

# DESIGN AND CONSTRUCTION OF HIGH VOLTAGE AND HIGH CURRENT DC POWER SUPPLY FOR ELECTROMAGNET EQUIPMENT

Hall Effect is a physics phenomena using for electrical property measurement of semiconductor materials. The Hall measurement is done under an applied magnetic field from DC electromagnet. The magnetic field depends on the supply current in electromagnetic coils. In this work, high current DC power supply with voltage control current source and Hall Effect sensor were designed and constructed. The experimental procedures were divided into three parts. Firstly, circuit and schematic designs were simulated by using OrCAD PSpice program and Altium Designer program, respectively. DC supply, current source control and Hall Effect sensor circuits were built in second part. Finally, the circuits were tested on DC electromagnet. Current, voltage and thermal stability of circuits as well as magnetic field were investigated. The maximum power was achieved at 1500W (15A/100V) with the temperature maximum below 40 °C and the magnetic field of 1 T was obtained.

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