

Abstract

A disposable micro-fluidic cuvette for extracorporeal circuits diverts microlitre-scale blood or plasma samples via laser-drilled micro-bore capillaries to interchangeable electrochemical test strips seated in sled pockets on the cuvette wall. Spring-loaded electrical contacts read each strip while bulk fluid continues through a low dead-volume serpentine path. Multiple pockets enable simultaneous multi-analyte monitoring (e.g., glucose, lactate, β -ketone) without increasing sample volume. The cuvette integrates with a thermally-controlled housing and luer-compatible ports, providing low blood loss, rapid strip replacement, and straightforward regulatory path leveraging existing FDA-cleared strip chemistries.