

The bridge rectifier

Principle and equipment

Principle

A bridge rectifier in the form of a light-emitting diode model is to be used to demonstrate that the current in the outer circuit of the bridge rectifier always flows in the same direction regardless of the polarity of the voltage applied.

Equipment

Position No.	Material	Order No.	Quantity
1	Multimeter ADM2, demo., analogue	13820-01	1
2	PHYWE Digital Function Generator, USB, incl. Cobra4 software	13654-99	1
3	PHYWE power supply, universal DC: 0...18 V, 0...5 A / AC: 2/4/6/8/10/12/15 V, 5 A	13500-93	1
4	Demo Physics board with stand	02150-00	1
5	Motor, 2 V DC	11031-00	1
6	Switch, change-over, module DB	09402-02	2
7	Bridge rectifier w. LED,module DB	09455-01	1
8	Clamp on holder	02164-00	1
9	Connector interrupted, module DB	09401-04	2
10	Junction, module DB	09401-10	2
11	Light emitt. diode,red,module DB	09454-00	1
12	Resistor 50 Ohm,module DB	09412-50	1
13	Electr.symbols f.demo-board,12pcs	02154-03	1
14	Wire crossing, insulated, module DB	09401-05	1
15	Clamp on fixing magnet	02151-01	1
16	Connector, straight, module DB	09401-01	2
17	Connector, angled, module DB	09401-02	6
18	Connect.straight w.socket,mod. DB	09401-11	1
19	Disc for 11031-00	11031-01	1
20	Connecting cord, 32 A, 1000 mm, red	07363-01	2
21	Connecting cord, 32 A, 1000 mm, blue	07363-04	2
22	Connecting cord, 32 A, 500 mm, red	07361-01	2
23	Connecting cord, 32 A, 500 mm, blue	07361-04	1

Set-up and procedure

Observation and evaluation

Observation

1. When connector A of the bridge rectifier is connected with the plus pole, and connection B with the minus pole, of the source of current, then LED 1 (symbol) and LED 3 of the bridge rectifier light up.

When these connections are made to the opposite poles of the source of current, then LED 2 and LED 4 of the bridge rectifier light up.

The LED in the outer circuit lights up with both polarities of the source of current, the motor rotates in the same direction and the measuring instrument is only deflected in one direction.

2. At lower frequencies of the alternating voltage of the function generator it can be recognised that the current flows alternately through two LEDs of the bridge rectifier. The LED in the outer circuit lights up twice as often as a bridge rectifier LED, the motor rotates in the same direction and the measuring instrument is only deflected in one direction.

When the frequency of the function generator is increased, the LEDs flicker more and more quickly until the impression of continual lighting up is given.

Beobachtung und Auswertung

Auswertung