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Upgraded Thomson Scattering Diagnostic on DIII-D,* D.M. Ponce, B.D. Bray, T.M. Deterly, C.L. Hsieh, C. Liu, *GA* — A new final-design polychromator assembly and data acquisition test system is being deployed during plasma operations at DIII-D for electron temperature and density measurement. The new polychromator features APD detectors that incorporate 500 MHz bandwidth amplifiers in a trans-impedance amplification circuit with low input bias current with an overall amplification of 360 times and an integration and a sample-and-hold circuit to provide analog output into a data acquisition digitizer. The APD detector box has high voltage bias supplies and temperature sensing incorporated in a single box. The SNR will be improved at least by a factor of $2^{1/2}$. The data acquisition system is a D-TACQ DT100 system with a 96 channel 250 kSPS ACQ196CPCI board. We present gain calibration, spectral calibration, plasma run, and calculated electron temperature and density data with respective comparison of the data from the existing Thomson system. We also present the plan for complete deployment of an upgraded system that will incorporate two new 50 Hz lasers and a new Field Programmable Gate Array (FPGA)control and timing module.

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