



SCION™ GC Series

- The Gas Chromatographer's Choice for Separations

Innovation in Gas Chromatography

Scion Instruments' tradition of innovation and product reliability have combined to create the next generation of Scion Instruments' Gas Chromatographs. By understanding and then designing to exceed the most critical performance and reliability needs of GC users, Scion Instruments systems that are specifically for, and all about helping GC users. The new SCION 436 and SCION 456-GC have been designed to meet the most critical requirements of the users - reliable performance, ease of use, and simple maintenance.

Local User Interface

Users can navigate effortlessly through all GC setup and control functions using the large, high resolution color touch display. Available in 13 languages to facilitate localized training, operation and support.

Fast, Flexible Detection

Scion Instruments' comprehensive range of detectors deliver industry leading sensitivity, ease of operation and outstanding reliability. All Scion GC detectors feature rapid data sampling rates (600 Hz), essential for high speed, high resolution separations.

Multi-language capability



SCION 436-GC

Full EFC capability

- Up to 3 modules
- Backflush Option

High pressure Injection Ports (0-150 psi)

High performance Oven 170°C/min

Inlets:

- S/SL
- PTV/LVI
- COC
- PWOC
- Packed/Wide Bore
- 2 or 3 injectors per GC
- Gas Sampling Valve
- Liquid Sampling Valve

SCION 456-GC

Detectors:

- FID
- TCD
- ECD
- PFPD
- NPD
- PDHID
- MS SQ

High pressure Injection Ports (0-150 psi)

High performance oven 150/180°C/min

Full EFC Capability

- Up to 9 modules (21 Channels)
- Backflush option



Enhanced Operator Benefits

The SCION GC range meets virtually all application requirements. All SCION GCs are equipped with high resolution Electronic Flow Control to ensure retention time precision. Whatever the requirement, we have the solution.

Connectivity and Control from Anywhere

Using either the GC Portal interface or the industry leading CompassCDS software, users can easily control and monitor SCION GC hardware from remote locations.

Hydrogen Carrier Ready

All SCION GCs are capable of using hydrogen as a carrier gas and carry ATEX explosion safety certification. These GCs can also be fitted with hydrogen safety systems, providing users with additional security.



Targeted Software Solutions

CompassCDS has several customized software plug-in options to provide users with additional functionality that includes enhanced reporting, complex post-analysis calculations and results exporting among others. Some examples include:

Natural Gas Reporting Tool

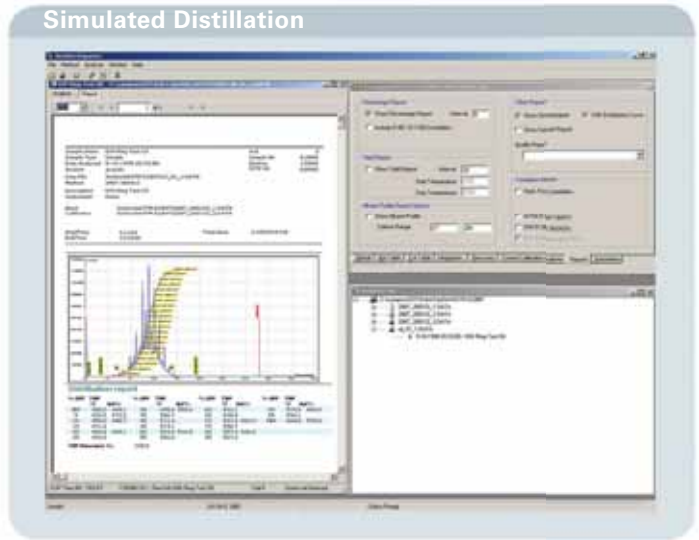
Provides users with the ability to produce customized reports based on GPA/ISO/ASTM natural gas methods and calculations

Simulated Distillation

Provides boiling point distributions for the full range of petroleum products required to comply with ASTM, DIN, IP and ISO standard test methods

Detailed Hydrocarbon Analysis

Automatically reports the physical properties of hydrocarbons based on individual components for applications that comply with ASTM, IP and other standard methods



The screenshot displays the Natural Gas Reporting Tool interface, showing a GPA 2172 Report. The report includes a header with 'scion INSTRUMENTS' and 'GPA 2172 Report'. Below the header, there is a table with report details and a main table of component results. At the bottom, there is a section for calculations at a pressure base of 14.696.

| Run Name | GPA Single Channel5 | | | | |
|----------------------------|----------------------|-------------|------------------------|-------------|-------|
| User Name | Administrator | System Name | NetGas GC | | |
| Acquisition Date & Time | 10/3/2015 4:23:45 AM | Method Name | GPA Single Channel | | |
| Component Results (14.696) | | | | | |
| Name | Quantity (kg/d) | Qty (kg) | Liquid Volume Fraction | Wt Fraction | GPM |
| Carbon Dioxide | 2.3100 | 2.3153 | 0.02 | 0.04 | 0.40 |
| Methane | 81.2000 | 81.0672 | 0.79 | 0.54 | 13.83 |
| Ethane | 1.8000 | 1.8041 | 0.02 | 0.02 | 0.46 |
| Propane | 3.2200 | 3.2214 | 0.04 | 0.06 | 0.88 |
| i-Butane | 2.1000 | 2.1048 | 0.03 | 0.02 | 0.69 |
| n-Butane | 2.0400 | 2.0447 | 0.03 | 0.05 | 0.65 |
| i-Pentane | 1.4500 | 1.4522 | 0.03 | 0.04 | 0.51 |
| n-Pentane | 3.3600 | 3.3677 | 0.06 | 0.10 | 1.23 |
| C6+ | 2.3400 | 2.3454 | 0.06 | 0.09 | 1.03 |
| | 95.7700 | 100.0000 | 1.00 | 1.00 | 19.70 |

| Calculations at Pressure Base 14.696 | | | |
|--------------------------------------|---------|-------------------------------------|---------|
| Heating Value (Dry Basis) Total BTU | 1351.74 | Heating Value (Wet Basis) Total BTU | 1357.83 |
| Heating Value (Dry Basis) Total BTU | 1366.50 | Heating Value (Wet Basis) Total BTU | 1364.04 |
| Compressibility (Z) (Dry Gas) | 0.9998 | Compressibility (Z) (Dry Gas) | 0.9993 |
| Density (G) (Dry Gas) | 0.8140 | Component Molar Total | 24.00 |
| C2+ | 5.475 | C2+ | 4.992 |
| C4+ | 4.398 | C3+ | 2.764 |



SCION
INSTRUMENTS

SCION 50
455-SC



SCION GC Benefits

- Multi-language User Interface
- Advanced EFC Capability
- High Pressure Injection
- Inert Flow Path
- Backflush Capability
- Constant Linear Velocity Mode
- 600 Hz Data Rate
- CompassCDS Software

SCION 436-GC

- Small footprint
- High performance
- Dual channel architecture



SCION 456-GC

- Solutions platform
- Total flexibility
- Four channel architecture



Increased Productivity

With over 40 year's experience in gas chromatography, we provide unrivalled expertise in building robust instruments and creating customized solutions that enhance productivity. With complete control of design, manufacture and testing, Scion Instruments is able to guarantee that the quality and technological excellence of its products is of the highest standard.

Speed increased by a factor 6.5

- Small ID from 0.25 to 0.1mm
- Short column from 15 to 4 mtr
- Increased ramp from 10 to 65 °C/min
- Data rate from 25 to 200 Hz

Fast Cycle Times

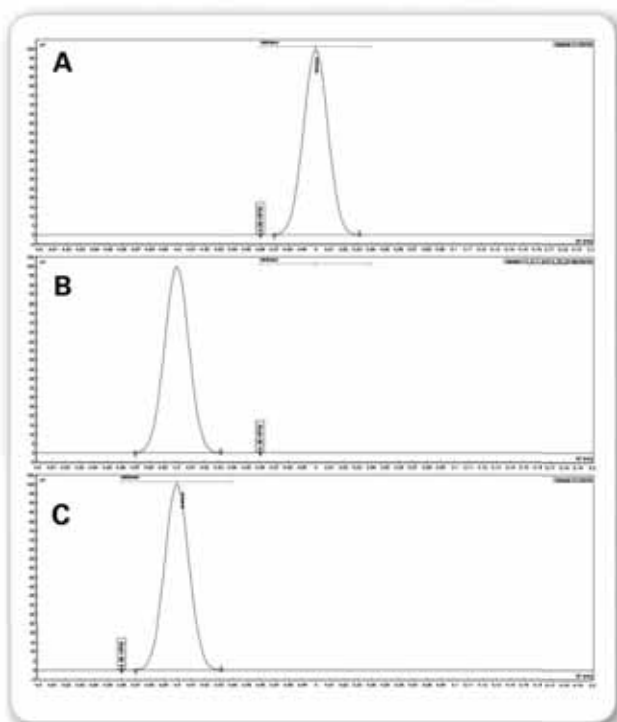
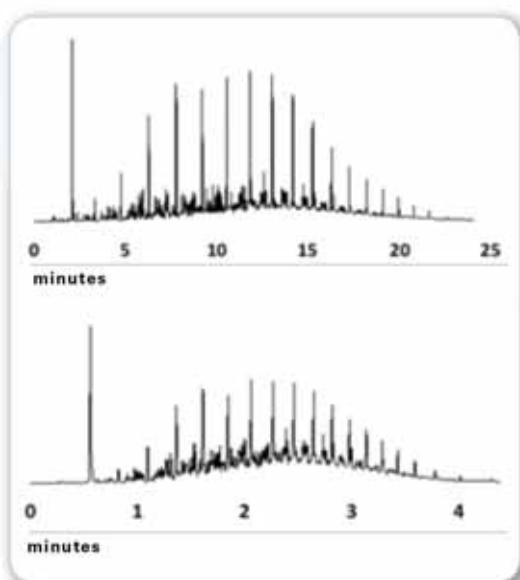
Reducing the time between injections can considerably improve productivity. The high performance oven incorporates features designed to ensure rapid heating and cooling for maximum productivity. This, in conjunction with high pressure injectors and ultra narrow bore columns significantly reduces analysis cycle times with no loss of performance.

IntelliUpdate

Instrument and system effects (column ageing, matrix etc.) can cause experimental deviations such as retention time shifts. The CompassCDS IntelliUpdate function can be used to automatically correct and compensate for such deviations.

This is accomplished without having to make any changes to instrument control parameters and ensures users obtain consistently accurate results.

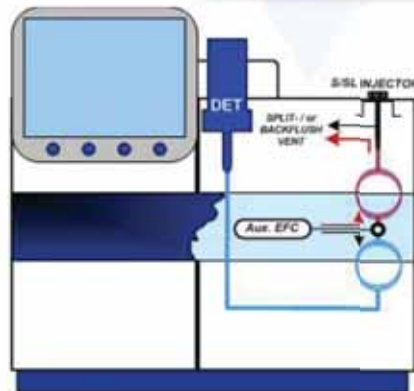
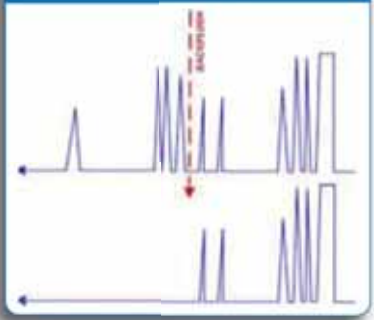
A) Methane peak eluting at 5.00 minutes automatically identified with associated Halve Peak Width timed event at 4.96 minutes. B) Methane peak eluting 0.1 minutes later due to column deterioration over time with peak no longer identified and timed event missed as software has not compensated. C) IntelliUpdate feature automatically updates peak Retention Time and timed event tables after each run to compensate for peak and timed event migration.



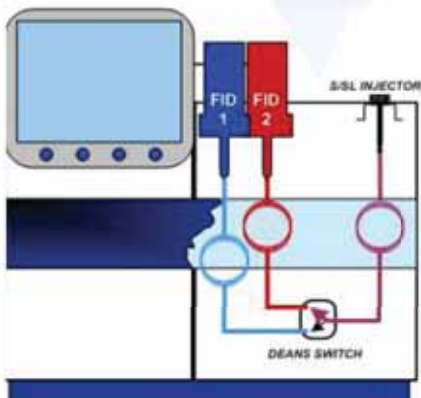
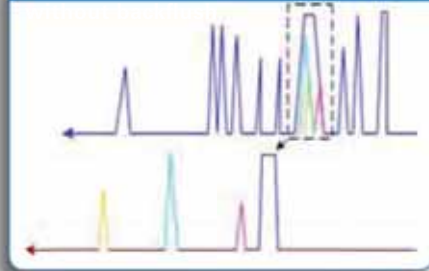
Optimized Switching Valves

Flow splitting, backflushing and Deans switching are valuable techniques for improving cycle times, analytical performance and the robustness of GC methods. Backflushing is key to reducing analysis time and column protection and works by reversing column flow once peaks of interest have eluted and been detected. This feature eliminates the need for extended time and temperature segments usually required to elute highly retained components injected with compounds of interest. Reversing the flow elutes these materials out through the injector split vent and has the added benefit of protecting columns from thermal degradation and contamination.

Comparison analysis with and without backflush



Heart cut using the Deans switch



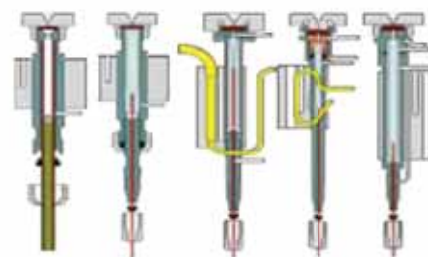
Deans switching enables the use of multiple traps and columns of differing phases in one method/analysis. It is the basis of two dimensional GC and of the many standard analyzers manufactured by Scion Instruments. Use our expertise to configure the optimum system for you.

Capability and Automation

Scion Instruments offers a detector and injector range that meets virtually all application and market requirements. All come standard with advanced EFC. Whatever the requirement, be it Split/Splitless, Cold-on-Column, Packed, Flash or Programmable Temperature Vaporizing injection, we have the solution.

| | Universal | | | | Specific | | |
|--|-----------|-----|-------|----|----------|-----------|------|
| | FID | TCD | PDHID | MS | ECD | NPD (TSD) | PFPD |
|  Academic | ✓ | ✓ | | ✓ | | ✓ | |
|  Environment | | | ✓ | ✓ | ✓ | ✓ | ✓ |
|  Food Beverage | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
|  Forensics Toxicology | ✓ | | | ✓ | | | ✓ |
|  Petroleum | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

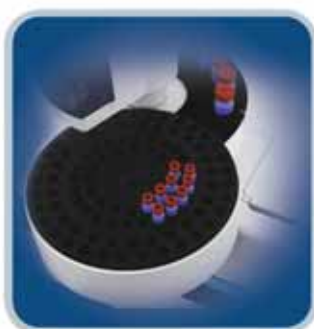
Scion instruments offers a complete selection of injectors designed for all applications, column types and dimensions.



Injector Selection Guide - Sample/Analysis Characteristics or Requirements

| Trace Analysis | Separation & Speed | Sample Capacity | Wide Range of Analytes | Preferred Column Type | 1st Choice | 2nd Choice |
|----------------|--------------------|-----------------|------------------------|------------------------------|-------------------|----------------------------------|
| ✓ | | | | Capillary, 0.53 mm ID | Large Volume (LV) | Split/Splitless |
| | ✓ | | | Capillary, 0.1 to 0.53 mm ID | Split/Splitless | Large Volume (LV) SS Mode |
| | ✓ | ✓ | | Capillary, 0.53 mm ID | Large Volume (LV) | |
| | ✓ | | | Capillary, retention gap | Cold On-Column | Large Volume PTV Mode |
| | ✓ | | | Capillary, 0.53 mm ID | Packed | Large Volume (LV) PTV Mode |
| | | | ✓ | Capillary, 0.53 mm ID | Cold On-Column | Large Volume (LV) On-Column Mode |

Regardless of sample type or throughput, SCION GCs can provide an automated solution to meet your requirements. Three sampler options are available; the CP-8410, CP-8400, and the Combi PAL. Each can be tailored to meet specific sampling needs and workloads.



CP-8400

- High throughput
- 100 x 2ml sample capacity
- Dual/Duplicate Injection
- SPME



CP-8410

- Flexibility
- Accommodates 2, 5, 10 ml vials
- Low cost/high performance
- Ease of use



Combi PAL

- High throughput
- Liquid handling capability
- SPME
- ITEX

Scion-Certified Consumables for Your SCION GC

Scion GC columns span a broad range of column lengths, diameters, stationary phases, and materials including: Fused Silica (FS) and Inert Steel (IS). Ideal for either routine or research type analyses, Scion GC columns cover a wide range of applications and include:

- Standard WCOT (Wall Coated Open Tubular)
- Solid Stationary Phase PLOT (Porous Layer Open Tubular)
- Inert Steel Micro-Packed and Packed



Super Clean™ Gas Filters

Scion Gas Purification Systems have the range to satisfy your needs from individual to combination filters, from Ultra purity combined with Ultra capacity, to all in one solution kits. Innovative features designed into the product yield extensive benefits to the user.

- Ultra-high capacity for long life, less change and improved productivity
- High-purity output ensures 99.9999% Pure Gas
- "Quick connect" fittings for easy, leak-tight filter changes
- Glass internals prevent diffusion; plastic externally for safety
- Easy-to-read indicators for planned maintenance and improved up-time



For research use only. Not for use in diagnostic procedures.



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