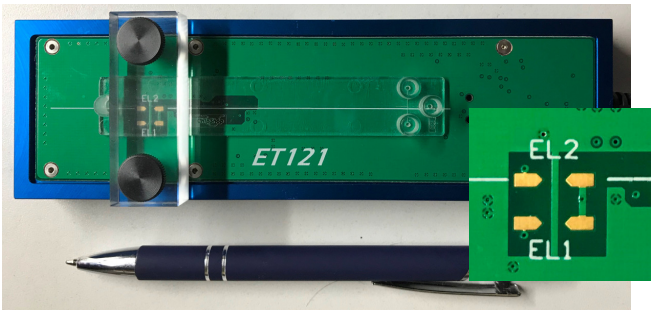
Microchip Platform with C4D Electrodes (ET121)



C4D MCE Platform

- C4D detection electrodes on the platform
- Use with glass or polymer microfluidic chips
- Compatible with eDAQ C4D units ER815 and ER225

Description

The ET121 platform was designed as a contactless conductivity detector for microfluidic chips, for microchip electrophoresis or pressure-driven experiments.

It was tested using microfluidic chip model 02-0772-0202-05 from Microfluidic ChipShop. This microchip has a channel with a 75µm x 75µm square cross section, a channel length of 87mm and a cover thickness of 100µm. Chips with a similar user-developed design can be used with this device but eDAQ cannot guarantee the results obtained.

Alternative Chip Designs

When using other microfluidic chips, the overall goal is to increase the value of the coupling capacitance between the electrodes and the fluid channel, while decreasing the conductance of the fluid channel. To optimise the performance, the following conditions should be chosen as a guide:

- Increase channel width (50 to 200 µm ideal)
- Decrease channel height (20 to 50 µm ideal)
- Decrease lid thickness (50 to 100 µm ideal)
- Increase channel length (80 to 100 mm ideal)
- Decrease buffer conductivity (300 to 1000 µS/cm)

Supporting Hardware Units

The ET121 platform is supported by two control units. Both systems have trigger inputs to initiate scans.

- ER815 C4D Detector: This unit supports PowerChrom (ES280), Chart (ES500) and serial protocol software. It can be configured as a "dumb" detector providing an analog output suitable for processing by a customer-supplied data analysis system.
- ER225 C4D Data System: This unit supports both PowerChrom (ES280) and Chart (ES500) software. It provides the means to record data from a second detector (UV detector for example) and has analog outputs to control four external events.

Compatible with ER430 High Voltage Sequencer using EC230 High Voltage Cables. EC20 Standard Test Solutions are available.

Specifications

- Electrode dimensions: 2mm x 1mm
- Electrode separation: 2mm
- Platform Dimensions: 50mm x 165mm x 30mm
- Platform Weight: 250gm
- Balanced bridge configuration.
- Excitation sinewave: 100 to 1200 kHz
- Excitation amplitude: 10 to 100 Vpp
- Connector: 10 Pin Lemo (for the ER815) or 8 Pin DIN (for the ER225)

Microchip configuration limits:

- Maximum thickness: 2.5mm
- Maximum width: 20mm
- Maximum length: 120mm

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