

ELECTROTECHNICH LAB.

BASIC ELECTRIC-ELECTRONICS EDUCATION SET

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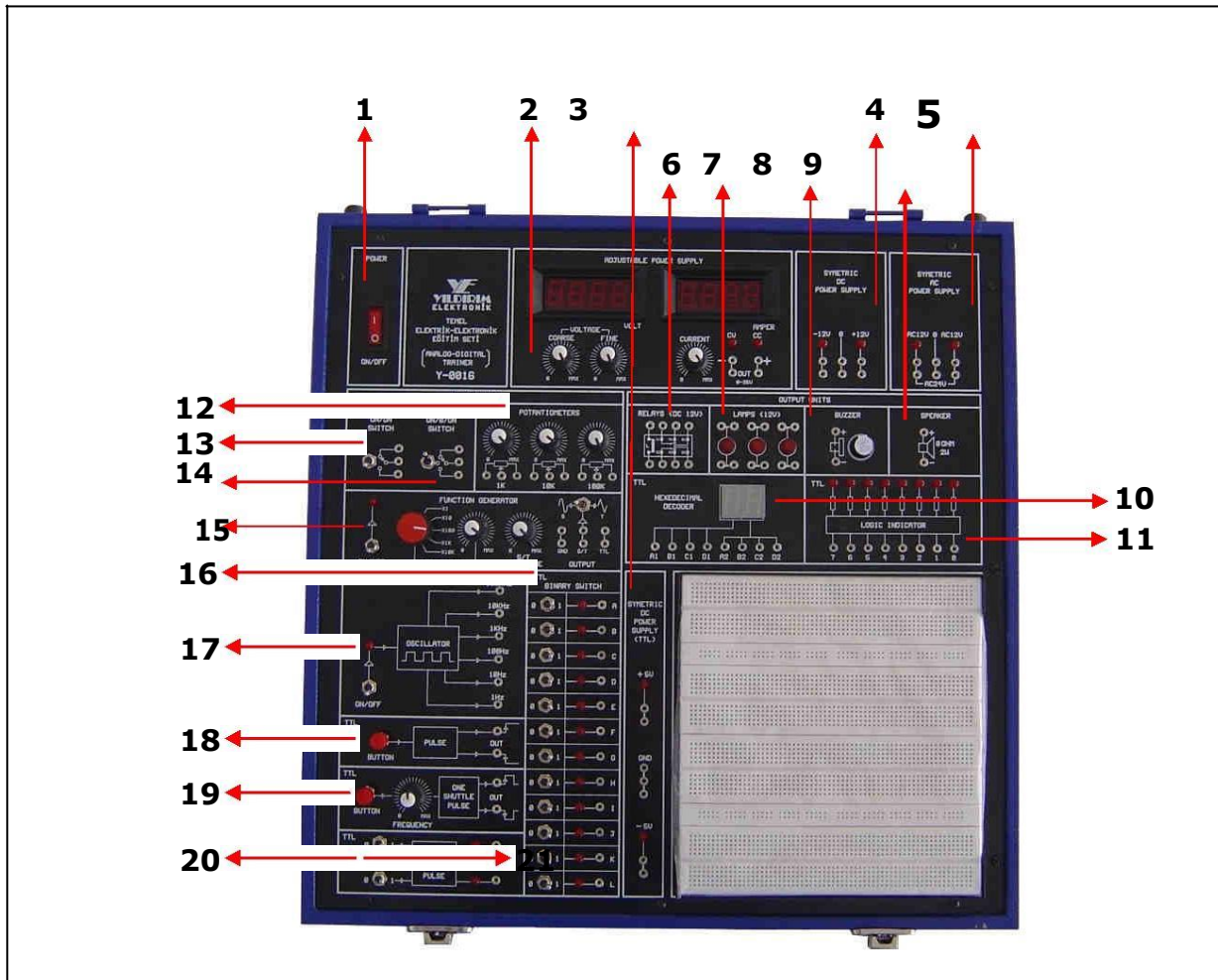
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BASIC ELECTRIC-ELECTRONICS EDUCATION SET



1. Power ON/OFF
2. 0-36V, 0-1A Over current protected adjustable power supply
3. (-5V)-0(+5V) Electronically protected DC symmetric power supply
4. (-12V)-0(+12V) Electronically protected DC symmetric power supply
5. 12V-0-12V Electronically protected AC symmetric power supply
6. Relay (DC 12V)
7. 3xLamp (12V)
8. Buzzer
9. 8Ohm – 2W Loudspeaker
10. Hexadecimal Decoder
11. 8 bit Logic display
12. (1k-10k-100k) Potentiometers
13. Switch (on-on)
14. Switch (on-0-on)
15. 1Hz-100KHz Function Generator (sinusoidal, Triangular, TTL)
16. 12 bit TTL Binary switch
17. 1Hz-10Hz-100Hz-1KHz-10KHz- 100KHz Oscillator
18. TTL Pulse
19. TTL impulse
20. Set, Reset, Preset Puls
21. Protoboard

USAGE OF THE CIRCUITS IN BASIC ELECTRICS- ELECTRONICS EDUCATION SET

1-POWER (ON-OFF)

Used for applying energy to the education set and experiment circuits.

2- ADJUSTABLE DC POWER SUPPLY

When the power on-off switched to "**ON**", energy is applied to the 0-36V, 0-1A adjustable power supply. When the energy is applied to the power supply displays of ammeter and voltmeter shall give light. Current can be adjusted by current potentiometer and voltage can be adjusted by the voltage potentiometer. The only point to pay attention here is turning the current potentiometer completely to left. Thus there will not be voltage on circuit and CC LED is on. In normal mode CV LED is on.

In order to generate the certain current turn the CURRENT Potentiometer completely to the left and short- circuit the output terminal and turn it to right until generating the required current

For the Voltage adjustment first use the COARSE potentiometer coarse tuning then the FINE potentiometer for fine tuning

3-(-5V) 0 (+5V) DC SIMETRICAL SUPPLY

When the output terminals are short-circuited the supply will protect itself and the LED concerning TTL power on-off block is off. In order to power the circuit again, switch the power off and wait for 5 seconds and switch the power on again.

NOTE: The ground of the circuit is independent. Pay attention while connecting.

4- (-12V) 0 (+12V) DC SIMETRICAL SUPPLY

When the output terminals are short-circuited the supply will protect itself and the LED concerning TTL power on-off block is off. In order to power the circuit again, switch the power off and wait for 5 seconds and switch the power on again.

NOTE: the ground of the circuit is independent. Pay attention while connecting

5- 12V-0-12V AC SIMETRICAL SUPPLY

When the output terminals are short-circuited the supply will protect itself and the LED concerning TTL power on-off block is off. In order to power the circuit again, switch the power off and wait for 5 seconds and switch the power on again.

NOTE: The ground of the circuit is independent. Pay attention while connecting

6- RELAY

A DC 12V relay with two group contacts.

7- LAMPS

3 12V filament lamps

8- BUZZER

It is the instrument that generates constant frequency sound when the voltage is applied to the terminals.

9- LOUDSPEAKER

Set contains an 80hm-2Watt loudspeaker in order to be used in analog experiments. The loudspeaker connection is maintained by the input terminals.

10- HEXADECIMAL DECODER

It is the circuit which converts BINARY (0-1) coded data to HEXADECIMAL (0-F) format.

11- 8 BIT LOGIC DISPLAY

It is used to show the logical data in 0-1 format by the LED's. If the logical data is "0", the LED is off; if it is "1", the LED is on.

12- POTENTIOMETERS

3 potentiometers of 1K, 10K and 100K.

13 - SWITCH (ON-ON)

One (**on-on**) switch

14- SWITCH (ON-0-ON)

One (**on-0-on**) switch

15- FUNCTION GENERATOR

It is the generator with sinusoidal, triangular and TTL square output waveforms. The signal has five levels of frequency, frequency-amplitude adjustable and it is between 1Hz and 100 KHz.

NOTE: the ground of the circuit is independent. Pay attention while connecting

16- 12 BIT TTL BINARY SWITCH

It is used for obtaining logical '0' and '1' data. 12 switches are used for 12 bits. LED indicator lamp is used to show switch positions and outputs.

17- STEPPED, CONSTANT FREQUENCY TTL OSCILLATOR

It is the oscillator circuit generates signal on TTL level and 1Hz-10Hz-100Hz-1 kHz-10 KHz-100 KHz values. Appropriate frequency can be obtained from its own terminal.

18- TTL PULSE CIRCUIT

It is used to generate logical 'pulse'. In every switching both negative and positive pulses are generated. Pulses are in the output terminals.

19- TTL IMPULSE CURRENT

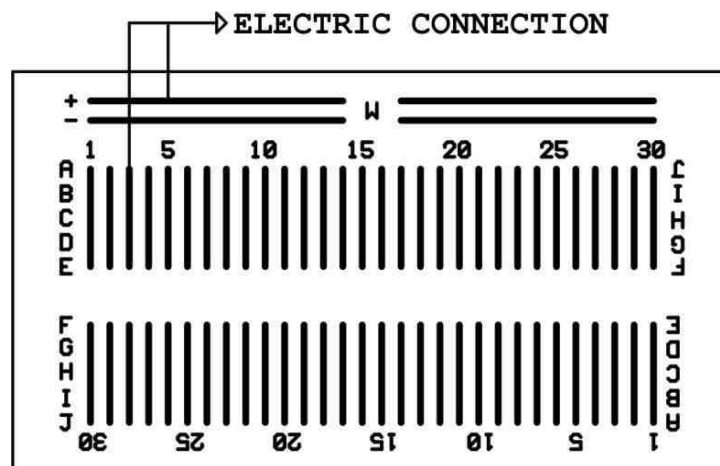
It is the circuit that generates pulse which can be adjusted positively and negatively. Pulse is generated in every pressing to the button.

20- TTL SET-RESET-PRESET PULSE CIRCUIT

It is the circuit that generates general purpose pulse with respect to the position of the input switch.

21- PROTOBOARD

It is the instrument on which the external experiments are done and circuits are constructed. The usage information is as in the following figure.



Standard experiments are done by replacing the Protoboard with Y-0016/001-013 modules.

CONNECTING THE BASIC ELECTRIC EDUCATION SET TO THE NETWORK

FEMALE CONNECTOR OF THE POWER CABLE GIVEN WITH THE SET SHOULD BE ATTACHED TO THE SOCKET BACKSIDE OF THE SET, MALE CONNECTOR ON THE OTHER SIDE OF THE POWER CABLE SHOULD BE ATTACHED TO NETWORK PLUG

THE SET IS READY TO USE AFTER THE POWER IS SWITCHED ON. THIS SWITCH IS ALSO AN AUTOMATIC FUSE.

BESIDES, IN ORDER TO PROTECT THE SET AND THE ENVIRONMENT IN CASE OF A BREAKDOWN, TWO FUSE PLACES (1A) ARE PLACED AT THE BACKSIDE OF THE SET

ATTENTION!!!

THE EXPERIMENT RESULTS IN THE BOOK MAY BE SLIGHTLY DIFFERENT FROM YOUR OWN EXPERIMENT RESULTS. THIS MAY BE DUE TO THE DIFFERENCES IN THE ENVIRONMENT, THE QUALITY OF THE MEASUREMENT DEVICES USED AND THE CHARACTERISTICAL FEATURES OF THE MATERIALS USED IN THE EXPERIMENTAL SET.

THE EXPERIMENTAL RESULTS SHOULD BE ASSUMED TO BE CORRECT UNLESS THERE IS EXTREME DIFFERENCES.