The subject of the bachelor thesis is the plasma diagnostics in the planar magnetron and in the hollow cathode system operating in the pulse mode, when the plasma is generated by DC pulses. The diagnostics method used will be the Langmuir probe. The aim of the thesis is the construction of the computer-controlled electronic measuring system and its assessment when measuring the parameters of argon discharge plasma in both systems with time resolution i.e. depending on time during one pulse period.