Method for non-dismantling control of pressure sensors in a multichannel measurement information system, which consists in measuring one realization of a random pressure at the output of the measuring line using sensors, sampling the output signals of all pressure sensors in time and obtaining time samples, forming a pressure matrix of m×n dimension. The singular values of the pressure matrix are decomposed and all calculated singular values are sent to the first inputs of the comparators, the other inputs of which receive the corresponding singular values from the matrix of reference averaged pressures, which is formed on the basis of a preliminary statistical averaging of pressures in serviceable sensors under normal conditions of operation of the multichannel measurement information system. From the comparators' outputs, the corresponding differences in singular values are sent to the quadrators, where these differences are squared and sent to the adder, and then to the square root calculator, whose output value is compared in the threshold device with the threshold value of the Euclidean distance between the set of singular values of the reference averaged pressure matrix and the similar set for the current pressure matrix. If the threshold value of this distance is exceeded, a decision is made about the malfunction of one or more pressure sensors.