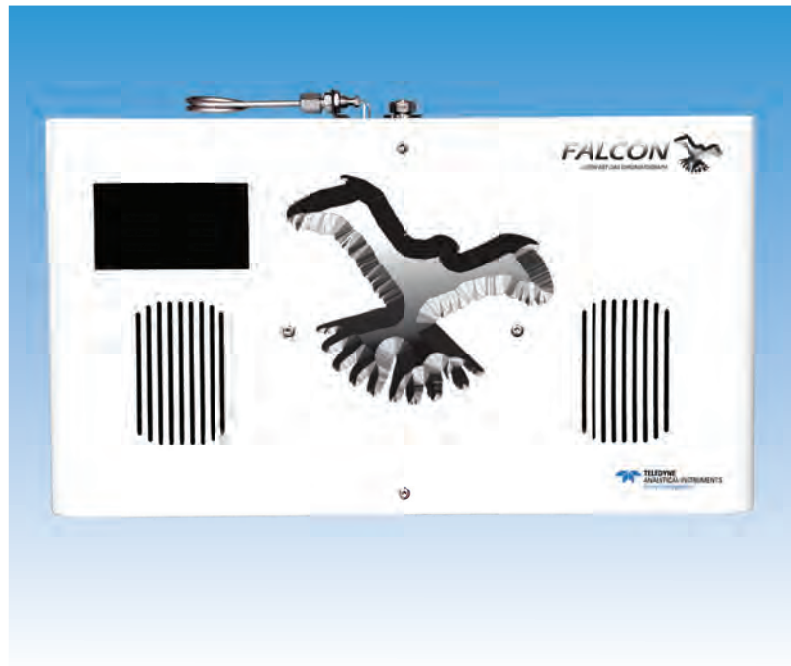




TELEDYNE FALCON GC

ULTRAFAST GAS CHROMATOGRAPH

FASTER, SMALLER, SMARTER, EASIER, GREENER



The Falcon Series Ultrafast Gas Chromatograph

Faster

With analytical cycles 10 to 50 times faster than traditional chromatographs, the Falcon Series Ultrafast Gas Chromatograph vastly increases responsiveness for the data consumer in a wide range of lab, process and field applications. Less time is spent waiting on results which means more productivity and timely control of measured processes. Product output, quality and profitability are increased while field analysis becomes more practical and reliable.

The Falcon Series GC's incredible speed inspired a new Ultrafast Simulated Distillation Method. The ASTM D7798 method can perform simulated distillation nearly 6 times faster than the previous method (D2887), with superior repeatability and reproducibility.



Smaller

The elimination of the air bath column ovens, required for traditional gas chromatography, drastically reduces the Falcon Series GC footprint. Yet, the Falcon Series delivers all the functionality of much larger, higher thermal mass, traditional GCs. At 17" wide, 8.5" deep, 11" high and 25 Lbs (43 cm x 22 cm x 28 cm & 11kg), the Falcon Series offers advanced analytical chemistry in a highly compact, versatile package.

The smaller size of the Falcon Series GC means more efficient utilization of space and, ultimately, bigger profits for the user. The small Falcon Series footprint allows for higher installation density in the laboratory and enables process installation schemes that place the analyzer much closer to its sampling point in the plant. Closer proximity means less sample lag time as well as more representative measurements for process control. This also makes hand carried and vehicular transport applications far more feasible.



Smarter

Using modern computing with standard operating systems and software, the Falcon Series GC frees valuable technical resources from the daily grind of interpreting and validating chromatographic results. State-of-the-art Chromperfect® GC operating software is built in and LineUp™ software from Infometrix® virtually eliminates misidentification and components and drastically reduces the need for expensive calibration sample runs. Less time spent calibrating the analyzer means more time spent on more economically valuable diagnostics, most notably measured process deviations from the set-point. Infometrix Pirouette® software may be added to enable interface with process automation.



is Faster, Smaller, Smarter, Easier and Greener.

Easier

The patented, plug and play temperature-programmed gas chromatography column modules allow the Falcon Series GC to avoid the complicated and troublesome valve schemes used in isothermal process analyzers and many lab gas chromatographs. The Falcon Series GC's patented overall modular design also makes diverse application engineering and maintenance easier, as column and detector modules are readily changed out as needed.

Correlation between laboratory systems and online process control systems become realistically possible with the Falcon Series system, because both physical packages use the same measurement principle, hardware and methodology. Applying the Falcon Series GC in-lab and online means less time spent reconciling lab and process measurements and validating which result is correct. More time can be spent working on valuable, direct process optimization.

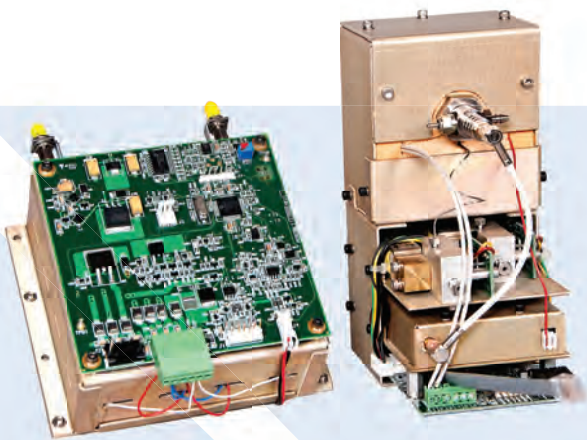
Greener

The obvious and extraordinary features and benefits of the Falcon Series GC combine to yield something that may not be that evident: Green Process Analytical Chemistry. The Falcon Series GC is greener, whether in the control laboratory, online in the processing plant, near line in the pilot plant or when transported for field measurements. Consuming less than 300 Watts in operation, the Falcon Series GC uses a small fraction of the traditional gas chromatograph consumption rate of up to 3000 Watts.

With analytical cycles that are many times faster and the low electrical load needed for operation, the Falcon Series GC's power consumption per analysis is 1% or less of the energy required by traditional gas chromatography. Combine these savings with the reduction in workload for air conditioning systems and the Falcon Series solution is greener still. The Falcon Series product life cycle environmental impact from manufacturing throughout its useful lifetime to disposal is far less than traditional GCs.

The Result

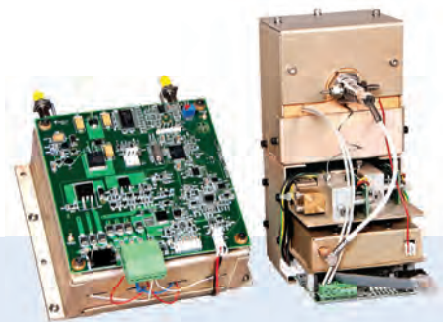
Faster, Smaller, Smarter, Easier, Greener = better quality, increased productivity, profitability and versatility, with far less hassle and environmental impact. That summarizes the business concept for the ultrafast, compact, ultra-user friendly, energy-efficient, highly durable, practical, reliable and economical Falcon Series Ultrafast Gas Chromatograph.



Column Module and Detector Module

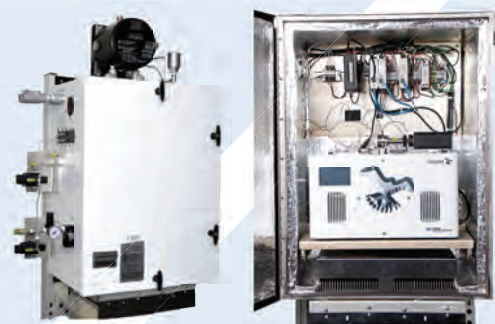
With its patented modular columns and detectors platform, application range is second only to analytical speed in the list of Falcon Series GC advantages. Consider these diverse capabilities:

- Gas or liquid samples
- Fixed gases & hydrocarbons up to C₄₄
- Petroleum products & biodiesel formulations up to C₅₀
- FID, TCD, DBD or FPD detector modules
- Single column module lengths up to 16 meters
- Dual column module units with 32 meters total length
- Dual detector configurations
- Dual column heartcut configurations



Process Enclosure

The Falcon Series process enclosure is also modular and compact. The all-weather Falcon Series enclosure can even be tucked away “in the pipes” when needed. For most environments, the Falcon Series enclosure can be installed outdoors with only rain and sun protection, or in very economical 3-sided shelters. The enclosure module also includes an optional built in efficient air-conditioning system and has configurations for NEC, ATEX or IECEx hazardous area locations available with purge.



Autosampler

The Falcon Series GC Autosamplers offer many outstanding features.

- Servo motor drive
- Simultaneous X-Y movement - not sequential
- Faster, quieter - more reliable movement
- Fast injections - software programmed control
- Simple operation methods linked to the Falcon Series GC
- Ultra-reliable and durable
- Direct syringe injection
- Variable injection rates
- Variable syringe fill rates
- Multiple tray options



Mobile System

The Falcon Series GC's compact size and superior performance makes mobile systems for GC analysis a functional reality.

- Upstream E&P evaluations
- Environmental emissions monitoring
- Roadside fuel marker detection
- Transportable product authentication
- Pipeline product interface detection
- Forensic analysis
- Fence-line monitoring

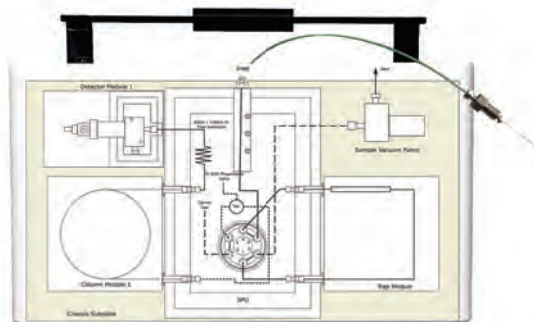


Falcon Series Gas and Liquid Chromatographs

The Falcon Series Ultrafast Gas Chromatograph is a widely applicable, fast programmed temperature gas chromatograph consisting of:

- Heated split/splitless injection port including septum purge and 662°F (350°C) maximum operating temperatures. The inlet can accept gas or liquid syringe injections or optionally use an automated gas or liquid sample valve.
- One or two column modules, for simultaneous detection on two individual column types, and one or two detector modules.
- Plug and play, precalibrated and individually programmed temperature column modules, enabling dual simultaneous analysis on the same sample, using different separation media and temperature profiles for maximum selectivity.
- Flame Ionization Detection, Thermal Conductivity Detection, Flame Photometric and Dielectric Barrier Discharge detectors are available.
- Maximum detector operating temperature is 662°F (350°C)
- Chromperfect® chromatography data system running on a Windows PC. Infometrix® LineUp™ and Pirouette® software may be added to enhance data analysis and interface.
- System configurations enabling measurement of fixed gases up through components with boiling points equivalent to $n - C_{50}$. Samples can be gas or liquid phase and be directly injected into the split/splitless injection port. Optional SP/ME and other sampling methods are available.

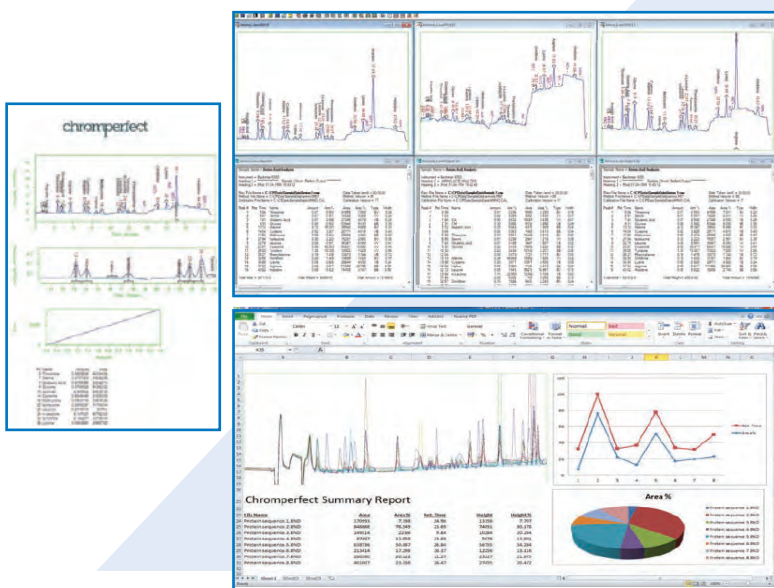
See the technical specifications for more information.



Chromperfect® SL™

What is Chromperfect® SL™?

Chromperfect® SL™ is a new PC based data system designed to meet the needs and budgets of smaller laboratories, offers much more than expensive competitive systems and shares the same core software as any other Chromperfect® system. It has a fully featured system with ease of use at the forefront of the product's innovative design.



Features

- Easy to set-up, learn and use
- Flexible and powerful data acquisition
- Freedom to choose how many chromatograms are displayed and analyzed at a time
- Fully documented methods, sequences and reports, including instrument run logs
- Fully integrated System Manager which offers complete control over user privileges and system access

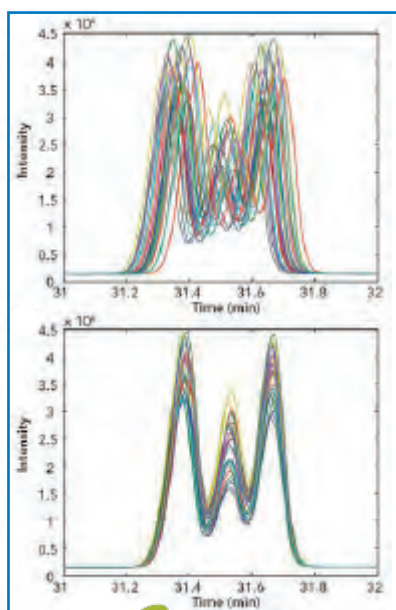
Available Application Software

- *Natural Gas Reporter* - custom report program for characterizing natural gas and its condensates
- *Size Exclusion Chromatography* - Reporting and analysis tool for molecular weight distribution
- *Simulated Distillation* - Reporting package for petrochemical chemists to determine boiling point distribution of crude oil
- *Analog Output Module*
- *Marker Trace* - Product authentication software for lab or mobile testing

Infometrix® LineUp™

What is Infometrix® LineUp™?

LineUp™ software is a tool for adjusting retention times that does not require any prior information. Using a multivariate correlation method, LineUp™ will adjust a chromatogram's retention axis to more closely resemble that of a target chromatogram.



Features

Column Replacement

The LineUp™ software process produces accessible data that allows the user to measure column degradation and predict when the column should be replaced. In the meantime, LineUp™ will continue to automatically correct any retention time shifts due to column aging.

Service Life

The service life of the columns and other components that may inadvertently impact retention time variance as they age can be extended. This adds significant replacement cost savings to the predictive maintenance value of LineUp™.

Additional Features

LineUp™ can run manually, but is also designed to run invisibly. In addition, in the software bundle, manual adjustments to correct for retention time shifts are eliminated. The speed and efficiency of the measurement process are increased significantly as well as many process decision dependent on the GC measurement.

SPECIFICATIONS

Available Detectors	Flame Ionization (FID), Thermal Conductivity (TCD), Flame Photometric (FPD), Dielectric Barrier Discharge (DBD), Electron Capture
Analysis Configurations	Online analysis via rotary valve Manual sample injection via auto-sampler
Repeatability	± 1% RSD or better (area)
Response Time	Application dependent
Temperature	Operating: 32 to 95°F (0° to 35°C) Storage: -4 to 140°F (-20° to 60°C)
Utilities	Carrier Gas (application-dependent) Hydrogen fuel and air required for FID and FPD
Power	For GC Only: 24 VDC power, 300 Watts max (Optional 100-240 VAC 50/60 Hz with external converter)
Voltage	< 300 Watts peak power at startup, practical use < 200 Watts for gas or liquid analyzers
Interface	Front-panel touchscreen for GC initialization and manual sampling functions All other functions via TCP/IP Ethernet to external PC with Chromperfect® Seven software (Windows® 7 or higher OS required)
Outputs	Via external PC modules Analog Outputs: 4-20 mADC (isolated) Digital Outputs: Relay contacts TCP/IP MODBUS Others available upon request
Dimensions	17"W x 11" H x 8.5"W (43 cm x 22 cm x 28 cm) Approximately 25 lbs (11 kg)
Data Processing and Instrument Control	Note: computer system is integral and necessary component of the analysis system and includes the following requirements: RS-232 or USB to RS-232 adapter, Ethernet Windows XP or newer operating environment Chromperfect® software for dual column data acquisition via RS-232 serial or Ethernet ports



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