

➤ **Power Electronics (Fundamentals)**

## M5/N-M5. Power Supplies Module



### GENERAL DESCRIPTION

With the Power Supplies Module “N-M5”, designed by EDIBON, symmetrical voltage regulators, operation of fixed, symmetrical and switched-mode power supplies as well as rectification (conversion of an AC voltage to a DC voltage) can be studied.

In addition, faults can be simulated in most of the circuits under study. The student must investigate what is happening in the circuit and why it is not working properly. These faults simulations can be of several types from damage components to a hypothetical incorrect circuit assembly.

### PRACTICAL POSSIBILITIES

Rectification:

- 1.- Rectification.
- 2.- Bridge rectifier.
- 3.- Theoretical/practical exercises.

Fixed voltage sources:

- 4.- Power supply with the Zener diode.
- 5.- Stabilization through Zener and Transistor.
- 6.- Faults study in “Stabilization through Zener and Transistor”.
- 7.- Protection against overcurrents.
- 8.- Protection against overvoltages.
- 9.- Faults study of “Protection against overcurrents”.
- 10.-Theoretical/practical exercises.

Symmetrical voltage power sources:

- 11.-Symmetrical source; 78XX regulator.
- 12.-Symmetrical source; 79XX regulator.
- 13.-Theoretical/practical exercises.

Voltage regulators with integrated circuits:

- 14.-Adjustable regulator; LM317.
- 15.-Faults study in adjustable LM317 regulator.
- 16.-Adjustable L200 regulator.
- 17.-Faults study in adjustable L200 regulator.
- 18.-Theoretical/practical exercises.

Introduction to switched power supplies:

- 19.-Switching technique.
- 20.-Switching technique. PWM.
- 21.-Switching technique. Boost.
- 22.-Theoretical/practical exercises.

Additional practical possibilities:

- 23.-Voltage Feedback.
  - 24.-DC-DC converter.
- Several other exercises can be done and designed by the user.

### SPECIFICATIONS

Circuit blocks:

- Transformer. (Circuit#1).
- Half wave rectifier. Full wave rectifier, center tap. (Circuit#2).
- Full wave rectifier. (Circuit#3).
- Filtering. (Circuit#4).
- Zener limiting.(Circuit#5).
- Regulation. (Circuit#6).
- Overcurrent protection. (Circuit#7).
- Overvoltage protection. (Circuit#8).
- Voltage regulators. (Circuit#9).
- LM317 adjustable regulator. (Circuit#10).
- L200 adjustable regulator. (Circuit#11).
- Switched source. (Circuit#12).
- PWM switched source. (Circuit#13).
- Boost switched source. (Circuit#14).
- Load.
- Channels.

### DIMENSIONS AND WEIGHTS

- Dimensions: 300 x 210 x 45 mm approx.  
(11.81 x 8.26 x 1.77 inches approx.)
- Weight: 300 g approx. (0.66 pounds approx.)

### REQUIRED ELEMENTS (NOT INCLUDED)

- Required (at least one):
- FACO. Power Supply.
  - EBC100. Base Unit, with built-in power supply.

### ADDITIONAL RECOMMENDED ELEMENTS (NOT INCLUDED)

- Recommended (only one):
- EDAS/MIS-0.25. EDIBON Data Acquisition System and Virtual Instrumentation (speed: 250,000 samples/s). or
  - EDAS/MIS-1.25. EDIBON Data Acquisition System and Virtual Instrumentation (speed: 1,250,000 samples/s).