

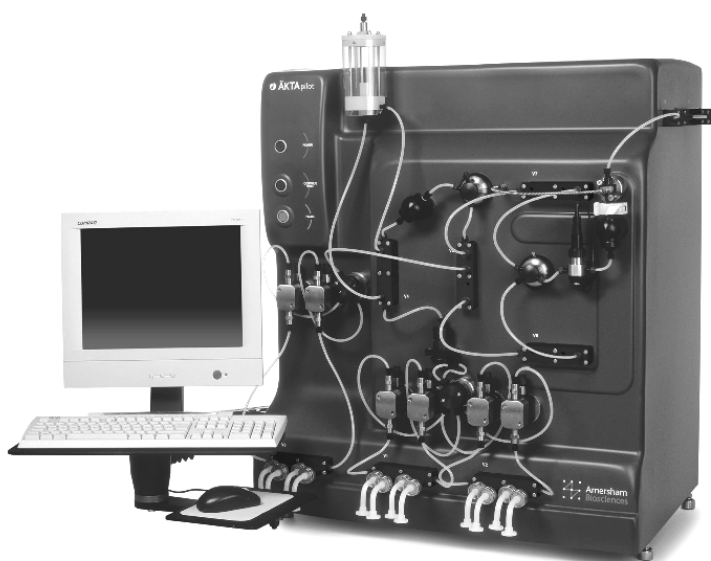
# 1 Introduction

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## 1.1 ÄKTApilot system

ÄKTApilot™ is a high performance, automated liquid chromatography system. The system is designed for process development, process scale-up and scale-down, and small scale production.

ÄKTA™ pilot is biocompatible, hygienic and sanitizable. It meets all GLP and cGMP demands for Phase I–III in drug development and small-scale production.



**Fig 1-1.** ÄKTApilot system

ÄKTApilot system consists of ÄKTApilot separation unit, the connected computer including a flat-screen monitor, and UNICORN™ control system.

ÄKTApilot features:

- Liquid flow rates from 4 to 800 ml/min (limited gradient performance at 400–800 ml/min).
- Operating pressure up to 20 bar.

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## 1.6 Mixer

Buffers delivered by the system pump are dynamically mixed by an electrically operated mixer. A 5 ml mixer chamber is available.

## 1.7 Detectors and monitors

ÄKTApilot is equipped with detectors for continuous in-line measurement of pH, conductivity and UV absorbance. The detectors provide accurate and reliable monitoring through self-test and self-calibration.

The flow cells are connected close together, which minimizes band broadening and time delay between the detectors. The flow cells are easily accessible from the front panel to facilitate user maintenance.

The pH electrode is mounted in the pH cell holder after pressure sensor 4 in the flow path. The pH monitor provides pH measurement in the range 0–14 (specifications valid between 2 and 12).

The conductivity cell is placed after the pH electrode in the flow path. It is used to verify gradients and to follow peak positions relative to ionic strength.

The relationship between the pH and the output signal from the pH electrode is temperature dependent. Therefore, the conductivity cell contains a temperature sensor which can be used to compensate the pH measurement during temperature changes.

The UV cell is placed after the conductivity cell in the flow path. It is used for measuring the UV absorbance of the liquid. Up to three wavelengths can be measured simultaneously in the range 190–700 nm.

## 1.8 Pressure sensors

There are four pressure sensors continuously measuring the pressure in the flow path. Two of them are located directly after the pumps, the third is placed before the column, and the fourth after the column.