

## 4.2.01-00 Electrical fields and potentials in the plate capacitor



## What you can learn about ...

- Capacitor
- Electric field
- Potential
- Voltage
- Equipotential lines

## Principle:

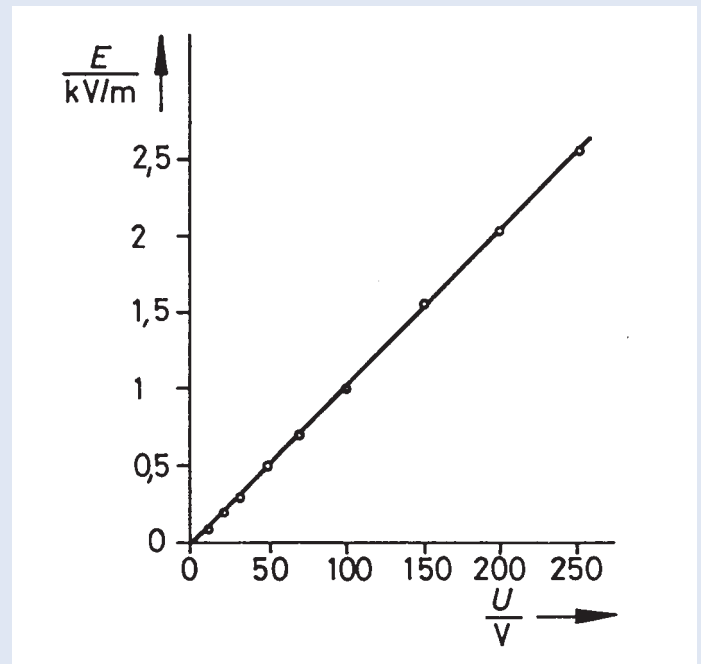
A uniform electric field  $\vec{E}$  is produced between the charged plates of a plate capacitor. The strength of the field is determined with the electric field strength meter, as a function of the plate spacing  $d$  and the voltage  $U$ . The potential  $\phi$  within the field is measured with a potential measuring probe.

## What you need:

Capacitor plate 283 mm x 283 mm	06233.02	2
Capacitor plate with hole, $d = 55$ mm	11500.01	1
Spacer plates, 1 set	06228.01	1
Electric field meter	11500.10	1
Potential probe	11501.00	1
Power supply, regulated, 0...600 V-	13672.93	1
Blow lamp, butan cartridge, X2000	46930.00	1
Butane cartridge C 206 without valve	47535.00	1
Rubber tubing, $d_i = 6$ mm, $l = 1$ m	39282.00	1
Digital multimeter 2010	07128.00	2
Connecting cable, 4 mm plug, 32 A, green-yellow, $l = 10$ cm	07359.15	1
Connecting cable, 4 mm plug, 32 A, red, $l = 75$ cm	07362.01	5
Connecting cable, 4 mm plug, 32 A, blue, $l = 75$ cm	07362.04	5
Optical profile bench, $l = 600$ mm	08283.00	1
Base for optical profile bench, adjustable	08284.00	2
Slide mount for optical profil bench, $h = 80$ mm	08286.02	2
Slide mount for optical profil bench, $h = 30$ mm	08286.01	1
Support rod, stainless steel 18/8, $l = 250$ mm, $d = 10$ mm	02031.00	2
Support rod -PASS-, square, $l = 250$ mm	02025.55	1
Right angle clamp -PASS-	02040.55	4
Rule, plastic, 200 mm	09937.01	1
Barrel base -PASS-	02006.55	1
High value resistors, 10 M $\Omega$	07160.00	1

Complete Equipment Set, Manual on CD-ROM included  
Electrical fields and potentials  
in the plate capacitor

P2420100



Electric field strength as a function of the plate voltage.

## Tasks:

1. The relationship between voltage and electric field strength is investigated, with constant plate spacing.
2. The relationship between electric field strength and plate spacing is investigated, with constant voltage.
3. In the plate capacitor, the potential is measured with a probe, as a function of position.