



PRODUCT NOTE

Gas Chromatography

KEY FEATURES

- Multi-instruments information on a single touchscreen
- Detachable touchscreen for real-time status notifications
- Programmable LEDs and sounds for immediate assessment of system status
- Smart sampling capabilities allowing adaptation to throughput needs
- User-replaceable detectors to allow application flexibility
- Hydrogen sensor for safety and sustainability

Smart, Simple and Sustainable GC for More Productivity – PerkinElmer GC 2400 System

Introduction

The innovative PerkinElmer GC 2400™ System allows customers to achieve unprecedented levels of efficiency.

Designed to address modern analytical

lab productivity, the GC 2400 System offers a detachable touchscreen combined with smart sampling capabilities for faster decision making, in and outside the lab.

A new user interface collates and provides live status information from all GC 2400 Systems within the network and on the different configured GC accessories like the PerkinElmer HS 2400™ Headspace Sampler all within a single display. Managed by PerkinElmer SimplicityChrom™ Chromatography Data System (CDS) Software, the GC 2400 System becomes an integral part of a comprehensive GC workflow.

Whether the application is industrial, environmental, pharmaceutical or in food and beverage, the GC 2400 System can help labs exceeding their productivity and performance goals, while delivering accurate results.



Figure 1: GC 2400 System.

AS 2400 Liquid Sampler

The PerkinElmer AS™ 2400 Liquid Sampler (Figure 2) comes in different configurations to adapt to labs evolving needs: with single or dual tower configurations and different trays capacities. Autosampler towers and trays are self-configurable and can easily be moved from one instrument to another to accommodate applications and workflows changes. Programmable LED strips on the autosampler tower provides instrument live status updates, at a glance.

- Variety of syringes from 0.5 uL to 50 uL
- Small (20 vial) tray and large (144 vial) tray options for



Figure 2: AS 2400 Liquid Sampler.

maximum productivity

GC 2400 Injectors

Packed (PKD), Split/Splitless (S/SL) and Programmable Split/Splitless (PSS), injectors have a wide range of operating temperatures and pressures. Injector hardware is designed for tool-less preventative maintenance. Programmed Pneumatic Control (PPC) Modules are self-calibrating, and are able to change carrier gases without recalibrating, and in addition they are compensating for ambient pressure variations, to minimize retention time variability. For specific samples, the GC 2400 System can be interfaced with PerkinElmer solutions such as the HS 2400 Headspace Sampler and Turbomatrix HS Trap, Turbomatrix Thermal Desorber in addition to hyphenated systems featuring TGA-IR. Third party sample handling devices like Teledyne Tekmar Purge & Trap can also be integrated.

GC 2400 GC Oven

The GC 2400 Oven has a max heating rate of up to 140 °C/min or controlled of ballistic cooling for increased sample throughput. Superior oven temperature control and pneumatics means that the retention time variability is less than 0.008%.

Illuminating the interior of the oven is easily accomplished using a gooseneck lamp which is stored under the oven door at the front of the instrument. This makes changing columns and other routine maintenance inside the oven a straightforward task.

The GC 2400 System was designed with sustainability in mind. Reduced gas consumption capabilities are available as part of the analytical methods to allow operational cost efficiency. Managed by SimplicityChrom CDS Software, the GC 2400 System is programmable to operate with reduced gas flow during and in-between runs and when idle. The optional built-in hydrogen sensor addresses user safety concerns when using hydrogen as a carrier gas. If the hydrogen concentration exceeds a defined volume, the LED strip lights up and the GC 2400 System automatically shuts down all heated zones and carrier flow, while an audio signal alerts the user.

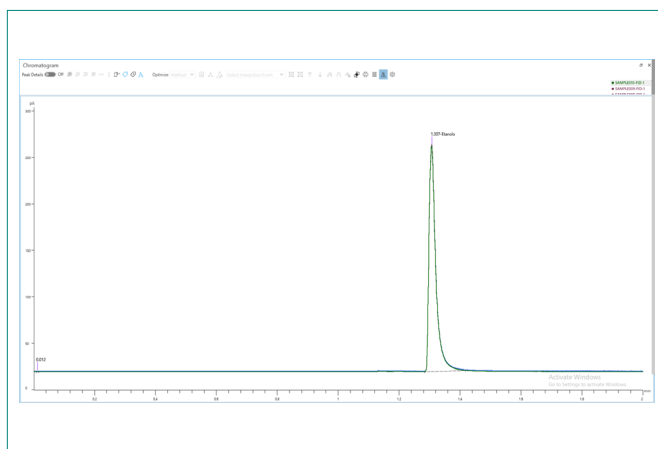


Figure 3: Typical repeatability of Ethanol: 10 injections. 0,55% RSD Area, Retention Time 0,0026% RSD.

GC 2400 Detectors

The GC 2400 System can support up to three detectors plus mass spectrometer. Detectors can be easily interchanged by the user, and are auto-configured in the software and firmware without user intervention:

- flame ionization detector (FID)
- electron capture detector (ECD)
- and/or single quadrupole mass spectrometer (MS 2400 SQ)

SimplicityChrom CDS Software

SimplicityChrom CDS Software truly connects and integrates all steps of the GC workflow in a way that simplifies the entire process. With flexible access, SimplicityChrom CDS System provides full control – from status updates to data processing and reporting.

Thanks to a user-friendly, intuitive graphical interface, SimplicityChrom CDS Software minimizes training needs and adapts to the different user-proficiencies of the lab.

For labs that test highly regulated samples, such as pharmaceuticals and food, SimplicityChrom CDS Software supports compliance with 21 CFR Part 11.

SimplicityChrom features and benefits include:

- Modern design, balancing the power you need with user-friendly iconography and easy-to-learn workflows
- Efficient creation and printing of reports directly from the Data Review and Acquisition modules
- Smart user interface offering notifications
- Management of user accounts and profiles, simplifying the administration process and mitigating many common IT challenges associated with domain management
- Powerful search and filter features in Audit Trail for a superior user experience
- Tools to meet 21 CFR Part 11 compliance requirements, such as audit trail, lab management, and review/approve are integrated into the main application for greater access and productivity.

Simplicity Vision Application

PerkinElmer Simplicity Vision™ runs on any PC, laptop and tablet allows the monitoring of every step of the GC workflow as well as instrument set-up and pre-run manual operations.

This smart application, provides status of all GC 2400 systems within the network. Used as a multi-instrument interface, users can benefit from working remotely while accelerating on-the-go decisions and revolutionizing how analysis information enter the decision-making process.

- The home screen provides an overview on the different systems configured in the lab where users can select the instrument to get information from at a glance.
- The plot screen allows visual confirmation that analysis runs are performing according to the method and allows faster decision-making if intervention is needed.

The tablet can be used in wired or wireless mode according to lab's needs and IT requirements. The GC 2400 System features a dedicated holder, allowing the use of the tablet as a conventional instrument touchscreen.

- Assess instrument readiness status
- Check GC methods and sequences status
- Consult logs and help menu items
- Sequence stop function
- Browse consumables and accessories information

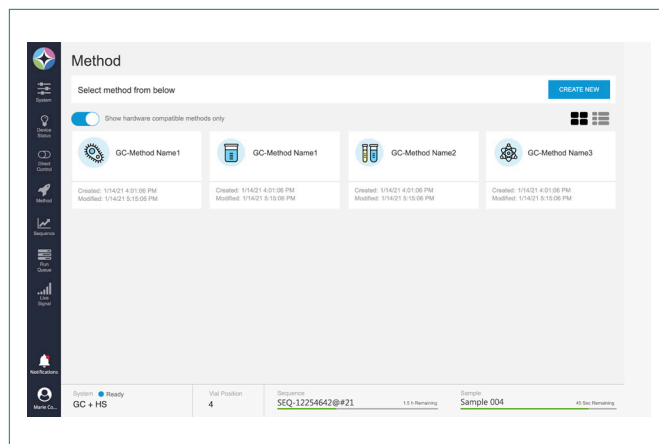


Figure 4: Method selection view on Simplicity Vision run on the detachable touchscreen.

Third Party Instrument Control

The GC 2400 System can operate under Waters Empower™ Chromatography Data System Software, both stand-alone and when interfaced with the HS 2400 Headspace Sampler.

Typical Applications

By combining the versatility of gas chromatography with the power of connectivity and workflow integration of the GC 2400 Platform, PerkinElmer offers a truly integrated GC workflow for many different analytical sectors and applications. Smart separation technologies and a full array of service support meet the needs for busy labs focused on simplified chromatographic operations.

Enabling consumer safety and fair markets while enabling to protect producers' reputation

From the detection of contaminants in food to quality control of food contact materials according to regulations, laboratories need trusted solutions to implement efficient analytical workflows. The GC 2400 Platform, featuring the MS 2400 SQ System, provides sensitivity for the most challenging food matrices while ensuring efficient lab operations

Enabling more data for cleaner air, water and soils

Whether pesticides or volatile organic compounds the GC 2400 Platform supports labs looking for robust yet sensitive GC solutions for environmental matrices. PerkinElmer offers a wide variety of sampling capabilities like headspace, purge & trap, and thermal desorption. All of these accessories and are the proprietary pressure balanced sampling based Headspace Autosampler fully integrated in the GC 2400 Platform supported by SimplicityChrom CDS Software for robust analytical

workflow for the most challenging matrices.

Streamline pharmaceutical QA/QC process

To ensure accurate residual solvent analysis in a timely manner the GC 2400 Platform is just one piece of an analytical workflow where efficiency is key. In order to meet the requirements for compliance and traceability the SimplicityChrom CDS Software integrates the analytical workflow offering intuitive user-experience for faster user-proficiency.

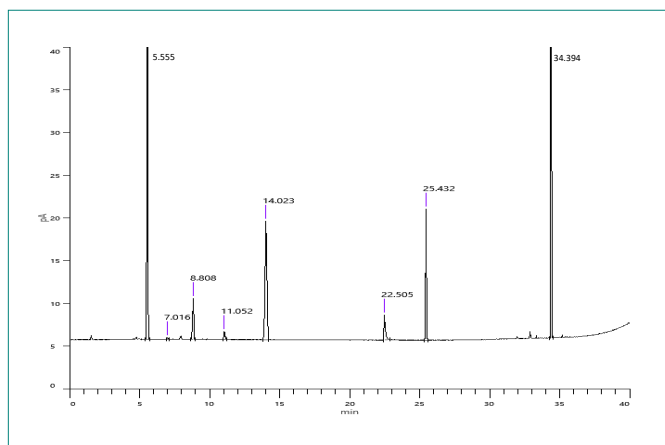


Figure 5: Determination of residual solvents in pharmaceuticals according to USP Method 467.

Enabling product quality for consumer safety and productivity

Whether solvents or polymers, the GC 2400 Platform delivers accurate results, allowing laboratories to have efficient workflows for QA/QC analyses. With the GC 2400 Platform and SimplicityChrom CDS Software, high-throughput labs can optimize their decision-making process thanks to the truly wireless user-experience. Hyphenation with PerkinElmer TGA and IR Systems allow a comprehensive characterization of polymers and other industrial materials.

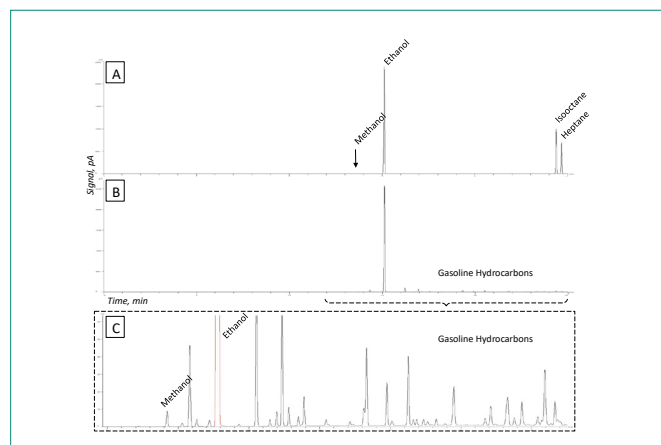


Figure 6: Determination of ethanol and methanol content in Flex Fuels (E85) according to ASTM D5501.