

GC

Varian  
CP-3800 GC



**VARIAN**

## Outstanding Flexibility with Proven Performance The Varian CP-3800 GC for any application

*Flexible platform—single, dual, or three-channel configurations for maximum productivity.*

*Easy upgrades—quickly add additional capabilities as your requirements change.*

*Simplified PC control—password security, Star Chromatography Workstation Quick Start Applications, and Custom Report Writer templates streamline operation.*

The Varian CP-3800 GC meets all your analytical requirements with practical solutions for simple and complex applications.

In a standard configuration, the CP-3800 accommodates up to three injectors and three detectors, all operating simultaneously. In addition, the CP-3800 is easily configured to perform on-line analyses for monitoring critical gas and liquid process streams.

The CP-3800's flexible platform lets you start with a basic configuration and add a wide variety of options in the field. Options include additional channels, gas and liquid sampling valves, and external sampling devices. Future upgrades guarantee that you can meet changing requirements at a moment's notice.

Star Chromatography Workstation combined with Quick Start Applications provide a powerful yet simple interface for controlling the CP-3800 GC. Routine applications can be launched from the desktop with minimal data entry. Reports specific to your application are easily created with Star Custom Report Writer. Report generation can be automated for around-the-clock monitoring.

The CP-3800 GC from Varian—unlimited possibilities!



## Simplified user interface

- Large display with 11 lines and 35 characters/line for easy viewing
- Easy method navigation for greater productivity
- Access to all GC parameters for complete method editing and system control

## AutoSamplers

- CP-8400 handles up to 100 samples in liquid or ambient headspace mode
- CP-8410 with a fixed sample tray supports multiple vial sizes
- 8200 for liquid injections and economical SPME analysis
- Combi PAL offers maximum flexibility for liquid, heated headspace, and SPME applications
- Archon™ with Tekmar 3100 for automated Purge and Trap sampling



## Injectors

- CP-1177 Split/Splitless Injector with optimized split vent design
- 1079 PTV (Programmable Temperature Vaporizing) injector for cold on-column, Large Volume Injection (LVI), and solid sample introduction with ChromatoProbe
- 1041 On-Column/Packed Injector for capillary and packed applications
- 1061 Flash Injector for simplified direct injections
- Valve systems for gas and high pressure liquid samples

## Column oven

- Spacious oven accommodates three or more columns
- Varian Quick Connects provide easy column installation
- Rapid oven cool down increases sample throughput
- Cryogenic cooling extends application range

## Detectors

- Flame Ionization (FID) with a patented, ceramic flame tip for ultimate peak shape and sensitivity
- Thermal Conductivity (TCD) with automatic filament protection for lowest maintenance costs
- Micro-Thermal Conductivity (Micro-TCD) optimized for capillary applications
- Electron Capture (ECD) for ultra-high sensitivity and selectivity of halogenated compounds
- Thermionic Specific (TSD) for selective detection of nitrogen/phosphorus compounds
- Pulsed Flame Photometric (PFPD) for selective detection of sulfur, phosphorus, nitrogen, and 25 additional elements

## Star Chromatography Workstation

- Simple interface for easy method building and data acquisition
- Quick Start helps create and launch routine applications from the desktop
- Password protection eliminates unauthorized data access and method editing

## Routine report templates

- Star Workstation Custom Report Writer for easy report template creation
- Drag and drop icons for quickly creating reports

# Simplified User Interface

## For convenient system navigation and method editing

Intuitive keypad buttons and large display simplify daily operation.

- Easy viewing with 11 lines and 35 characters/line LCD screen
- Quickly view GC status and edit GC parameters from the keypad
- Complete method editing and GC control via keypad
- Save time with immediate access to any one of eight methods stored in on-board memory

All CP-3800 GC functions at your fingertips for quick access at any time.



Navigate method parameters. Use section-specific soft keys to access and edit method parameters independent of PC workstation.

Method 8		Method 8		0.00	20.00
<b>INSTRUMENT STATUS (FRONT)</b>					
Component	Set	Actual			
1177 Oven (°C)	220	220			
Column Flow (ml/min)		4.0			
Column Pressure (psi)	5.0	5.0			
Column Oven Temp (°C)	199	199			
TSD Oven (°C)	300	300			
TSD Output (mV)		65.901			
Software Ver.					

Complete GC status in a single screen. View channel-specific information at the touch of a button.

# Maximize Sample Throughput

## Versatile autosamplers minimize errors and reduce costs

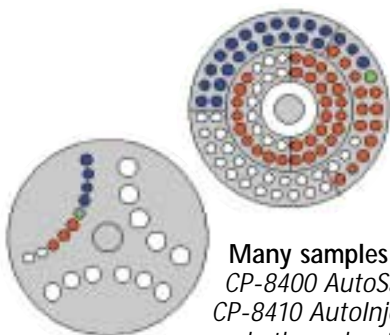
The CP-8400 AutoSampler provides high throughput with a standard 100 sample carousel for 2 mL vials. The CP-8410 AutoInjector provides flexibility with a fixed tray for 2 mL, 5 mL, and 10 mL vials.

- High sample throughput with dual and duplicate modes of injection
- Automatically access two injectors with a single tower
- Minimize method development time with pre-programmed modes of injection

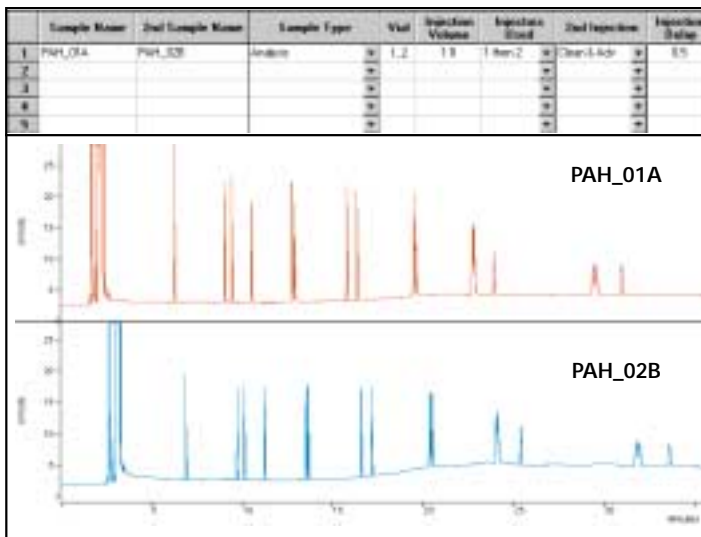
Varian AutoSamplers elevate GC automation to new levels of reliability, productivity, and performance.



Save time and reduce costs. The CP-8400 AutoSampler provides dual and duplicate injections with only a single tower.



Many samples or only a few. The CP-8400 AutoSampler and the CP-8410 AutoInjector provide both sample throughput and flexibility.



Double throughput without additional hardware costs! Dual sample injection mode for a 16-component Polynuclear Aromatic Hydrocarbon mixture injected into two injectors sequentially.

## Automated Sample Preparation For volatile and semi-volatile applications

In addition to traditional liquid autosamplers, the CP-3800 GC conveniently interfaces with a wide range of automation devices.

For example, the Varian Archon and the Combi PAL combine both sample preparation and sample introduction in a single unit. Archon sets the industry standard for Purge and Trap automation (e.g., USEPA Method 5035). Combi PAL is the only GC sampling device that automates liquid and heated headspace injections, plus solid phase microextraction (SPME).

Configuring the CP-3800 with advanced sampling devices minimizes sample preparation time associated with demanding samples.



**Eliminate solvents.** *Combi PAL's advanced SPME mode with agitation and heating rapidly extracts semi-volatile samples without costly solvents.*



**Reduce carryover.** *Archon's automated hot water rinse effectively flushes contaminants from prior samples for improved analytical results.*

# Exceptional Performance

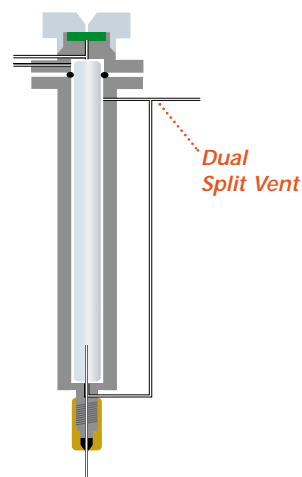
## Optimized injectors for every application

Varian has the injector to meet every application need. All Varian injectors for the CP-3800 are available with Electronic Flow Control (EFC) or manual pneumatics.

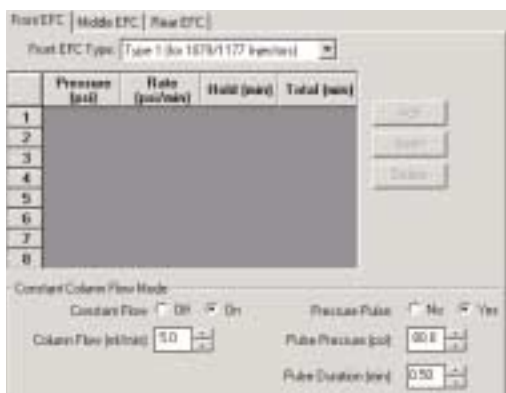
Varian's EFC optimizes GC injector performance by electronically controlling column pressure, flow, and split vent flow. Also, EFC's pressure pulse capability lets you increase injection volumes for greater sensitivity without injector overload.

Also, EFC modules are designed for special inlet configurations such as purge and trap, headspace, and valved systems for maximum performance. In addition, EFC conserves costly carrier gas with convenient software control by reducing the split vent flow between injections.

Simplify injector set-up, shorten method development time, and facilitate application troubleshooting with EFC from Varian.



**Minimal solvent tailing.** Dual split vent efficiently eliminates residual solvent for improved sensitivity.



**Convenient injector interface.** Intuitive screens provide quick and easy set-up for all injection parameters including pressure pulse.

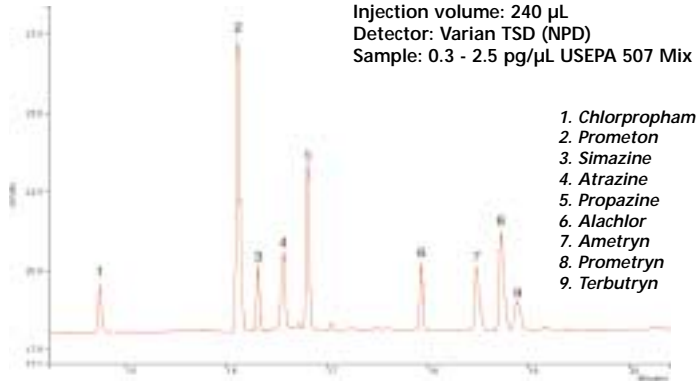
**Eliminate injection start errors.** Varian's AutoStart switch is automatically activated by the syringe to guarantee that every run starts immediately when the sample is injected.



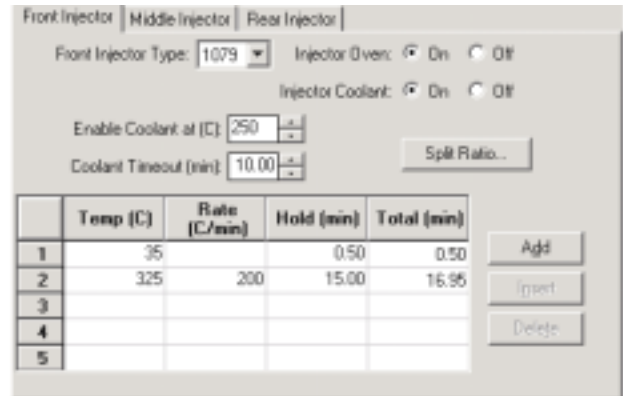
# Difficult Samples

## Versatile inlet devices for the results you need

### 1079 PTV Injector

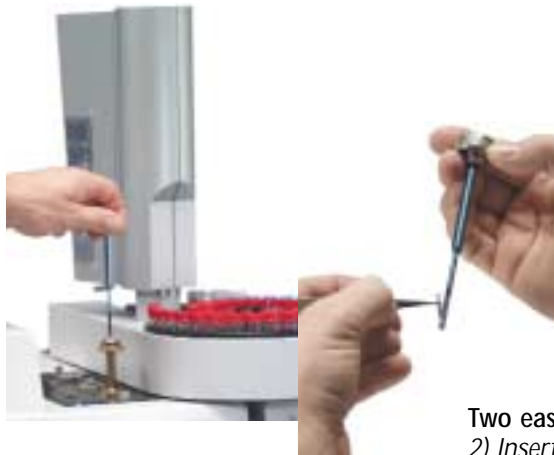


Reduce sample prep time and costs. Large Volume Injections (LVI) improve laboratory productivity while maximizing sensitivity and minimizing solvent use.



Easy temperature programming. Intuitive interface makes the 1079 PTV easy to set up for cold on-column and large volume injections.

## No Sample Preparation Required with ChromatoProbe



Varian's revolutionary ChromatoProbe:

- Analyzes solids, liquids, and slurries without any sample preparation
- Directly desorbs samples in the 1079 PTV Injector without additional hardware
- Uses disposable micro-vials to minimize system contamination

Two easy steps. 1) Place sample micro-vial into probe.  
 2) Insert probe into 1079 PTV Injector.

# Universal and Selective Detectors

## Ultimate sensitivity for demanding applications

Demanding applications require rugged and reliable detectors to assure quality results. Universal detectors provide high sensitivity for a wide range of routine samples. Varian's selective detectors specifically eliminate matrix interferences while providing maximum sensitivity.

All Varian detectors for the CP-3800 are available with EFC or manual pneumatics. With EFC, gas flows are optimized for each detector assuring easy set-up and operation.

Varian's comprehensive line of detectors guarantees a cost-effective solution to your application requirements.

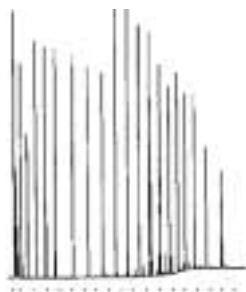


**Ultimate sensitivity—setting the industry standard.** *Varian's ECD provides ultra-high sensitivity for halogenated compounds, such as 7 fg/sec for Lindane.*

### Flame Ionization Detector



Metal Flame Tip



Ceramic Flame Tip

**Improved analyte response.** *The Varian FID, with its standard ceramic flame tip, delivers improved response for high molecular weight compounds.*

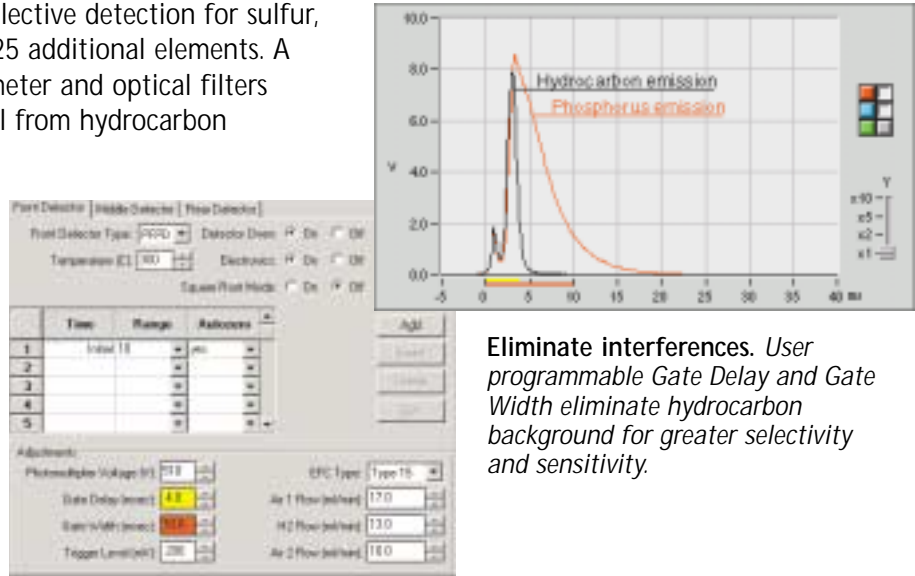


**200 nL TCD cells for optimized sensitivity.** *The Varian Micro-TCD eliminates make-up gas requirements for capillary column-based applications.*

# Highly Selective Pulsed FPD

## Eliminates matrix interferences for greater sensitivity

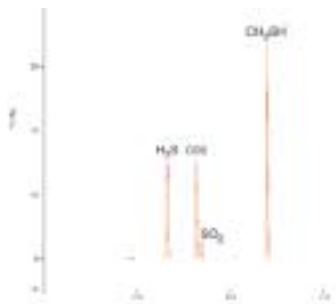
The Varian PFPD provides selective detection for sulfur, phosphorus, nitrogen, and 25 additional elements. A unique time-gated electrometer and optical filters eliminate background signal from hydrocarbon interferences.



Eliminate interferences. Use programmable Gate Delay and Gate Width eliminate hydrocarbon background for greater selectivity and sensitivity.

## Trace Sulfur Contaminants in Beverage-Grade CO<sub>2</sub>

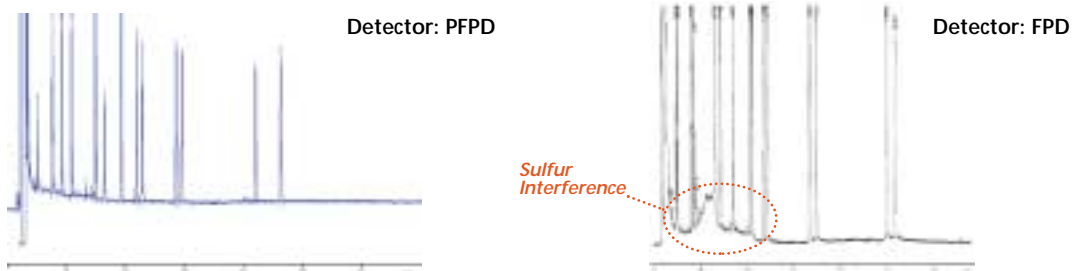
0.2 ppm Sulfur Gases



Easy-to-operate, reliable sulfur detection. The PFPD provides a simpler, more cost-effective alternative to chemiluminescence for many trace sulfur analyses.

## Superior Phosphorus Pesticide Analysis

0.10 µg/mL for Each Pesticide in Broccoli Extract



Improve phosphorus detection 10-fold. Compared to the FPD, the pulsed operation of the PFPD selectively eliminates sulfur interferences during the analysis of phosphorus pesticides.

## Custom GC Solutions

### Simple solutions for complex separations

Varian has long been the leader in providing turn-key solutions for industrial, petrochemical, and environmental applications. The CP-3800's flexible platform easily supports a wide range of GC analyzers from a single Gas Sampling Valve with packed column for permanent gas analysis to an advanced four-valve, three-channel system with multiple columns for Refinery Gas Analysis.

The Varian CP-3800 advantage:

- Eliminate application development time with standard and custom analyzers
- Column switching, series bypass, backflush, and sample injection easily handled by single or multi-valve oven configurations
- Minimize baseline upsets with rapidly responding EFC optimized for valved configuration
- Improve sensitivity for trace gas analysis by concentrating samples with an integrated Sample Preconcentration Trap (SPT)
- Automatically switch between multiple sample streams with a stream-selector valve

Varian manufactures, tests, installs, and supports these special configurations for the lifetime of your system. Our single vendor approach assures you the best possible return on your investment.



**Always compact.** Even with multi-valve, multi-column, and multi-detector configurations, the CP-3800 retains its compact footprint and ease-of-use.

# Varian Analyzers: User defined, Varian tested!

## Boost productivity, reduce operating costs

Varian offers a range of CP-3800-based solutions from standard GC analyzers for natural gas analysis to custom analyzers defined by you for your specific application. All Varian analyzers are factory tested to guarantee full performance with minimal start-up time.

Complete with test results, documentation, and reference manual, your Varian Custom GC Solution will provide years of reliable, productive service.



**Quick and easy access.** Varian's multi-valve oven with removable cover leaves actuators in place while providing complete access for valve troubleshooting and maintenance.

Time	Valve 1	Valve 2	Valve 3
1	Gas Sampling	Back/Back to Vent	Over Bypass
2	Initial Fill	Back/Back	Bypass
3	1.00 Inert	Forward	Over
4	1.50 Fill	Back/Back	Over
5			
6			
7			
8			
9			

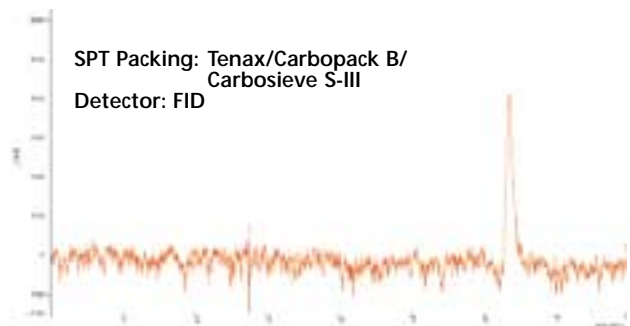
**Total control.** Star Workstation controls valve identification and switching as well as oven temperature.

## Superior Sensitivity for Organic Components in Gases and Ambient Air



**Enhanced sensitivity.** Varian's patented SPT concentrates trace analytes in air and gas samples for on-line processes and field samples brought to the laboratory.

### 2 ppb Ethylene in Air from a Food Processing Facility



**Your choice of packing.** With the Varian SPT, select from a variety of different packing materials for optimum selectivity and maximum sensitivity. Varian GC Application Note No. 65.

# User-Friendly Star Workstation PC Control

## Full-featured workstation with a simple interface

The CP-3800 GC can be controlled from virtually anywhere in the world through industry-standard Ethernet hardware.

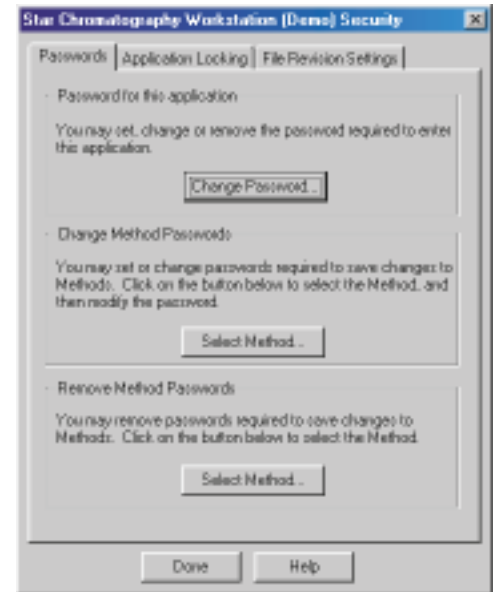
- Instrument communication utilizing standard network protocols (TCP/IP)
- PC workstation control and data handling for up to four Varian GCs, each with three detectors
- Create Quick Start desktop icons for each sample type or method used in your laboratory
- Set levels of user access through the Star Workstation Security Administration program

Varian's Star Workstation streamlines setup, operation, and reporting for all your routine and custom applications.

### Security



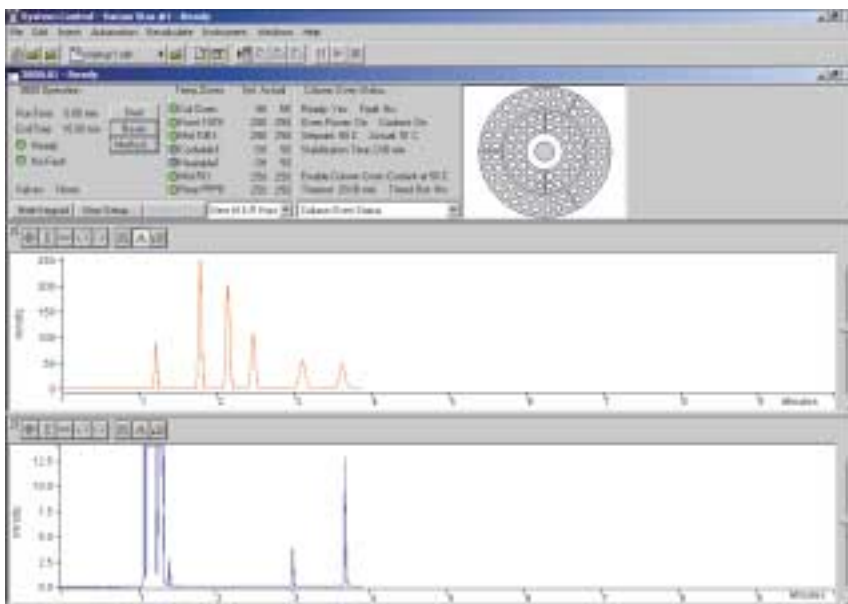
*Password protection eliminates unauthorized data access and method editing.*



### System Control



*System status and data acquisition are all viewed in a single window.*



# Routine Analysis With minimal operator intervention

Using the Star Toolbar, operators can build Quick Start Applications with sample-specific methods for GC control and data handling. These Quick Start applications are selected through desktop icons with minimal data entry by operators.

Quick Start takes the guesswork out of daily operation improving laboratory productivity for both manual and automated injections.

## Star Toolbar



Build methods with one-click access to any Star Workstation application.

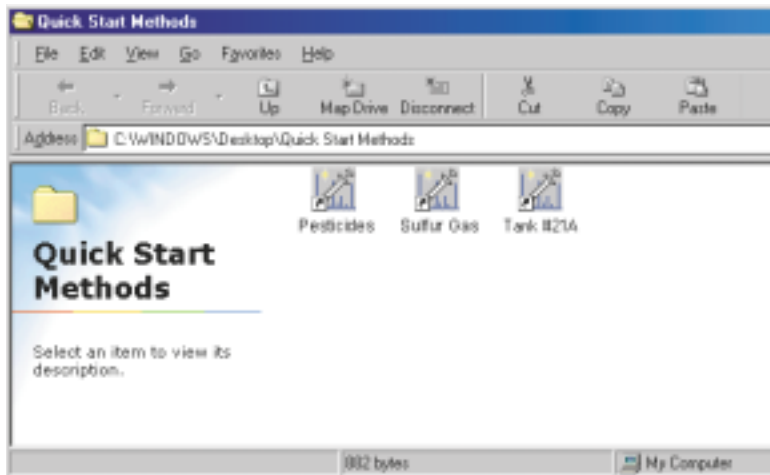


## Quick Start

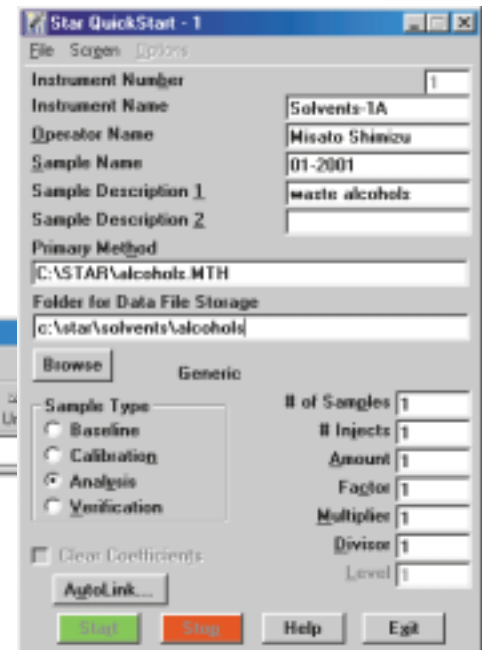


Launch routine methods using Quick Start icons on the desktop.

## Quick Start Icons



## Quick Start Window



# Flexible Reports

## Easy to create and automate

A wide array of standard report formats are available through Varian's Star Chromatography Workstation. Reports may be printed in a variety of formats or archived as ASCII files.

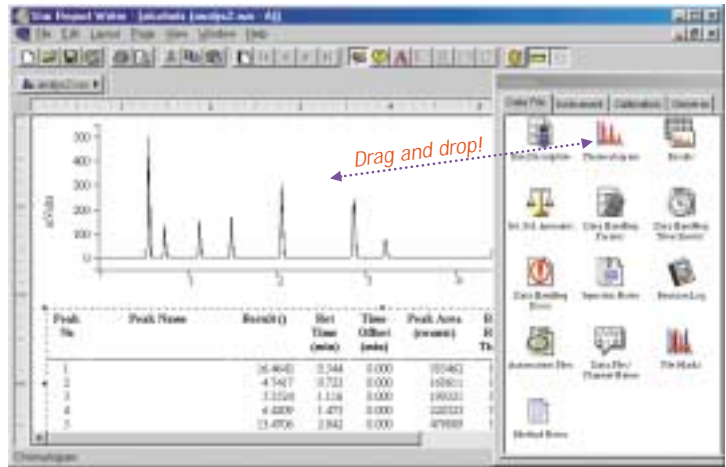
Star Custom Report Writer lets you create custom report templates for applications with specific reporting requirements. Link Custom Report templates to method sequence files for automated processing and unattended operation.

Standard and custom reports with minimal effort!

### Custom Report Creation



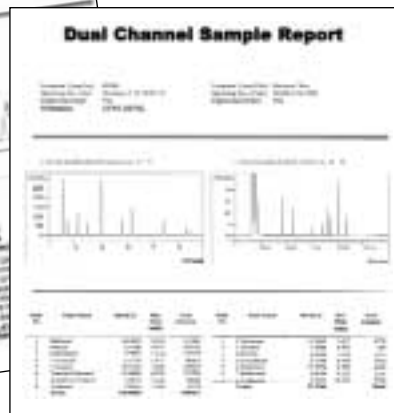
Drag multiple icons into the template field and create custom reports immediately.



### Custom Report Writer



Custom reports present data in formats tailored to your specific requirements.



# Varian Chromatography and Spectroscopy Supplies Performance, Selection, and Value

Varian's 50-plus years of continuous innovation in analytical instrumentation assures you the best in high performance products. Varian is committed to providing analytical products and supplies at affordable prices supported by superior customer service.

To maximize CP-3800 GC performance, select the best value in analytical supplies ranging from sample vials and sample preparation products to CP-Sil Low-Bleed capillary columns. Call today to request your free Varian Chromatography and Spectroscopy Supplies catalog.



**Varian injector septa and liners.** *Products proven to deliver high performance in demanding environments.*

**Autosampler and autoinjector vials.** *Vials with septa manufactured from materials specifically designed to minimize GC contamination.*



**CP-Sil Low Bleed Capillary Columns with EZ-GRIP.™** *Low column bleed means higher precision, especially for trace analysis. EZ-GRIP makes column installation quick and simple.*

**CP-Gas Clean Filters.** *Extremely efficient filters remove moisture and oxygen to extend column life and improve system performance.*



**Varian Analytical Instruments  
serving worldwide markets in:**

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Basic Chemical  
Biotechnology  
Clinical  
Electronics  
Environmental  
Photonics  
Toxicology  
Pharmaceutical  
Food and Beverage  
Metals and Mining  
Petroleum and Petrochemical



Varian is committed to a process of continuous improvement which demands that we understand and then meet or exceed the needs and expectations of our customers – both inside and outside the company – in everything we do.

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