

## Electricity

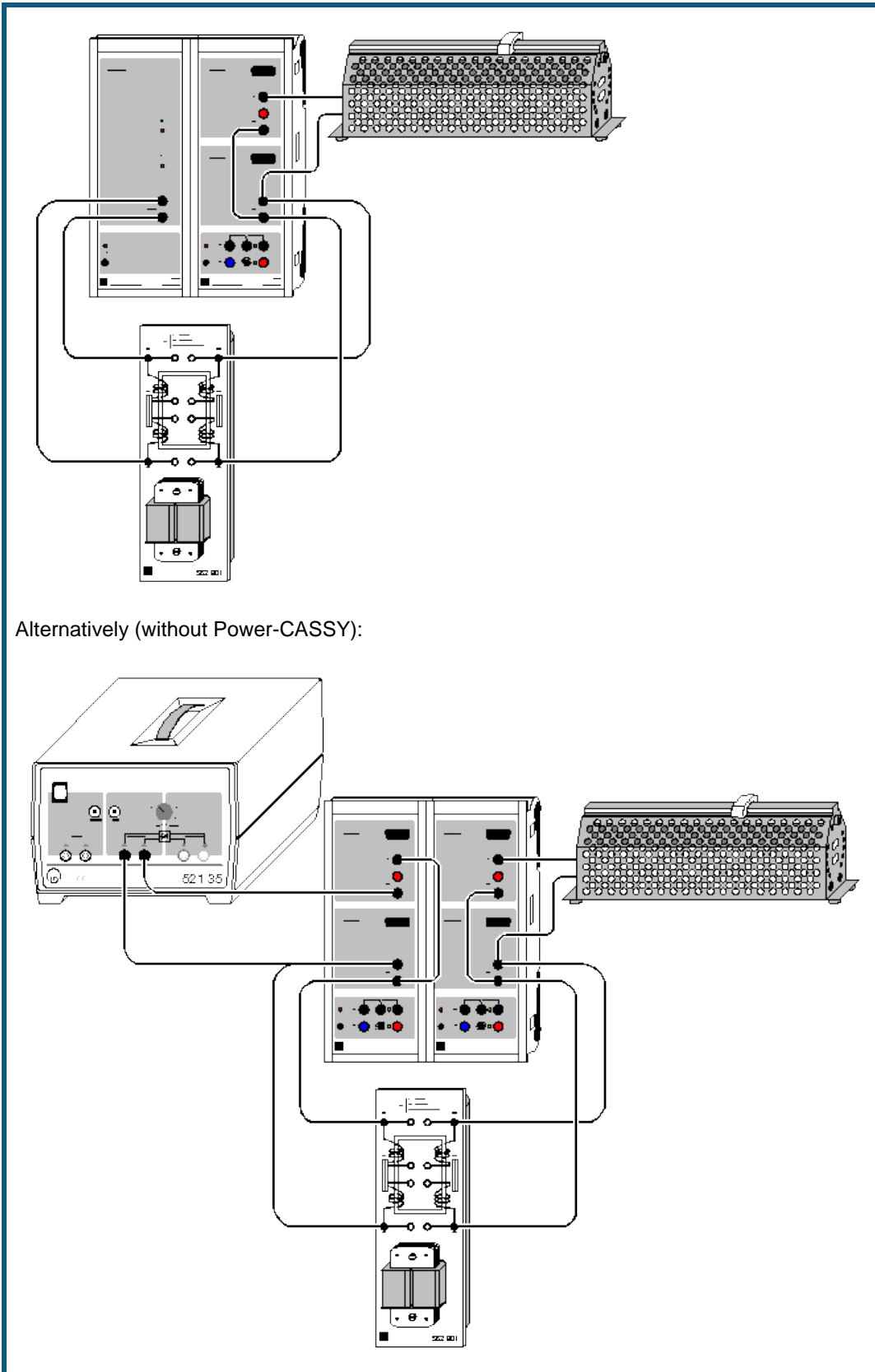
Electromagnetic induction  
*Transformer*

Recording the voltage and current of a transformer under load as a function of time


### Description from CASSY Lab 2

For loading examples and settings, please use the CASSY Lab 2 help.

## Voltage and current curves of a transformer as a function of time



Alternatively (without Power-CASSY):

 can also be carried out with [Pocket-CASSY](#)

## Experiment description

This experiment records the primary and secondary currents and voltages of a transformer under load as time-dependent quantities. From these, CASSY Lab directly calculates the time-dependent power values in the primary and secondary circuit, as well as the RMS values of current and voltage, the phase relation and the active power values.

## Equipment list

1	<a href="#">Power-CASSY</a>	524 011
1	<a href="#">Sensor-CASSY</a>	524 010 or 524 013
1	<a href="#">CASSY Lab 2</a>	524 220
1	Transformer for students' experiments	562 801
1	Rheostat 100 $\Omega$	537 34
1	Connecting lead, 25 cm, black	500 414
6	Connecting leads, 100 cm, black	500 444
1	PC with Windows XP/Vista/7/8	

## Alternatively (without Power-CASSY)

2	<a href="#">Sensor-CASSYs</a>	524 010 or 524 013
1	<a href="#">CASSY Lab 2</a>	524 220
1	Variable extra-low voltage transformer S	521 35
1	Transformer for students' experiments	562 801
1	Rheostat 100 $\Omega$	537 34
2	Connecting leads, 25 cm, black	500 414
8	Connecting leads, 100 cm, black	500 444
1	PC with Windows XP/Vista/7/8	

## Experiment setup (see drawing)



The primary side of the transformer is supplied by Power-CASSY or by the variable transformer (approx. 6 V AC). In the latter case, the primary voltage, primary current and phase relation ( $\cos \varphi$ ) must be measured using a second Sensor-CASSY unit.

Sensor-CASSY performs the necessary measurements of voltage, current and phase relation ( $\cos \varphi$ ) on the secondary side. The transformer is under resistive load ( $\cos \varphi = 1$ ) in the form of a rheostat. However, where available the transformer can also be operated under inductive or capacitive load ( $\cos \varphi < 1$ ). You can improve the response of the transformer to load by connecting two coils each in parallel on the primary and secondary side of the transformer for students' experiments.

In place of the transformer for students' experiments, you can also use the [demountable transformer](#).

## Carrying out the experiment


### ■ Load settings

- Start the measurement with .
- Vary the load (e.g. also inductive or capacitive load) and observe the effect on the secondary and primary circuits.
- Vary the number of coils on the primary and secondary side of the transformer and observe the behavior under load.
- If desired, alter the curve form or the frequency of the primary voltage in [Settings U1](#) on Power-CASSY and observe the result.
- Stop the measurement with .

## Evaluation

You can change to the **Power** display with the mouse during or after measuring. This display shows both power values as a function of time.

## Hint

You can show and hide all measuring instruments simultaneously with .