

Adept™



HPLC
OVEN MODULES



Precise Column Temperature

Almost all chromatographic separations benefit from stabilising the column temperature and, or, the choice of a column operating temperature other than ambient.

A temperature controlled column enclosure is therefore to be considered as an important item in any chromatographic system. Experimental results are more reproducible over time and comparison of results between different analytical laboratories will be of a higher standard than is possible without the use of an oven with precise temperature control.

To obtain the best sensitivity in reverse phase chromatography, selecting the best temperature can be a very important part of method development.

Choice of Temperature

So many separations carried out at room temperature would provide more reproducible results if carried out with the column in a controlled environment of 30°C to 35°C, just above ambient.

When higher temperatures are used the viscosity of the mobile phase is reduced and sample solubility is increased. Both of these lead to increased speed of analysis with possibly better chromatographic resolution. The importance of column temperature in reverse phase chromatography is also related to the dissociation constants for acidic and basic compounds.

Columns operated below ambient temperature have an advantage in some bio-analytical separations. A cooled oven is required for these applications.

Temperature Precision

A sophisticated microprocessor system and software control enables the set point temperature to be controlled to $\pm 0.01^\circ\text{C}$.

The oven temperature is continuously displayed by large bright LEDs. The set point temperature is displayed at the touch of an up or down key of the unit while heating and cooling is in progress.

Remote control of the oven set point temperature is possible and the actual temperature may be captured and displayed using Cecil PC/PowerStream software.



Select From Three Ovens

Three versions of the Adept Series Column Ovens are available to suit your range of experimental requirements.

A heated only version, a cooled and heated version and one specially configured for Ion Chromatography. This latter one is supplied with the Cecil Instruments, IonQuest, IC system and is heated only.

The heated only oven operates from ambient to 85°C, as does the IC version and the cooled and heated oven, uses the Peltier effect, and operates from 12°C below ambient to 70°C. A temperature of 5°C is possible with an ambient temperature of 15°C.

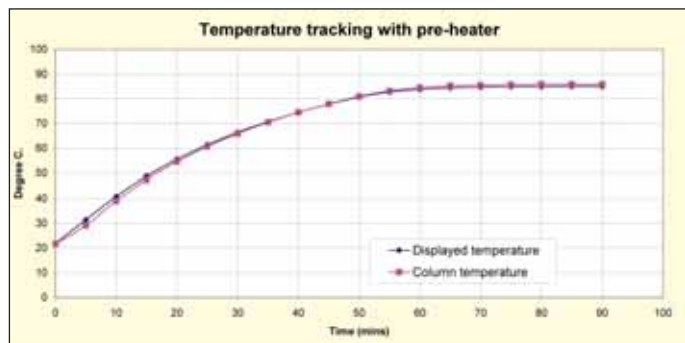
Column Selection Valve

A column selection valve may be fitted for manual selection of either two columns, or three columns. This can be very useful for change of method or method development. An automated switching valve is also available.

OPTIMUM CHROMATOGRAPHY



Convenience of Use



All components mounted in the ovens are readily accessed by the front opening door of the units.

Convenient self sealing ports are provided for all inlet and outlet pipework.

No significant settling time is required once the Set Point is reached, unlike ovens with fast temperature ramping which may need 30 minutes or more settling time. This is demonstrated by the plot of temperature tracking.

Leak Detection

To ensure safety of operation the ovens are fitted with a vapour sensing leak detection system. When a leak is detected the system will switch off the oven and shut down the whole system ensuring complete protection.

The sensitivity of the leak detector may be adjusted by the operator.



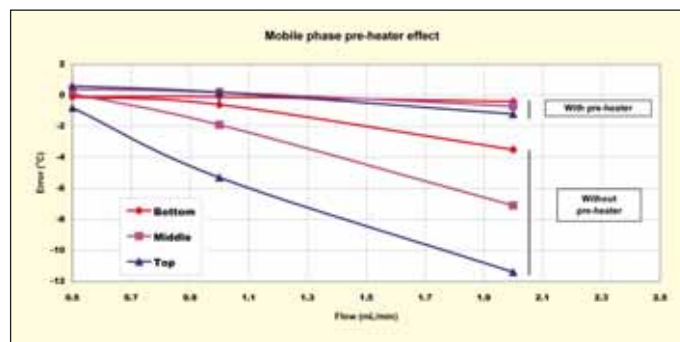
Mobile Phase Pre-heater

Whenever column temperatures, well above ambient, are used a mobile phase pre-heater should always be used.

Without pre-heating, columns operated at 40°C and above will suffer excessive temperature gradients throughout their length with considerable deviation from the set point temperature. This gradient effect increases the higher the operating temperatures and the faster the mobile phase flow rate.

At 60°C with a flow rate of 2mL/min of de-ionised water, the gradient on a 250mm column may be as high as 12°C between the top and bottom of the column as shown on the graph.

Operation at elevated temperature without a mobile phase pre-heater can cause major distortions of peak shapes and adversely affect column performance, retention times and reproducibility.



Cecil HPLC With Oven

A complete HPLC system from the Cecil Adept range is shown on the left.

The close coupling between the oven and the side of the detector ensures the virtual elimination of ambient temperature fluctuation on the flow line between the oven and, for instance, a temperature sensitive conductivity detector.

Ion Chromatography Oven

The temperature specification of the ion chromatography oven is the same as the heated oven. However, the oven has fittings to receive two IC columns (cation and anion) and their pre-columns. A suppressor module, which removes background conductivity, is also accommodated together with an over-pressure cut-out valve which protects the suppressor module against damage.



ORDERING

CE 4600	Heated and cooled oven with power lead and operators manual
CE 4601	Heated oven with power lead and operators manual
CE 4601C	Ion Chromatography heated oven with power lead and operators manual
4601 30 00	Column mobile phase pre-heater, suits all three ovens
4601 31 00	Column switching valve for two columns with mounting bracket
4601 35 00	Suppressor over pressure release valve

Specification

Heated Oven, CE4601

Temperature Range	Ambient to 85°C
Temperature and Set Point Readout	3 digit bright LED display
Temperature Readout Resolution	0.1°C
Temperature Stability	± 0.01°C
Number of Columns	3 up to 25cm long and pre-columns
Heating Rate	30 mins to set point of 65°C (ambient 25°C)
Stabilising Time	Negligible when set point reached
Leak Detection	Vapour detector – adjustable shut down level
Power Requirement	50 Watts, 100-240 V, 50/60Hz.
Size and Weight	390H x 118W x 220D 5.8kg.

Ion Chromatography Oven – Heated, CE4601C

Temperature Range	Ambient to 85°C
Temperature and Set Point Readout	3 digit, bright LED display
Temperature Readout Resolution	0.1°C
Temperature Stability	± 0.01°C

Columns Provision for 2 ion chromatography columns and pre-columns

Suppressor Module Provision for auto suppression module

Over Pressure Valve Provision for pressure release valve to protect suppressor module

Heating Rate	30 mins to set point of 65°C (ambient 25°C)
Stabilising Time	Negligible when set point reached
Leak Detection	Vapour detector – adjustable shut down level
Power Requirement	50 Watts, 100-240 V, 50/60Hz.
Size and Weight	390H x 118W x 220D 5.8kg.

Cooled and Heated Oven, CE4600

Temperature Range	5°C to 70°C (maximum 12°C below ambient)
Temperature and Set Point Readout	3 digit, bright LED display
Temperature Readout Resolution	0.1°C
Temperature Stability	± 0.01°C
Number of Columns	3 up to 25cm long with pre-columns accommodated
Heating Rate	30 mins to 60°C set point (ambient 25°C)
Stabilising Time	Negligible when set point reached
Leak Detection	Vapour detector – adjustable shut down level
Power Requirement	50 Watts, 100-240 V, 50/60Hz.
Size and Weight	390H x 118W x 220D 6.4kg.

Cecil Instruments policy is one of continuous development. We therefore reserve the right to change specification without notice.

BENEFITS AND FEATURES

Accommodates Up To 3 Columns

Columns Up To 25cm

Ambient –10°C to 70°C

Ambient +5°C to 85°C

Temperature Stability ±0.01°C

Column Pre-heater Option

Accommodates Suppressor Module

Accommodates Suppressor Over-pressure Valve

Leak Detector Shut Down

Self Sealing Tube Ports

Front Opening Convenience

Adept Range Design

Close Couples to Detector

Mounting For Column Switching Valve

Only 11.8cm wide

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