	Archive_Avg[67 - Average 67]	1	RD_ONLY	
7913	FLOAT	Archive_Avg[68 - Average 68]	1	RD_ONLY	
7914	FLOAT	Archive_Avg[69 - Average 69]	1	RD_ONLY	
7915	FLOAT	Archive_Avg[70 - Average 70]	1	RD_ONLY	
7916	FLOAT	Archive_Avg[71 - Average 71]	1	RD_ONLY	
7917	FLOAT	Archive_Avg[72 - Average 72]	1	RD_ONLY	
7918	FLOAT	Archive_Avg[73 - Average 73]	1	RD_ONLY	
7919	FLOAT	Archive_Avg[74 - Average 74]	1	RD_ONLY	
7920	FLOAT	Archive_Avg[75 - Average 75]	1	RD_ONLY	
7921	FLOAT	Archive_Avg[76 - Average 76]	1	RD_ONLY	
7922	FLOAT	Archive_Avg[77 - Average 77]	1	RD_ONLY	
7923	FLOAT	Archive_Avg[78 - Average 78]	1	RD_ONLY	
7924	FLOAT	Archive_Avg[79 - Average 79]	1	RD_ONLY	
7925	FLOAT	Archive_Avg[80 - Average 80]	1	RD_ONLY	
7926	FLOAT	Archive_Avg[81 - Average 81]	1	RD_ONLY	
7927	FLOAT	Archive_Avg[82 - Average 82]	1	RD_ONLY	
7928	FLOAT	Archive_Avg[83 - Average 83]	1	RD_ONLY	
7929	FLOAT	Archive_Avg[84 - Average 84]	1	RD_ONLY	
7930	FLOAT	Archive_Avg[85 - Average 85]	1	RD_ONLY	
7931	FLOAT	Archive_Avg[86 - Average 86]	1	RD_ONLY	
7932	FLOAT	Archive_Avg[87 - Average 87]	1	RD_ONLY	
7933	FLOAT	Archive_Avg[88 - Average 88]	1	RD_ONLY	
7934	FLOAT	Archive_Avg[89 - Average 89]	1	RD_ONLY	
7935	FLOAT	Archive_Avg[90 - Average 90]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7936	FLOAT	Archive_Avg[91 - Average 91]	1	RD_ONLY	
7937	FLOAT	Archive_Avg[92 - Average 92]	1	RD_ONLY	
7938	FLOAT	Archive_Avg[93 - Average 93]	1	RD_ONLY	
7939	FLOAT	Archive_Avg[94 - Average 94]	1	RD_ONLY	
7940	FLOAT	Archive_Avg[95 - Average 95]	1	RD_ONLY	
7941	FLOAT	Archive_Avg[96 - Average 96]	1	RD_ONLY	
7942	FLOAT	Archive_Avg[97 - Average 97]	1	RD_ONLY	
7943	FLOAT	Archive_Avg[98 - Average 98]	1	RD_ONLY	
7944	FLOAT	Archive_Avg[99 - Average 99]	1	RD_ONLY	
7945	FLOAT	Archive_Avg[100 - Average 100]	1	RD_ONLY	
7946	FLOAT	Archive_Avg[101 - Average 101]	1	RD_ONLY	
7947	FLOAT	Archive_Avg[102 - Average 102]	1	RD_ONLY	
7948	FLOAT	Archive_Avg[103 - Average 103]	1	RD_ONLY	
7949	FLOAT	Archive_Avg[104 - Average 104]	1	RD_ONLY	
7950	FLOAT	Archive_Avg[105 - Average 105]	1	RD_ONLY	
7951	FLOAT	Archive_Avg[106 - Average 106]	1	RD_ONLY	
7952	FLOAT	Archive_Avg[107 - Average 107]	1	RD_ONLY	
7953	FLOAT	Archive_Avg[108 - Average 108]	1	RD_ONLY	
7954	FLOAT	Archive_Avg[109 - Average 109]	1	RD_ONLY	
7955	FLOAT	Archive_Avg[110 - Average 110]	1	RD_ONLY	
7956	FLOAT	Archive_Avg[111 - Average 111]	1	RD_ONLY	
7957	FLOAT	Archive_Avg[112 - Average 112]	1	RD_ONLY	
7958	FLOAT	Archive_Avg[113 - Average 113]	1	RD_ONLY	
7959	FLOAT	Archive_Avg[114 - Average 114]	1	RD_ONLY	
7960	FLOAT	Archive_Avg[115 - Average 115]	1	RD_ONLY	
7961	FLOAT	Archive_Avg[116 - Average 116]	1	RD_ONLY	
7962	FLOAT	Archive_Avg[117 - Average 117]	1	RD_ONLY	
7963	FLOAT	Archive_Avg[118 - Average 118]	1	RD_ONLY	
7964	FLOAT	Archive_Avg[119 - Average 119]	1	RD_ONLY	
7965	FLOAT	Archive_Avg[120 - Average 120]	1	RD_ONLY	
7966	FLOAT	Archive_Avg[121 - Average 121]	1	RD_ONLY	
7967	FLOAT	Archive_Avg[122 - Average 122]	1	RD_ONLY	
7968	FLOAT	Archive_Avg[123 - Average 123]	1	RD_ONLY	
7969	FLOAT	Archive_Avg[124 - Average 124]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7970	FLOAT	Archive_Avg[125 - Average 125]	1	RD_ONLY	
7971	FLOAT	Archive_Avg[126 - Average 126]	1	RD_ONLY	
7972	FLOAT	Archive_Avg[127 - Average 127]	1	RD_ONLY	
7973	FLOAT	Archive_Avg[128 - Average 128]	1	RD_ONLY	
7974	FLOAT	Last FCalib_New Resp Factor[1 - Component 1]		RD_ONLY	
7975	FLOAT	Last FCalib_New Resp Factor[2 - Component 2]		RD_ONLY	
7976	FLOAT	Last FCalib_New Resp Factor[3 - Component 3]		RD_ONLY	
7977	FLOAT	Last FCalib_New Resp Factor[4 - Component 4]		RD_ONLY	
7978	FLOAT	Last FCalib_New Resp Factor[5 - Component 5]		RD_ONLY	
7979	FLOAT	Last FCalib_New Resp Factor[6 - Component 6]		RD_ONLY	
7980	FLOAT	Last FCalib_New Resp Factor[7 - Component 7]		RD_ONLY	
7981	FLOAT	Last FCalib_New Resp Factor[8 - Component 8]		RD_ONLY	
7982	FLOAT	Last FCalib_New Resp Factor[9 - Component 9]		RD_ONLY	
7983	FLOAT	Last FCalib_New Resp Factor[10 - Component 10]		RD_ONLY	
7984	FLOAT	Last FCalib_New Resp Factor[11 - Component 11]		RD_ONLY	
7985	FLOAT	Last FCalib_New Resp Factor[12 - Component 12]		RD_ONLY	
7986	FLOAT	Last FCalib_New Resp Factor[13 - Component 13]		RD_ONLY	
7987	FLOAT	Last FCalib_New Resp Factor[14 - Component 14]		RD_ONLY	
7988	FLOAT	Last FCalib_New Resp Factor[15 - Component 15]		RD_ONLY	
7989	FLOAT	Last FCalib_New Resp Factor[16 - Component 16]		RD_ONLY	
7990	FLOAT	Last FCalib_New Resp Factor[17 - Component 17]		RD_ONLY	
7991	FLOAT	Last FCalib_New Resp Factor[18 - Component 18]		RD_ONLY	
7992	FLOAT	Last FCalib_New Resp Factor[19 - Component 19]		RD_ONLY	
7993	FLOAT	Last FCalib_New Resp Factor[20 - Component 20]		RD_ONLY	
7994	FLOAT	Last FCalib_New Resp Factor[1 - Component 1]		RD_ONLY	
7995	FLOAT	Last FCalib_New Resp Factor[2 - Component 2]		RD_ONLY	
7996	FLOAT	Last FCalib_New Resp Factor[3 - Component 3]		RD_ONLY	
7997	FLOAT	Last FCalib_New Resp Factor[4 - Component 4]		RD_ONLY	
7998	FLOAT	Last FCalib_New Resp Factor[5 - Component 5]		RD_ONLY	
7999	FLOAT	Last FCalib_New Resp Factor[6 - Component 6]		RD_ONLY	
8000	FLOAT	Last FCalib_New Resp Factor[7 - Component 7]		RD_ONLY	
8001	FLOAT	Last FCalib_New Resp Factor[8 - Component 8]		RD_ONLY	
8002	FLOAT	Last FCalib_New Resp Factor[9 - Component 9]		RD_ONLY	
8003	FLOAT	Last FCalib_New Resp Factor[10 - Component 10]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8004	FLOAT	Last FCalib_New Resp Factor[11 - Component 11]		RD_ONLY	
8005	FLOAT	Last FCalib_New Resp Factor[12 - Component 12]		RD_ONLY	
8006	FLOAT	Last FCalib_New Resp Factor[13 - Component 13]		RD_ONLY	
8007	FLOAT	Last FCalib_New Resp Factor[14 - Component 14]		RD_ONLY	
8008	FLOAT	Last FCalib_New Resp Factor[15 - Component 15]		RD_ONLY	
8009	FLOAT	Last FCalib_New Resp Factor[16 - Component 16]		RD_ONLY	
8010	FLOAT	Last FCalib_New Resp Factor[17 - Component 17]		RD_ONLY	
8011	FLOAT	Last FCalib_New Resp Factor[18 - Component 18]		RD_ONLY	
8012	FLOAT	Last FCalib_New Resp Factor[19 - Component 19]		RD_ONLY	
8013	FLOAT	Last FCalib_New Resp Factor[20 - Component 20]		RD_ONLY	
8014	FLOAT	Last FCalib_New Resp Factor[1 - Component 1]		RD_ONLY	
8015	FLOAT	Last FCalib_New Resp Factor[2 - Component 2]		RD_ONLY	
8016	FLOAT	Last FCalib_New Resp Factor[3 - Component 3]		RD_ONLY	
8017	FLOAT	Last FCalib_New Resp Factor[4 - Component 4]		RD_ONLY	
8018	FLOAT	Last FCalib_New Resp Factor[5 - Component 5]		RD_ONLY	
8019	FLOAT	Last FCalib_New Resp Factor[6 - Component 6]		RD_ONLY	
8020	FLOAT	Last FCalib_New Resp Factor[7 - Component 7]		RD_ONLY	
8021	FLOAT	Last FCalib_New Resp Factor[8 - Component 8]		RD_ONLY	
8022	FLOAT	Last FCalib_New Resp Factor[9 - Component 9]		RD_ONLY	
8023	FLOAT	Last FCalib_New Resp Factor[10 - Component 10]		RD_ONLY	
8024	FLOAT	Last FCalib_New Resp Factor[11 - Component 11]		RD_ONLY	
8025	FLOAT	Last FCalib_New Resp Factor[12 - Component 12]		RD_ONLY	
8026	FLOAT	Last FCalib_New Resp Factor[13 - Component 13]		RD_ONLY	
8027	FLOAT	Last FCalib_New Resp Factor[14 - Component 14]		RD_ONLY	
8028	FLOAT	Last FCalib_New Resp Factor[15 - Component 15]		RD_ONLY	
8029	FLOAT	Last FCalib_New Resp Factor[16 - Component 16]		RD_ONLY	
8030	FLOAT	Last FCalib_New Resp Factor[17 - Component 17]		RD_ONLY	
8031	FLOAT	Last FCalib_New Resp Factor[18 - Component 18]		RD_ONLY	
8032	FLOAT	Last FCalib_New Resp Factor[19 - Component 19]		RD_ONLY	
8033	FLOAT	Last FCalib_New Resp Factor[20 - Component 20]		RD_ONLY	
8034	FLOAT	Last FCalib_New Resp Factor[1 - Component 1]		RD_ONLY	
8035	FLOAT	Last FCalib_New Resp Factor[2 - Component 2]		RD_ONLY	
8036	FLOAT	Last FCalib_New Resp Factor[3 - Component 3]		RD_ONLY	
8037	FLOAT	Last FCalib_New Resp Factor[4 - Component 4]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8038	FLOAT	Last FCalib_New Resp Factor[5 - Component 5]		RD_ONLY	
8039	FLOAT	Last FCalib_New Resp Factor[6 - Component 6]		RD_ONLY	
8040	FLOAT	Last FCalib_New Resp Factor[7 - Component 7]		RD_ONLY	
8041	FLOAT	Last FCalib_New Resp Factor[8 - Component 8]		RD_ONLY	
8042	FLOAT	Last FCalib_New Resp Factor[9 - Component 9]		RD_ONLY	
8043	FLOAT	Last FCalib_New Resp Factor[10 - Component 10]		RD_ONLY	
8044	FLOAT	Last FCalib_New Resp Factor[11 - Component 11]		RD_ONLY	
8045	FLOAT	Last FCalib_New Resp Factor[12 - Component 12]		RD_ONLY	
8046	FLOAT	Last FCalib_New Resp Factor[13 - Component 13]		RD_ONLY	
8047	FLOAT	Last FCalib_New Resp Factor[14 - Component 14]		RD_ONLY	
8048	FLOAT	Last FCalib_New Resp Factor[15 - Component 15]		RD_ONLY	
8049	FLOAT	Last FCalib_New Resp Factor[16 - Component 16]		RD_ONLY	
8050	FLOAT	Last FCalib_New Resp Factor[17 - Component 17]		RD_ONLY	
8051	FLOAT	Last FCalib_New Resp Factor[18 - Component 18]		RD_ONLY	
8052	FLOAT	Last FCalib_New Resp Factor[19 - Component 19]		RD_ONLY	
8053	FLOAT	Last FCalib_New Resp Factor[20 - Component 20]		RD_ONLY	
8054	FLOAT	Last FCalib_New Ret Time[1 - Component 1]		RD_ONLY	
8055	FLOAT	Last FCalib_New Ret Time[2 - Component 2]		RD_ONLY	
8056	FLOAT	Last FCalib_New Ret Time[3 - Component 3]		RD_ONLY	
8057	FLOAT	Last FCalib_New Ret Time[4 - Component 4]		RD_ONLY	
8058	FLOAT	Last FCalib_New Ret Time[5 - Component 5]		RD_ONLY	
8059	FLOAT	Last FCalib_New Ret Time[6 - Component 6]		RD_ONLY	
8060	FLOAT	Last FCalib_New Ret Time[7 - Component 7]		RD_ONLY	
8061	FLOAT	Last FCalib_New Ret Time[8 - Component 8]		RD_ONLY	
8062	FLOAT	Last FCalib_New Ret Time[9 - Component 9]		RD_ONLY	
8063	FLOAT	Last FCalib_New Ret Time[10 - Component 10]		RD_ONLY	
8064	FLOAT	Last FCalib_New Ret Time[11 - Component 11]		RD_ONLY	
8065	FLOAT	Last FCalib_New Ret Time[12 - Component 12]		RD_ONLY	
8066	FLOAT	Last FCalib_New Ret Time[13 - Component 13]		RD_ONLY	
8067	FLOAT	Last FCalib_New Ret Time[14 - Component 14]		RD_ONLY	
8068	FLOAT	Last FCalib_New Ret Time[15 - Component 15]		RD_ONLY	
8069	FLOAT	Last FCalib_New Ret Time[16 - Component 16]		RD_ONLY	
8070	FLOAT	Last FCalib_New Ret Time[17 - Component 17]		RD_ONLY	
8071	FLOAT	Last FCalib_New Ret Time[18 - Component 18]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8072	FLOAT	Last FCalib_New Ret Time[19 - Component 19]		RD_ONLY	
8073	FLOAT	Last FCalib_New Ret Time[20 - Component 20]		RD_ONLY	
8074	FLOAT	Last FCalib_New Ret Time[1 - Component 1]		RD_ONLY	
8075	FLOAT	Last FCalib_New Ret Time[2 - Component 2]		RD_ONLY	
8076	FLOAT	Last FCalib_New Ret Time[3 - Component 3]		RD_ONLY	
8077	FLOAT	Last FCalib_New Ret Time[4 - Component 4]		RD_ONLY	
8078	FLOAT	Last FCalib_New Ret Time[5 - Component 5]		RD_ONLY	
8079	FLOAT	Last FCalib_New Ret Time[6 - Component 6]		RD_ONLY	
8080	FLOAT	Last FCalib_New Ret Time[7 - Component 7]		RD_ONLY	
8081	FLOAT	Last FCalib_New Ret Time[8 - Component 8]		RD_ONLY	
8082	FLOAT	Last FCalib_New Ret Time[9 - Component 9]		RD_ONLY	
8083	FLOAT	Last FCalib_New Ret Time[10 - Component 10]		RD_ONLY	
8084	FLOAT	Last FCalib_New Ret Time[11 - Component 11]		RD_ONLY	
8085	FLOAT	Last FCalib_New Ret Time[12 - Component 12]		RD_ONLY	
8086	FLOAT	Last FCalib_New Ret Time[13 - Component 13]		RD_ONLY	
8087	FLOAT	Last FCalib_New Ret Time[14 - Component 14]		RD_ONLY	
8088	FLOAT	Last FCalib_New Ret Time[15 - Component 15]		RD_ONLY	
8089	FLOAT	Last FCalib_New Ret Time[16 - Component 16]		RD_ONLY	
8090	FLOAT	Last FCalib_New Ret Time[17 - Component 17]		RD_ONLY	
8091	FLOAT	Last FCalib_New Ret Time[18 - Component 18]		RD_ONLY	
8092	FLOAT	Last FCalib_New Ret Time[19 - Component 19]		RD_ONLY	
8093	FLOAT	Last FCalib_New Ret Time[20 - Component 20]		RD_ONLY	
8094	FLOAT	Last FCalib_New Ret Time[1 - Component 1]		RD_ONLY	
8095	FLOAT	Last FCalib_New Ret Time[2 - Component 2]		RD_ONLY	
8096	FLOAT	Last FCalib_New Ret Time[3 - Component 3]		RD_ONLY	
8097	FLOAT	Last FCalib_New Ret Time[4 - Component 4]		RD_ONLY	
8098	FLOAT	Last FCalib_New Ret Time[5 - Component 5]		RD_ONLY	
8099	FLOAT	Last FCalib_New Ret Time[6 - Component 6]		RD_ONLY	
8100	FLOAT	Last FCalib_New Ret Time[7 - Component 7]		RD_ONLY	
8101	FLOAT	Last FCalib_New Ret Time[8 - Component 8]		RD_ONLY	
8102	FLOAT	Last FCalib_New Ret Time[9 - Component 9]		RD_ONLY	
8103	FLOAT	Last FCalib_New Ret Time[10 - Component 10]		RD_ONLY	
8104	FLOAT	Last FCalib_New Ret Time[11 - Component 11]		RD_ONLY	
8105	FLOAT	Last FCalib_New Ret Time[12 - Component 12]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8106	FLOAT	Last FCalib_New Ret Time[13 - Component 13]		RD_ONLY	
8107	FLOAT	Last FCalib_New Ret Time[14 - Component 14]		RD_ONLY	
8108	FLOAT	Last FCalib_New Ret Time[15 - Component 15]		RD_ONLY	
8109	FLOAT	Last FCalib_New Ret Time[16 - Component 16]		RD_ONLY	
8110	FLOAT	Last FCalib_New Ret Time[17 - Component 17]		RD_ONLY	
8111	FLOAT	Last FCalib_New Ret Time[18 - Component 18]		RD_ONLY	
8112	FLOAT	Last FCalib_New Ret Time[19 - Component 19]		RD_ONLY	
8113	FLOAT	Last FCalib_New Ret Time[20 - Component 20]		RD_ONLY	
8114	FLOAT	Last FCalib_New Ret Time[1 - Component 1]		RD_ONLY	
8115	FLOAT	Last FCalib_New Ret Time[2 - Component 2]		RD_ONLY	
8116	FLOAT	Last FCalib_New Ret Time[3 - Component 3]		RD_ONLY	
8117	FLOAT	Last FCalib_New Ret Time[4 - Component 4]		RD_ONLY	
8118	FLOAT	Last FCalib_New Ret Time[5 - Component 5]		RD_ONLY	
8119	FLOAT	Last FCalib_New Ret Time[6 - Component 6]		RD_ONLY	
8120	FLOAT	Last FCalib_New Ret Time[7 - Component 7]		RD_ONLY	
8121	FLOAT	Last FCalib_New Ret Time[8 - Component 8]		RD_ONLY	
8122	FLOAT	Last FCalib_New Ret Time[9 - Component 9]		RD_ONLY	
8123	FLOAT	Last FCalib_New Ret Time[10 - Component 10]		RD_ONLY	
8124	FLOAT	Last FCalib_New Ret Time[11 - Component 11]		RD_ONLY	
8125	FLOAT	Last FCalib_New Ret Time[12 - Component 12]		RD_ONLY	
8126	FLOAT	Last FCalib_New Ret Time[13 - Component 13]		RD_ONLY	
8127	FLOAT	Last FCalib_New Ret Time[14 - Component 14]		RD_ONLY	
8128	FLOAT	Last FCalib_New Ret Time[15 - Component 15]		RD_ONLY	
8129	FLOAT	Last FCalib_New Ret Time[16 - Component 16]		RD_ONLY	
8130	FLOAT	Last FCalib_New Ret Time[17 - Component 17]		RD_ONLY	
8131	FLOAT	Last FCalib_New Ret Time[18 - Component 18]		RD_ONLY	
8132	FLOAT	Last FCalib_New Ret Time[19 - Component 19]		RD_ONLY	
8133	FLOAT	Last FCalib_New Ret Time[20 - Component 20]		RD_ONLY	
8134	FLOAT	Last FCalib_Old Resp Factor[1 - Component 1]		RD_ONLY	
8135	FLOAT	Last FCalib_Old Resp Factor[2 - Component 2]		RD_ONLY	
8136	FLOAT	Last FCalib_Old Resp Factor[3 - Component 3]		RD_ONLY	
8137	FLOAT	Last FCalib_Old Resp Factor[4 - Component 4]		RD_ONLY	
8138	FLOAT	Last FCalib_Old Resp Factor[5 - Component 5]		RD_ONLY	
8139	FLOAT	Last FCalib_Old Resp Factor[6 - Component 6]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8140	FLOAT	Last FCalib_Old Resp Factor[7 - Component 7]		RD_ONLY	
8141	FLOAT	Last FCalib_Old Resp Factor[8 - Component 8]		RD_ONLY	
8142	FLOAT	Last FCalib_Old Resp Factor[9 - Component 9]		RD_ONLY	
8143	FLOAT	Last FCalib_Old Resp Factor[10 - Component 10]		RD_ONLY	
8144	FLOAT	Last FCalib_Old Resp Factor[11 - Component 11]		RD_ONLY	
8145	FLOAT	Last FCalib_Old Resp Factor[12 - Component 12]		RD_ONLY	
8146	FLOAT	Last FCalib_Old Resp Factor[13 - Component 13]		RD_ONLY	
8147	FLOAT	Last FCalib_Old Resp Factor[14 - Component 14]		RD_ONLY	
8148	FLOAT	Last FCalib_Old Resp Factor[15 - Component 15]		RD_ONLY	
8149	FLOAT	Last FCalib_Old Resp Factor[16 - Component 16]		RD_ONLY	
8150	FLOAT	Last FCalib_Old Resp Factor[17 - Component 17]		RD_ONLY	
8151	FLOAT	Last FCalib_Old Resp Factor[18 - Component 18]		RD_ONLY	
8152	FLOAT	Last FCalib_Old Resp Factor[19 - Component 19]		RD_ONLY	
8153	FLOAT	Last FCalib_Old Resp Factor[20 - Component 20]		RD_ONLY	
8154	FLOAT	Last FCalib_Old Resp Factor[1 - Component 1]		RD_ONLY	
8155	FLOAT	Last FCalib_Old Resp Factor[2 - Component 2]		RD_ONLY	
8156	FLOAT	Last FCalib_Old Resp Factor[3 - Component 3]		RD_ONLY	
8157	FLOAT	Last FCalib_Old Resp Factor[4 - Component 4]		RD_ONLY	
8158	FLOAT	Last FCalib_Old Resp Factor[5 - Component 5]		RD_ONLY	
8159	FLOAT	Last FCalib_Old Resp Factor[6 - Component 6]		RD_ONLY	
8160	FLOAT	Last FCalib_Old Resp Factor[7 - Component 7]		RD_ONLY	
8161	FLOAT	Last FCalib_Old Resp Factor[8 - Component 8]		RD_ONLY	
8162	FLOAT	Last FCalib_Old Resp Factor[9 - Component 9]		RD_ONLY	
8163	FLOAT	Last FCalib_Old Resp Factor[10 - Component 10]		RD_ONLY	
8164	FLOAT	Last FCalib_Old Resp Factor[11 - Component 11]		RD_ONLY	
8165	FLOAT	Last FCalib_Old Resp Factor[12 - Component 12]		RD_ONLY	
8166	FLOAT	Last FCalib_Old Resp Factor[13 - Component 13]		RD_ONLY	
8167	FLOAT	Last FCalib_Old Resp Factor[14 - Component 14]		RD_ONLY	
8168	FLOAT	Last FCalib_Old Resp Factor[15 - Component 15]		RD_ONLY	
8169	FLOAT	Last FCalib_Old Resp Factor[16 - Component 16]		RD_ONLY	
8170	FLOAT	Last FCalib_Old Resp Factor[17 - Component 17]		RD_ONLY	
8171	FLOAT	Last FCalib_Old Resp Factor[18 - Component 18]		RD_ONLY	
8172	FLOAT	Last FCalib_Old Resp Factor[19 - Component 19]		RD_ONLY	
8173	FLOAT	Last FCalib_Old Resp Factor[20 - Component 20]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8174	FLOAT	Last FCalib_Old Resp Factor[1 - Component 1]		RD_ONLY	
8175	FLOAT	Last FCalib_Old Resp Factor[2 - Component 2]		RD_ONLY	
8176	FLOAT	Last FCalib_Old Resp Factor[3 - Component 3]		RD_ONLY	
8177	FLOAT	Last FCalib_Old Resp Factor[4 - Component 4]		RD_ONLY	
8178	FLOAT	Last FCalib_Old Resp Factor[5 - Component 5]		RD_ONLY	
8179	FLOAT	Last FCalib_Old Resp Factor[6 - Component 6]		RD_ONLY	
8180	FLOAT	Last FCalib_Old Resp Factor[7 - Component 7]		RD_ONLY	
8181	FLOAT	Last FCalib_Old Resp Factor[8 - Component 8]		RD_ONLY	
8182	FLOAT	Last FCalib_Old Resp Factor[9 - Component 9]		RD_ONLY	
8183	FLOAT	Last FCalib_Old Resp Factor[10 - Component 10]		RD_ONLY	
8184	FLOAT	Last FCalib_Old Resp Factor[11 - Component 11]		RD_ONLY	
8185	FLOAT	Last FCalib_Old Resp Factor[12 - Component 12]		RD_ONLY	
8186	FLOAT	Last FCalib_Old Resp Factor[13 - Component 13]		RD_ONLY	
8187	FLOAT	Last FCalib_Old Resp Factor[14 - Component 14]		RD_ONLY	
8188	FLOAT	Last FCalib_Old Resp Factor[15 - Component 15]		RD_ONLY	
8189	FLOAT	Last FCalib_Old Resp Factor[16 - Component 16]		RD_ONLY	
8190	FLOAT	Last FCalib_Old Resp Factor[17 - Component 17]		RD_ONLY	
8191	FLOAT	Last FCalib_Old Resp Factor[18 - Component 18]		RD_ONLY	
8192	FLOAT	Last FCalib_Old Resp Factor[19 - Component 19]		RD_ONLY	
8193	FLOAT	Last FCalib_Old Resp Factor[20 - Component 20]		RD_ONLY	
8194	FLOAT	Last FCalib_Old Resp Factor[1 - Component 1]		RD_ONLY	
8195	FLOAT	Last FCalib_Old Resp Factor[2 - Component 2]		RD_ONLY	
8196	FLOAT	Last FCalib_Old Resp Factor[3 - Component 3]		RD_ONLY	
8197	FLOAT	Last FCalib_Old Resp Factor[4 - Component 4]		RD_ONLY	
8198	FLOAT	Last FCalib_Old Resp Factor[5 - Component 5]		RD_ONLY	
8199	FLOAT	Last FCalib_Old Resp Factor[6 - Component 6]		RD_ONLY	
8200	FLOAT	Last FCalib_Old Resp Factor[7 - Component 7]		RD_ONLY	
8201	FLOAT	Last FCalib_Old Resp Factor[8 - Component 8]		RD_ONLY	
8202	FLOAT	Last FCalib_Old Resp Factor[9 - Component 9]		RD_ONLY	
8203	FLOAT	Last FCalib_Old Resp Factor[10 - Component 10]		RD_ONLY	
8204	FLOAT	Last FCalib_Old Resp Factor[11 - Component 11]		RD_ONLY	
8205	FLOAT	Last FCalib_Old Resp Factor[12 - Component 12]		RD_ONLY	
8206	FLOAT	Last FCalib_Old Resp Factor[13 - Component 13]		RD_ONLY	
8207	FLOAT	Last FCalib_Old Resp Factor[14 - Component 14]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8208	FLOAT	Last FCalib_Old Resp Factor[15 - Component 15]		RD_ONLY	
8209	FLOAT	Last FCalib_Old Resp Factor[16 - Component 16]		RD_ONLY	
8210	FLOAT	Last FCalib_Old Resp Factor[17 - Component 17]		RD_ONLY	
8211	FLOAT	Last FCalib_Old Resp Factor[18 - Component 18]		RD_ONLY	
8212	FLOAT	Last FCalib_Old Resp Factor[19 - Component 19]		RD_ONLY	
8213	FLOAT	Last FCalib_Old Resp Factor[20 - Component 20]		RD_ONLY	
8214	FLOAT	Last FCalib_Old Ret Time[1 - Component 1]		RD_ONLY	
8215	FLOAT	Last FCalib_Old Ret Time[2 - Component 2]		RD_ONLY	
8216	FLOAT	Last FCalib_Old Ret Time[3 - Component 3]		RD_ONLY	
8217	FLOAT	Last FCalib_Old Ret Time[4 - Component 4]		RD_ONLY	
8218	FLOAT	Last FCalib_Old Ret Time[5 - Component 5]		RD_ONLY	
8219	FLOAT	Last FCalib_Old Ret Time[6 - Component 6]		RD_ONLY	
8220	FLOAT	Last FCalib_Old Ret Time[7 - Component 7]		RD_ONLY	
8221	FLOAT	Last FCalib_Old Ret Time[8 - Component 8]		RD_ONLY	
8222	FLOAT	Last FCalib_Old Ret Time[9 - Component 9]		RD_ONLY	
8223	FLOAT	Last FCalib_Old Ret Time[10 - Component 10]		RD_ONLY	
8224	FLOAT	Last FCalib_Old Ret Time[11 - Component 11]		RD_ONLY	
8225	FLOAT	Last FCalib_Old Ret Time[12 - Component 12]		RD_ONLY	
8226	FLOAT	Last FCalib_Old Ret Time[13 - Component 13]		RD_ONLY	
8227	FLOAT	Last FCalib_Old Ret Time[14 - Component 14]		RD_ONLY	
8228	FLOAT	Last FCalib_Old Ret Time[15 - Component 15]		RD_ONLY	
8229	FLOAT	Last FCalib_Old Ret Time[16 - Component 16]		RD_ONLY	
8230	FLOAT	Last FCalib_Old Ret Time[17 - Component 17]		RD_ONLY	
8231	FLOAT	Last FCalib_Old Ret Time[18 - Component 18]		RD_ONLY	
8232	FLOAT	Last FCalib_Old Ret Time[19 - Component 19]		RD_ONLY	
8233	FLOAT	Last FCalib_Old Ret Time[20 - Component 20]		RD_ONLY	
8234	FLOAT	Last FCalib_Old Ret Time[1 - Component 1]		RD_ONLY	
8235	FLOAT	Last FCalib_Old Ret Time[2 - Component 2]		RD_ONLY	
8236	FLOAT	Last FCalib_Old Ret Time[3 - Component 3]		RD_ONLY	
8237	FLOAT	Last FCalib_Old Ret Time[4 - Component 4]		RD_ONLY	
8238	FLOAT	Last FCalib_Old Ret Time[5 - Component 5]		RD_ONLY	
8239	FLOAT	Last FCalib_Old Ret Time[6 - Component 6]		RD_ONLY	
8240	FLOAT	Last FCalib_Old Ret Time[7 - Component 7]		RD_ONLY	
8241	FLOAT	Last FCalib_Old Ret Time[8 - Component 8]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8242	FLOAT	Last FCalib_Old Ret Time[9 - Component 9]		RD_ONLY	
8243	FLOAT	Last FCalib_Old Ret Time[10 - Component 10]		RD_ONLY	
8244	FLOAT	Last FCalib_Old Ret Time[11 - Component 11]		RD_ONLY	
8245	FLOAT	Last FCalib_Old Ret Time[12 - Component 12]		RD_ONLY	
8246	FLOAT	Last FCalib_Old Ret Time[13 - Component 13]		RD_ONLY	
8247	FLOAT	Last FCalib_Old Ret Time[14 - Component 14]		RD_ONLY	
8248	FLOAT	Last FCalib_Old Ret Time[15 - Component 15]		RD_ONLY	
8249	FLOAT	Last FCalib_Old Ret Time[16 - Component 16]		RD_ONLY	
8250	FLOAT	Last FCalib_Old Ret Time[17 - Component 17]		RD_ONLY	
8251	FLOAT	Last FCalib_Old Ret Time[18 - Component 18]		RD_ONLY	
8252	FLOAT	Last FCalib_Old Ret Time[19 - Component 19]		RD_ONLY	
8253	FLOAT	Last FCalib_Old Ret Time[20 - Component 20]		RD_ONLY	
8254	FLOAT	Last FCalib_Old Ret Time[1 - Component 1]		RD_ONLY	
8255	FLOAT	Last FCalib_Old Ret Time[2 - Component 2]		RD_ONLY	
8256	FLOAT	Last FCalib_Old Ret Time[3 - Component 3]		RD_ONLY	
8257	FLOAT	Last FCalib_Old Ret Time[4 - Component 4]		RD_ONLY	
8258	FLOAT	Last FCalib_Old Ret Time[5 - Component 5]		RD_ONLY	
8259	FLOAT	Last FCalib_Old Ret Time[6 - Component 6]		RD_ONLY	
8260	FLOAT	Last FCalib_Old Ret Time[7 - Component 7]		RD_ONLY	
8261	FLOAT	Last FCalib_Old Ret Time[8 - Component 8]		RD_ONLY	
8262	FLOAT	Last FCalib_Old Ret Time[9 - Component 9]		RD_ONLY	
8263	FLOAT	Last FCalib_Old Ret Time[10 - Component 10]		RD_ONLY	
8264	FLOAT	Last FCalib_Old Ret Time[11 - Component 11]		RD_ONLY	
8265	FLOAT	Last FCalib_Old Ret Time[12 - Component 12]		RD_ONLY	
8266	FLOAT	Last FCalib_Old Ret Time[13 - Component 13]		RD_ONLY	
8267	FLOAT	Last FCalib_Old Ret Time[14 - Component 14]		RD_ONLY	
8268	FLOAT	Last FCalib_Old Ret Time[15 - Component 15]		RD_ONLY	
8269	FLOAT	Last FCalib_Old Ret Time[16 - Component 16]		RD_ONLY	
8270	FLOAT	Last FCalib_Old Ret Time[17 - Component 17]		RD_ONLY	
8271	FLOAT	Last FCalib_Old Ret Time[18 - Component 18]		RD_ONLY	
8272	FLOAT	Last FCalib_Old Ret Time[19 - Component 19]		RD_ONLY	
8273	FLOAT	Last FCalib_Old Ret Time[20 - Component 20]		RD_ONLY	
8274	FLOAT	Last FCalib_Old Ret Time[1 - Component 1]		RD_ONLY	
8275	FLOAT	Last FCalib_Old Ret Time[2 - Component 2]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8276	FLOAT	Last FCalib_Old Ret Time[3 - Component 3]		RD_ONLY	
8277	FLOAT	Last FCalib_Old Ret Time[4 - Component 4]		RD_ONLY	
8278	FLOAT	Last FCalib_Old Ret Time[5 - Component 5]		RD_ONLY	
8279	FLOAT	Last FCalib_Old Ret Time[6 - Component 6]		RD_ONLY	
8280	FLOAT	Last FCalib_Old Ret Time[7 - Component 7]		RD_ONLY	
8281	FLOAT	Last FCalib_Old Ret Time[8 - Component 8]		RD_ONLY	
8282	FLOAT	Last FCalib_Old Ret Time[9 - Component 9]		RD_ONLY	
8283	FLOAT	Last FCalib_Old Ret Time[10 - Component 10]		RD_ONLY	
8284	FLOAT	Last FCalib_Old Ret Time[11 - Component 11]		RD_ONLY	
8285	FLOAT	Last FCalib_Old Ret Time[12 - Component 12]		RD_ONLY	
8286	FLOAT	Last FCalib_Old Ret Time[13 - Component 13]		RD_ONLY	
8287	FLOAT	Last FCalib_Old Ret Time[14 - Component 14]		RD_ONLY	
8288	FLOAT	Last FCalib_Old Ret Time[15 - Component 15]		RD_ONLY	
8289	FLOAT	Last FCalib_Old Ret Time[16 - Component 16]		RD_ONLY	
8290	FLOAT	Last FCalib_Old Ret Time[17 - Component 17]		RD_ONLY	
8291	FLOAT	Last FCalib_Old Ret Time[18 - Component 18]		RD_ONLY	
8292	FLOAT	Last FCalib_Old Ret Time[19 - Component 19]		RD_ONLY	
8293	FLOAT	Last FCalib_Old Ret Time[20 - Component 20]		RD_ONLY	
8963	FLOAT	Clear All Alarms		RD_WR	
8964	FLOAT	Acknowledge All Alarms		RD_WR	
9006	INT	Current Time(time_t)		RD_WR	MM
9007	INT	Current Time(time_t)		RD_WR	DD
9008	INT	Current Time(time_t)		RD_WR	YYYY
9009	INT	Current Time(time_t)		RD_WR	hh
9010	INT	Current Time(time_t)		RD_WR	mm
9011	INT	Current Time(time_t)		RD_WR	ss
9012	INT	Unused		RD_ONLY	
9013	INT	Modbus Id[1 - Port 0]		RD_ONLY	
9014	INT	Site Id		RD_WR	
9022	INT	Analysis Time		RD_ONLY	
9023	INT	Unused		RD_ONLY	
9024	INT	Cycle Time		RD_ONLY	
9025	INT	Unused		RD_ONLY	
9026	INT	Run Time		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
9027	INT	Unused		RD_ONLY	
9028	INT	Current Stream		RD_ONLY	
9029	INT	Unused		RD_ONLY	
9030	INT	GC Control_Analyser Control (Write Reg 9030)		RD_WR	
9031	INT	Unused		RD_ONLY	
9032	INT	GC Calibrating		RD_ONLY	
9033	INT	Unused		RD_ONLY	
9034	INT	Active Alarm Flag		RD_ONLY	
9035	INT	UnAck Alarm Flag		RD_ONLY	
9036	INT	Hourly Average Reset time		RD_ONLY	YY
9037	INT	Hourly Average Reset time		RD_ONLY	MM
9038	INT	Hourly Average Reset time		RD_ONLY	DD
9039	INT	Hourly Average Reset time		RD_ONLY	hh
9040	INT	Hourly Average Reset time		RD_ONLY	mm
9041	INT	Daily Average Reset time		RD_ONLY	YY
9042	INT	Daily Average Reset time		RD_ONLY	MM
9043	INT	Daily Average Reset time		RD_ONLY	DD
9044	INT	Daily Average Reset time		RD_ONLY	hh
9045	INT	Daily Average Reset time		RD_ONLY	mm
9046	INT	Weekly Average Reset time		RD_ONLY	YY
9047	INT	Weekly Average Reset time		RD_ONLY	MM
9048	INT	Weekly Average Reset time		RD_ONLY	DD
9049	INT	Weekly Average Reset time		RD_ONLY	hh
9050	INT	Weekly Average Reset time		RD_ONLY	mm
9051	INT	Monthly Average Reset time		RD_ONLY	YY
9052	INT	Monthly Average Reset time		RD_ONLY	MM
9053	INT	Monthly Average Reset time		RD_ONLY	DD
9054	INT	Monthly Average Reset time		RD_ONLY	hh
9055	INT	Monthly Average Reset time		RD_ONLY	mm
9056	INT	Variable Average Reset time		RD_ONLY	YY
9057	INT	Variable Average Reset time		RD_ONLY	MM
9058	INT	Variable Average Reset time		RD_ONLY	DD
9059	INT	Variable Average Reset time		RD_ONLY	hh
9060	INT	Variable Average Reset time		RD_ONLY	mm

3099...3102 (Valid data flags): This flag is set to **1** when new valid data is put into the Modbus registers and set to **0** if an alarm is active. The 4 copies of this flag operate in the same way; they are intended for use by up to 4 independent Modbus master devices attached to the 4 serial ports. This is a read-write register, so the Modbus Master can clear the flag once the new results are read.

3103...3182 (Calibration update flags): Set to **1** when response factors are updated during a calibration.

5001 (Last Analy_Cycle Time (1/30th sec)): Cycle time for last analysis in 1/30th seconds. For example, if cycle time is 300 seconds, this register reads **9000**.

5002 (Last Cal_Cycle Time (1/30th sec)): Cycle time for last calibration in 1/30th seconds. For example, if cycle time is 300 seconds, this register reads **9000**.

7001...70016 (Last Analy Mole %): These registers hold the mole % results for the last analysis run. The order of components in these registers can be determined by reading Register 3001...3016 which contains the component codes.

7017...7032 (Last Analy Weight %): These registers hold the weight % results for the last analysis run. The order of components in these registers can be determined by reading Register 3001...3016 which contains the component codes.

7033...7039 : Last analysis stream results.

7040...7044: User calculation results 1...5.

7046...7054: Last analysis stream results.

7070...7084: Most recent archive averages for Averages 1...15.

7085...7086: Current analog input values for Analog Input 1 and 2.

7087...7090: Last analysis stream results.

7091: Number of total calibration runs.

7092: Number of averaged calibration runs.

7093: Auto calibration start time.

7094: (Stream Sequence Select): Read-write register. When read, returns currently selected stream sequence. To change stream sequence, write sequence number.

Value	Stream sequence
1	Default stream sequence
2	Aux stream sequence 1
3	Aux stream sequence 2

7095...7110 (Last Analysis Response Factors): Response factor for Components 1...16 used on last run.

7111...7121: Results from last calibration.

7122: Calibration stream number.

7123...7125: Last analysis GS(M)R results.

7126...7161: Current running averages for Averages 1...36.

7162...7197: Maximum sample value during current averaging period for Averages 1...36.

7198...7233: Minimum sample value during current averaging period for averages 1...36.

7234...7269: Most recent archived averages for Averages 1 through 36.

7270...7305: Maximum sample value in the second most recent archived average for Averages 1...36.

7306...7341: Minimum sample value in the second most recent archived average for Averages 1...36.

7342...7377: Second most recent archived averages for Averages 1...36.

7378...7413: Maximum sample value in the second most recent archived average for Averages 1...36.

7414...7449: Minimum sample value in the second most recent archived average for averages 1...36.

7450...7485: Third most recent archived averages for Averages 1...36.

7586...7621: Maximum sample value in the third most recent archived averages for Averages 1...36.

7521...7557: Minimum sample value in the third most recent archived averages for Averages 1...36.

7558...7573: Multi-level calibration coefficient *a* components 1...16.

7572...7589: Multi-level calibration coefficient *b* components 1...16.

7590...7605: Multi-level calibration coefficient *c* components 1...16.

7606...7621: Multi-level calibration coefficient *d* components 1...16.

7622...7637: Indirect calibration - relative response factors for components 1...16.

7638...7717: Repeat of 7558...7637 above for component table 2.

7718...7845: Current running averages for Averages 1...128.

7486..7973: Most recent archived averages for Averages 1...128.

7974...8053: Current response factors.

8054...8133: Current retention times.

8214...8293: Retention times from previous calibration.

8963 (Clear All Alarms): Write 1 to this register to clear all active alarms.

8964 (Acknowledge All Alarms): Write 1 to this register to acknowledge all alarms.

9006...9011: GC system date/time read-write registers.

9013 (Modbus ID [Port 0]): Modbus ID for Serial Port 0.

9014 (Site ID): GC site ID read-write register.

9022 (Analysis Time): Analysis time.

9024 (Cycle Time): Cycle time.

9026 (Run Time): Run time.

9028 (Current Stream): Stream number.

9030 (Analyzer Control): Section B.6.

9032 (GC Calibrating): Tells you if the GC is calibrating. A value of 1 means the GC is calibrating, 0 otherwise.

9034 (Active Alarm Flag): Tells you if the GC has any active alarms. A value of 1 indicates that there are active alarms, 0 otherwise.

9035 (UnAck Alarm Flag): Tells you if the GC has any unaknowledged alarms. A value of 1 indicates that there are unacknowledged alarms, 0 otherwise.

9036...9040 (Hourly Average Reset Time): Date/time when hourly average results were archived.

9041...9045 (Daily Average Reset Time): Date/time when daily average results were archived.

9046...9047 (Weekly Average Reset Time): Date/time when weekly average results were archived.

9051...9055 (Monthly Average Reset Time): Date/time when monthly averaged results were archived.

9056...9060 (Variable Average Reset Time): Date/time when variable average results were archived.

F.6 Remote control registers

Modbus register	Description
GC Control_Auto Sequence	Start chromatograph auto sequencing. Normally **0.0**; write non-zero value to initiate sequencing. **1.0** - start with purge **2.0** - start without purge
GC Control_Halt	Halt chromatograph sequencing - Normally **0.0**; write **1.0** to perform halt.
GC Control_Single Stream	Start single stream run - Normally **0.0**. *Continuous Single Stream* mode: Write the stream number (in floating point) to start with a purge and the negative of the stream number to start without a purge. *Single Analysis Non-continuous Single Stream* mode: Write (128.0 + the stream number) (in floating point) to start with a purge, and the negative of (128.0 + the stream number) to start without a purge.
GC Control_Calibration	Start calibration sequence - Normally **0.0**. For *Normal Calibration*: Write the stream number of the calibration stream in floating point to start calibration sequence with a purge, or write the negative of the stream number to start calibration sequence without a purge. *For Forced Calibration*: Write (128.0 + stream number) of the cal stream in floating point to start calibration sequence with a purge or writes the negative of (128 + stream number) of the cal stream to start a calibration sequence without a purge.

<table>
<tr><th>Modbus register</th><th>Description</th></tr>
<tr><td>GC Control_Validation</td><td>Start validation sequence - Normally 0.0. For Validation: Write the stream number of the Validation stream in floating point to start validation sequence with a purge, or write the negative of the stream number to start validation sequence without a purge.</td></tr>
<tr><td>GC Control -> Validation Acknowledge</td><td>GC copies Start Validation command to this register; PLC can reset after confirming that command was successfully issued.</td></tr>
<tr><td>GC Control_Stream Sequence Select</td><td>Read-write register. When read, returns currently selected stream sequence. To change stream sequence, write sequence number.
<table>
<tr><th>Value</th><th>Stream sequence</th></tr>
<tr><td>1</td><td>Default stream sequence</td></tr>
<tr><td>2</td><td>Aux stream sequence 1</td></tr>
<tr><td>3</td><td>Aux stream sequence 2</td></tr>
</table></td></tr>
<tr><td>Stream Sequence - Default Stream Sequence</td><td>Reads the sequence of streams. For example, if current Sequence is 1, 2, then this register reads a value of 12. To change the sequence of streams: For example, to change the Sequence to 2,3, write 23 to this register.</td></tr>
<tr><td>GC Status > GC Running</td><td>GC is running.
0 - GC is idle
1 - GC is running (Auto Analysis, Single Stream, Calibration, Validation)</td></tr>
<tr><td>GC Status > Current Analysis Mode</td><td>Indicates mode of operation:
0 - GC Idle
1 - Auto Sequence
2 - Single Stream
3 - Manual Calibration
4 - Manual Validation</td></tr>
</table>

F.7 Read-write remote control register (9030)

9030 is a read-write register that can be used for controlling GC operation and for reading current operating mode.

The mode values read from register 9030 are:

0	Idle
1	In automatic sequencing mode
2	Running in single stream mode
3	Calibrating
4	Warm starting, running confidence tests
5	Validating (added in Firmware Version 2.1.0 and higher)

The commands that can be written to register 9030 are:

0	Halt at the end of the current analysis
1	Start automatic sequencing mode
2	Start a normal calibration, on first calibration stream
3	Run single analysis on stream 1, then halt
4	Run continually on stream 1
5	Run a single analysis on stream 2, then halt
6	Run continually on stream 2
7	Run a single analysis on stream 3, then halt
8	Run continuously on stream 3
9	Run a single analysis on stream 4, then halt
10	Run continually on stream 4
11	Run a single analysis on stream 5, then halt
12	Run continually on stream 5
13	Run a single analysis on stream 6, then halt
14	Run continually on stream 6
15	Run a single analysis on stream 7, then halt
16	Run continuously on stream 7
17	Run a single analysis on stream 8, then halt
18	Run continuously on stream 8
19	Run validation on first validation stream (added in Firmware Version 2.1.0 and higher)
...	
41	Run normal calibration on stream 1 (added in Firmware Version 2.1.0 and higher)
42	Run normal calibration on stream 2 (added in Firmware Version 2.1.0 and higher)
...	

60 Run normal calibration on stream 20 (added in Firmware Version 2.1.0 and higher)

...

81 Run validation on stream 1 (added in Firmware Version 2.1.0 and higher)

82 Run validation on stream 2 (added in Firmware Version 2.1.0 and higher)

...

100 Run validation on stream 20 (added in Firmware Version 2.1.0 and higher)

Commands **1-19**, **41-60**, and **81-100** above are with 60 seconds purge. Adding 20 to any command means *no purge* if relevant. These writes are done using Modbus functions **6** or **16**. Except for commands **0** and **2**, the GC must be idle. If a command fails because the GC was not idle or because the code is invalid or the stream is not used, a Modbus exception *illegal data value* will be returned. All these commands are allowed without requiring a password or the security switch to be unlocked. These commands are available to both User Modbus ports and SIM_2251 Modbus ports.

F.8 Writable Modbus registers

The following list documents all the Modbus registers in the GC that can be written when the GC is under legal metrology control with the security switch locked. Please note that not all the registers in this table are available in the SIM_2251 mapping.

Modbus register	Remarks
GC Status -> Current Month	Set GC clock. All 5 registers can be written in a single request, or individual registers can be written. The new date/time is validated before the GC system clock is changed.
GC Status -> Current Day	
GC Status -> Current Year	
GC Status -> Current Hour	
GC Status -> Current Minute	
GC Status -> New Data Flag	Flags for synchronizing Master and Slave. The Slave (GC) updates its result registers and then sets the flag to **1**. The Master (PLC/Flow Computer) reads the data and resets the flag to **0**.
GC Status -> Hourly Avg Updated	
GC Status -> Weekly Avg Updated	
GC Status -> Daily Avg Updated	
GC Status -> Monthly Avg Updated	
GC Status -> Last Run Data Valid 1	
GC Status -> Last Run Data Valid 2	
GC Status -> Last Run Data Valid 3	
GC Status -> Last Run Data Valid 4	

Modbus register	Remarks
GC Status -> Last Run Data Valid 5	
GC Status -> Last Run Data Valid 6	
GC Status -> Last Run Data Valid 7	
GC Status -> Last Run Data Valid 8	
GC Status -> Last Run Data Valid 9	
GC Status -> Last Run Data Valid 10	
Stream 1 -> New Data Available	
Stream 2 -> New Data Available	
Stream 3 -> New Data Available	
Stream 4 -> New Data Available	
Stream 5 -> New Data Available	
Stream 6 -> New Data Available	
Stream 7 -> New Data Available	
Stream 8 -> New Data Available	
Stream 9 -> New Data Available	
Stream 10 -> New Data Available	
Stream 11 -> New Data Available	
Stream 12 -> New Data Available	
Stream 13 -> New Data Available	
Stream 14 -> New Data Available	
Stream 15 -> New Data Available	
Stream 16 -> New Data Available	
Stream 17 -> New Data Available	
Stream 18 -> New Data Available	
Stream 19 -> New Data Available	
Stream 20 -> New Data Available	
Discrete Output 1 -> Switch	Master can write the following values to this register - **0** - Sets the discrete output to *Off*. **1** - Sets the discrete output to *On*. **2** - Sets the discrete output to *Automatic* (DO controller by GC's timed events).
Discrete Output 2 -> Switch	
Discrete Output 3 -> Switch	
Discrete Output 4 -> Switch	
Discrete Output 5 -> Switch	

Modbus register	Remarks
Dewpoint Configuration 1 -> Pressure 1	Pressure at which hydrocarbon dewpoint results are computed. Used only for dual-detector C9+ hydrocarbon dewpoint GCs. These registers are not used in C6+ custody transfer applications.
Dewpoint Configuration 1 -> Pressure 2	
Dewpoint Configuration 1 -> Pressure 3	
Dewpoint Configuration 1 -> Pressure 4	
Dewpoint Configuration 2 -> Pressure 1	
Dewpoint Configuration 2 -> Pressure 2	
Dewpoint Configuration 2 -> Pressure 3	
Dewpoint Configuration 2 -> Pressure 4	
Dewpoint Configuration 3 -> Pressure 1	
Dewpoint Configuration 3 -> Pressure 2	
Dewpoint Configuration 3 -> Pressure 3	
Dewpoint Configuration 3 -> Pressure 4	
Dewpoint Configuration 4 -> Pressure 1	
Dewpoint Configuration 4 -> Pressure 2	
Dewpoint Configuration 4 -> Pressure 3	
Dewpoint Configuration 4 -> Pressure 4	
GC Control_Auto Sequence	Start chromatograph auto sequencing. Normally **0.0**; write non-zero value to initiate sequencing. **1.0** - Start with purge. **2.0** - Start without purge.
GC Control_Halt	Halt chromatograph sequencing - Normally **0.0**; write *1.0* to perform halt.
GC Control_Single Stream	Start single stream run. Normally **0.0**. *Continuous Single Stream* mode: Write the stream number (in floating point) to start with a purge, and the negative of the stream number to start without a purge. *Single Analysis Non-continuous Single Stream* mode: Write (128.0 + the stream number) (in floating point) to start with a purge and the negative of (128.0 + the stream number) to start without a purge.

<table>
<tr><th>Modbus register</th><th>Remarks</th></tr>
<tr><td>GC Control_Calibration</td><td>Start calibration sequence.
Normally 0.0.
For normal calibration:
Write the stream number of the calibration stream in floating point to start calibration sequence with a purge or write the negative of the stream number to start calibration sequence without a purge.</td></tr>
<tr><td>GC Control_Validation</td><td>Start validation sequence.
Normally 0.0.
For validation:
Write the stream number of the validation stream in floating point to start validation sequence with a purge or write the negative of the stream number to start validation sequence without a purge.</td></tr>
<tr><td>GC Control_Stream Sequence Select</td><td>Read-write register. When read, returns currently selected stream sequence. To change stream sequence, write the sequence number.
Value stream sequence
<table>
<tr><th>Value</th><th>Stream sequence</th></tr>
<tr><td>1</td><td>Default stream sequence</td></tr>
<tr><td>2</td><td>Aux stream sequence 1</td></tr>
<tr><td>3</td><td>Aux stream sequence 2</td></tr>
</table></td></tr>
<tr><td>GC Control_Analyzer Control (Write Reg 9030)</td><td>GC remote control register. Please refer to Read-write remote control register (9030).
for details.</td></tr>
<tr><td>Acknowledge All Alarms</td><td>Normally 0.0. Write 1 to acknowledge all alarms.</td></tr>
<tr><td>Component Data 1_Calib Conc[Component 1..15]</td><td>Update calibration concentration from PLC before starting calibration.</td></tr>
<tr><td>Component Data 1_Resp Fact %[Component 1..15]</td><td>Update response factors from PLC.</td></tr>
<tr><td>Stream Sequence - Default Stream Sequence</td><td>Reads the sequence of streams. For example, if the current Sequence is 1, 2, then this register reads a value of 12.
To change the sequence of streams:
For example, to change the Sequence to 2,3, write 23 to this register.</td></tr>
<tr><td>GC Control_Auto Valve Timing</td><td>Start auto valve timing. Normally 0.0. Write
• Calibration stream number: to start AVT from current settings.
• Calibration stream number + 20 - to start AVT from default settings.</td></tr>
</table>

G Engineering drawings

G.1 List of engineering drawings - Rosemount 700XA

This addendum contains the following engineering drawings:

- BE-22175 Label Set Field Wiring Card 1 (Sheets 1, 2, and 3)
- DE-22050 Outline and Dimensional Pole, Wall and Floor Mounting Units, 700XA
- CE-22260 Assembly, 6 Port XA Valve, Model 700XA
- CE-22300 Assembly, 10 Port XA Valve, Model 700XA
- DE-22143 (Sheets 1-7) Unit Assembly 700XA GC

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