Equipment for preliminary amplification and registration for monitoring the parameters of fission chambers for DNFM diagnostic [[1]](#footnote-1)\*)

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The Divertor Neutron Flux Monitor (DNFM) diagnostic is a part of the ITER neutron diagnostics and is designed to measure neutron flux and thermonuclear power of the ITER. Fission chambers (FC) are chosen as neutron detectors for the DNFM. In the DNFM diagnostic FC of various sensitivity and a plane-parallel system of electrodes are used. FCs are combined into detector units (DU), each of them consists of three FCs.

Control of the radiometric parameters of DU prototypes and delivery sets will be carried out at a test bench for incoming control of the radiometric parameters of FC. To work as a part of the test bench, a measuring system (MS) was designed, based on 4 preliminary amplifiers (PA) for FC signals. Each PA includes:

• Polarity-configurable FC power supply with remote voltage control in the range of 50÷400V;

• PA calibrator;

• Output for Keithley-6487 as a FC current meter;

• Control interface based on microcontroller and fiber-optics;

• Interface for FC signal transmission via fiber-optics.

Data transmission and control of the PA is carried out by 4-channel optical module (OM) equipped with a USB interface. Schematic and layout solutions, as well as the results of laboratory tests of the MS are presented.

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1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLVIII/E/ru/IB-Nikolaev.docx) [↑](#footnote-ref-1)