

# Electricity with the Modular System

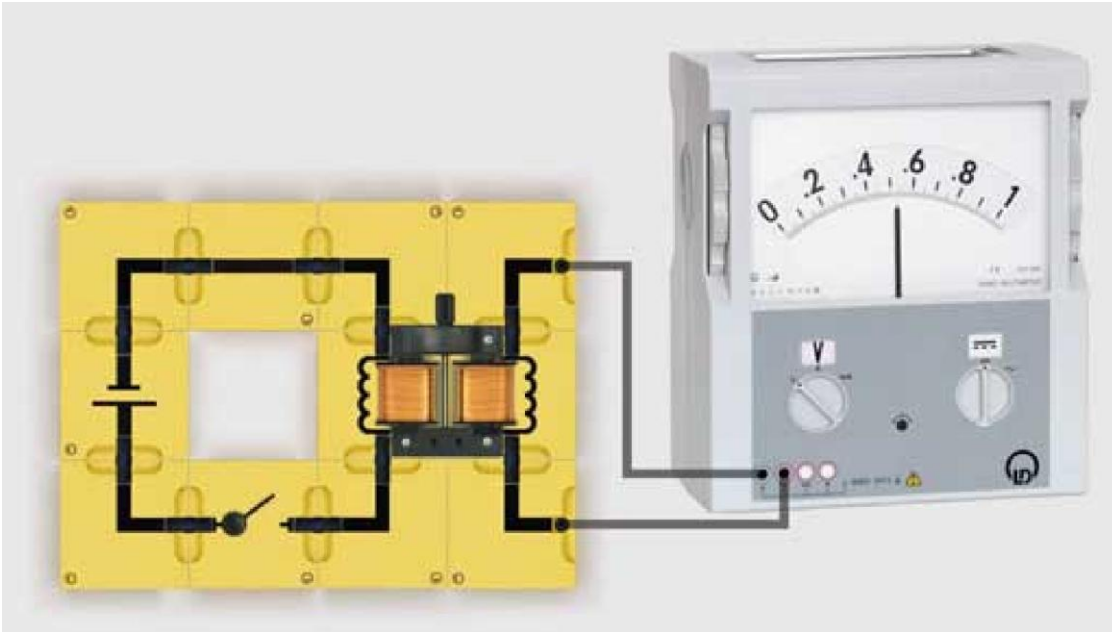
Electromagnetism and Induction  
Transformers

Electromagnetic  
induction with two coils

## Objective of the experiment

To demonstrate the occurrence of an induction voltage at two coils connected by an iron core.

## Setup



## Apparatus

2	539 052	Coil holder, BST
1	590 83	Coil, STE, 500 turns
1	590 84	Coil, STE, 1000 turns
1	593 21	Transformer core, demountable
1	539 025	Toggle switch, BST
1	539 053	Battery element, BST
1	539 001	Connector block BST, straight
6	539 004	Connector blocks BST, 90° angle
10	539 000	Bridging plug, BST
1	531 906	Demo multimeter, passive
2	500 644	Safety connection lead, 100 cm
1	301 300	Demonstration experiment frame
1	301 301	Adhesive magnetic board

**Carrying out the experiment**

- Set up the circuit.
- Close the toggle switch and open it again. At the same time, observe the pointer deflections on the demo multimeter.

**Observation**

Switch	Pointer deflection
closed	left
open	right

**Evaluation**

Two coils can be connected by an iron core.

If the voltage changes in one of the coils (primary coil), e.g. by turning on or off the primary circuit, voltage is induced in the other coil (secondary coil).

This is caused by the magnetic field variation in the secondary coil, resulting from the turn-on and turn-off processes. The polarities of the induced voltage during the turn-on and turn-off processes are opposite.

**Note**

The opposite polarity of induced voltage at the turn-on and turn-off processes corresponds to Lenz 's Law.