Programmable, variable step system for applying a liquid biological solution on a surface of chosen individual array elements of CMUT sensors delivers variable amounts of material for sensor surface modification and for analyses. By changing nozzle of the solution dispensing device, solutions of different material can be applied or concentration of a material changed. The system according to the invention comprises a positioning device of the sample dispensing device, a sample dispensing device with a dispensing nozzle, whose dimensions depend on the liquid volume being dispensed on array elements of the sensor and the position of which is controlled by electric actuator or piezo-actuator. Surface of the CMUT cell array is modified. Afterwards on top of it a sample of a biological liquid solution is dispensed for obtaining the characterizing signal of the sample. CMUT cell sensor arrays are connected in series to the signal processing and measurement device for measuring electromechanical impedance of the CMUT sensor membrane.