

● SCION 456-GC

Specification Sheet

Dimensions and Weights

Height: 57 cm (22.5 in.),

Width: 66 cm (26.0 in.),

Depth: 56 cm (22.0 in.)

Weight*: 43 kg (59lb)

* Typical values

Environmental Conditions

Operating temperatures: 10°C to 40°C.

Operating humidity (relative): 5% to 95%

Line voltage requirements: 120 V, 230 V (±10% nominal)

Column Oven

Dimensions: 23 cm (w) x 11 cm (d) x 28 cm (h)

Temperature range:

- Ambient: +4°C to 450°C
- Liquid N₂: -100°C to 450°C
- Liquid CO₂: -60°C to 450°C

Temperature program ramps/holds: 24/25

Maximum temperature ramp rate:

- 150°C/min for all voltages and 180°C/min with insert accessory

Cool down rate: 400 °C to 50 °C in 4.5 minutes

Temperature set-point resolution: 0.1 °C

Ambient temperature reject <0.01°C change in oven for 1°C change in ambient temp.

Retention Time Repeatability <0.008% or < 0.0008 min, based on n-Pentadecane under temperature programming conditions.

Area repeatability < 1% RSD

General Specifications

Up to 9 EFC modules total, injector, detector and auxiliary Optional backflush

GC Control:

External events (digital output):

8 standard

8 optional, total 16

Max number of timed events: 30 #

Heated zones:

Standard 9

Two power outlets 24V (1A max. each)



Temperature Range (°C)	456-GC Rates (°C/min)
50 - 70	150
70 - 115	95
115 - 175	70
175 - 300	45
300 - 450	30

Methods:

- Maximum stored internal methods: 50 (max. 30 alphanumeric characters)

Logging:

- Run log file (stored with the chromatogram when using CompassCDS) Error log file

Local Display:

- TFT full color screen
- WVGA resolution (800 x 480) Size 23 cm (9")

Local Control:

- Touch screen
- Hard Keys

Languages:

- English, German, French, Spanish, Italian, Portuguese, Cyrillic, Kanji, Chinese (standard and traditional), Thai, Korean and Dutch

Local automation:

- Method lines: 25
- Modes:
 - Infinite looping
 - Dual and duplicate injection

Communication

Ethernet: Protocol: TCP/IP

Data rate: 100 Mbps

Control:

- GC control and method parameters
- Analog output (optional):
 - Number of channels: 3
 - Time programmable steps: 30
 - Output software selectable (set individual):
- 0-1 V (default)
- 0-10 V

Synchronization signals with other devices and data systems:

Ready in and out

Start in and out

Data Handling and System Control:

CompassCDS Chromatography Data System

Certifications

CSA:

C22.2 61010-1

UL 61010-1

IEC: 61010-1

EMC:

47 CFR part 15

ANSI C63.4

EN 61326

ATEX Directive 94/9/EC

Injector Options

Maximum injectors: two, operating concurrently.

Pneumatics: Electronic Flow Control (EFC):

- S/SL Split/Splitless injector*
- PTV Programmable Temperature
- Vaporizing* COC Cold On-Column injector*
- Flash injector
- PWC Packed/ Wide bore On-Column injector

* including septum purge

S/SL Split/Splitless Injector

Pressure range: 0-150 psi

Total flow:

- 500 mL/min for N₂/Ar
- 1500 mL/min for He/H₂

Maximum temperature: 450 °C

Split range: 1-10,000 (column dependent)

Suited for columns:

- Wide bore: (0.53 mm)
- Narrow bore: (0.05 to 0.32 mm)

COC Cold On-Column Injector

Pressure range: 0-150 psi

Total Flow: 50 mL/min (Type 23 EFC)

Temperature range:

- Ambient +10 °C to 450 °C using air cooling
- -60 °C to 450 °C using liquid CO₂ cooling
- -160 °C to 450 °C using liquid N₂ cooling

Maximum temperature: 450 °C

Maximum temperature ramp rate: 200 °C/min

Temperature ramps/holds: 24/25

Suited for columns:

- Wide bore (0.53 mm)
- Narrow bore (0.32mm)

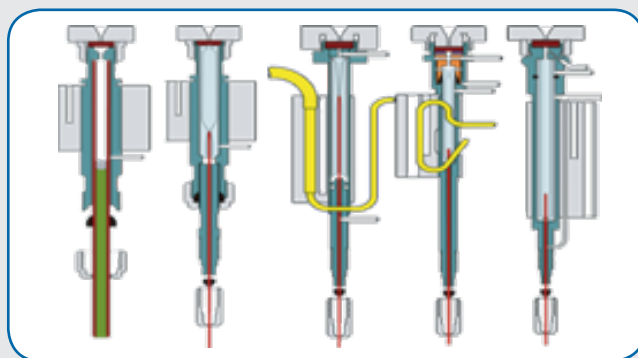
PTV Programmable Temperature

Vaporizing Injector

Pressure range: 0-150 psi

Total flow:

- 500 mL/min for N₂/Ar
- 1500 mL/min for He/H₂



Temperature range:

- Ambient + 10 °C to 450°C using air cooling
- -160 °C to 450 °C using liquid N₂ cooling
- -60 °C to 450 °C using liquid CO₂ cooling

Maximum temperature ramp rate: 200°C/min

Temperature ramps/holds: 24/25

Split range: 1-10,000 (column dependent)

Operational capabilities:

- Large volume injection
- Temperature ramped splitless
- Cold on-column
- Split and splitless

Suited for columns:

- Wide bore (0.53 mm)
 - Narrow bore (0.05 to 0.32 mm)
- Maximum injection volume: 250 µL (LVI mode)

Flash Injector

Pressure range: 0-150 psi

- Total flow: 50 mL/min (Type 23 EFC)

Maximum temperature: 450°C Suited for columns:

- Wide bore (0.53 mm)
- Packed (1/8" to 1/4")

PWOC Packed/Wide-bore On-Column Injector

Pressure range: 0-150 psi

- Total flow: 50 mL/min (Type 23 EFC)

Maximum temperature: 450°C

Suited for columns:

- Wide bore (0.53 mm)
- Packed (1/8" to 1/4")

Electronic Flow Control: Injectors (EFC)

Module types: 4 injector-specific modules

Pressure: 0.1 % Full Scale

Resolution pressure set points is 0.001psi

Flow sensor accuracy 2% of measured or 0.2% of full scale

Flow sensor repeatability 0.5%

Sample Preconcentration Trap (SPT)

Trace level analysis of volatiles in gases

Fully integrated

Temperature Range:

-60°C to 450°C using liquid CO₂ cooling

-185°C to 450°C using liquid N₂ cooling

Temperature rate:

- Ballistic for instant release of adsorbed volatiles

Available traps:
Two lengths
A wide range of standard packing and custom packings

Detector Options

Maximum detectors: two, operating concurrently (one of which is a Single or Triple Quad MS)
Pneumatics: Electronic Flow Control (DEFC)

Detector types:

- FID Flame Ionization Detector
- TCD Thermal Conductivity Detector
- ECD Electron Capture Detector NPD
- NPD Nitrogen-Phosphorus Detector
- PFPD Pulsed Flame Photometric Detector
- PDHID Pulsed Discharge Helium Ionization Detector
- MS Mass Spectrometry (see GC/MS brochure and datasheet)

Note: Data Acquisition Rate: 600Hz for all detectors, (exception PFPD)

FID Flame Ionization Detector

Maximum temperature: 450 °C
Detectivity: 1.4 pg C/sec
Linear dynamic range: 10⁷

Flame tip type: ceramic (patented) Operational quality:

- Flame-out detection
- Auto re-ignition

TCD Thermal Conductivity Detector

Maximum temperature: 450 °C Detectivity: 300 pg/mL (Butane)
Linear dynamic range: 10⁶

Operational quality:

- Filament protection
- Automatic bridge balancing

ECD Electron Capture Detector

Maximum temperature: 450°C
Detectivity: 7 fg/s Lindane
Linear dynamic range: 10⁴
Radioactive source: 63Ni- 15 mCi (555 Mbq)

NPD Nitrogen-Phosphorus Detector

Maximum temperature: 450°C
Detectivity:
N: 100 fg N/sec (Azobenzene) P: 100 fg P/sec (Malathion)

Linear dynamic range:

- N: 10⁵
- P: 10⁴

Operational quality: self-aligning bead



PPFD Pulsed Flame Photometric Detector

Photomultiplier tube:

- S/P
- S/P/N

Maximum temperature: 450 °C

Detectivity:

- S: 1 pg S/sec (S/P tube)
- P: 100 fg P/sec (S/P tube)
- N: 20 pg N/sec (S/P/N tube)

Linear dynamic range:

- S: 10^3
- P: 10^4
- N: 10^2
- Up to 23 elements can be detected

PDHID Pulsed Discharge Helium Ionization Detector Detectivity:

50 ppb (Methane)

Linear dynamic range: 10^4 (Methane)

Operational quality:

- Gold plated connections
- Welded column connections

Detectors (DEFC)

Module types: 6 detector-specific modules

Accuracy: $\pm 7\%$ set point flow

Resolution: 0.1 or 1 mL/min

Automation Options

8410 Autoinjector

Sample capacity:

- 10 x 2 mL vials
- 6 x 5 mL vials
- 5 x 10 mL vials

Large solvent wash vial: 2 x 120 mL*

Dual and duplicate mode

Internal standard addition

Modes of operation:

- Liquid
- Ambient headspace*
- SPME (Solid Phase Micro Extraction)*
- Sample heating and cooling*

Pre-programmed modes of injection Syringes:

1 μ L, 2 μ L, 5 μ L, 10 μ L, 100 μ L, 250 μ L for liquid injection

SPME

8400 Autosampler

Sample capacity: 100 x 2 mL vials
Large solvent wash vial: 2 x 120 mL*
Dual and duplicate mode
Internal standard addition

Modes of operation:

- Liquid
- Ambient headspace*
- SPME*
- Sample heating and cooling*
- Pre-programmed modes of injection

Syringes:

- 1 μ L, 2 μ L, 5 μ L, 10 μ L, 100 μ L, 250 μ L for liquid injection
- SPME

* Optional

Optionally a CTC-PAL autosampler, including specific options may be installed.

