



3320

Standard Air Capacitors



GENERAL

These standard fixed and variable capacitors are especially for precision measurements of high accuracy.

Because of their high insulation resistance, small self-inductance and dissipation factor, these standards may be used within large frequency ranges up to very high frequencies.

DESIGN FEATURES

The standard capacitors of set of types 3320 are said «three-poles» capacitors, as they are provided with three electrodes. Solid dielectric used for their construction is applied to part capacitances C₁₀ and C₂₀ only; those named C₁₂ having no solid dielectric and being practically loss-free.

As a protection against dust and moisture, fixed capacitors are enclosed in housings filled with dry air (water content of dry air: 75...100 ppm resp. 60...80 mg/m³).

We have equipped our standard air capacitors (< 1000 pF) with a drying agent (Silicagel). On the humidity indicator, mounted at the side, the humidity in the interior of the instrument can be controlled.

The variable capacitor is constructed as a vacuum-capacitor.

An artificial aging compensates the mechanical stresses of the plates and supports of the standard capacitors. The constancy with regard to time is remarkably increased by this method.

Up to 1000 pF electrodes of standard capacitors are made of specially treated Invar steel, while above 2000 pF the plates consist of polished aluminium.

Distance between plates is 3 mm for all types, so that the operating voltage may reach a maximum of 2000 V R.M.S. Every edge of metallic parts is rounded to avoid dispersion loss.

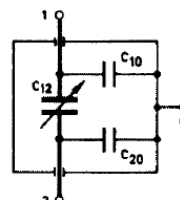
ACCURACY

The value of main capacitance C₁₂ = calibrated capacitance is given with an accuracy of ± 0.001 % in the test certificate delivered with the standards. Further, for fixed capacitors the label indicates part capacitances C₁₀ and C₂₀ with an accuracy of ± 0.1 pF.

On request the standard capacitors may be delivered with an official report from a laboratory of metrology.

EQUIVALENT CIRCUITS FOR CAPACITORS

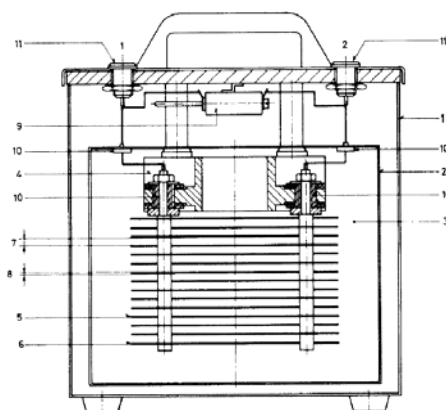
For absolute precision measurements, only the calibrated capacitance C₁₂ has to be used, the partial capacitances C₁₀ and C₂₀ should be eliminated.



$$C = C_{12} + \frac{C_{10} \cdot C_{20}}{C_{10} + C_{20}}$$

C₁₂ = Calibration capacitance
C₁₀ - C₂₀ = Partial capacitances

CONSTRUCTION



1. External Housing (screen)
2. Internal Housing (screen)
3. Dry air
4. Base Plate (screen)
5. Electrode Plates 2
6. Electrode Plates 1
7. Plate Distance = 3mm
8. Plate Thickness = 1 resp. 1.5 mm
9. Tune Capacitor
10. Insulators
11. Junction Bushings 1 and 2

LIST OF TYPES

Type	Capacitance C_{12}	Accuracy C_{12}	Partial capacitance $C_{10} - C_{20}$	Dimensions	Net weights	
No.	pF	%	~ pF	mm/ (in)	~ kg	~ lbs
3320/10	10	$\pm 0.02 \%$	60 - 70	260x260x310 (10.2x10.2x12.2)	10	22
3320/20*)	20	$\pm 0.01 \%$	60 - 80	260x260x310 (10.2x10.2x12.2)	10	22
3320/50 *)	50	$\pm 0.005 \%$	60 - 80	260x260x310 (10.2x10.2x12.2)	10	22
3320/100	100	$\pm 0.005 \%$	60 - 80	260x260x310 (10.2x10.2x12.2)	10	22
3320/200 *)	200	$\pm 0.005 \%$	60 - 80	260x260x310 (10.2x10.2x12.2)	11	24
3320/500 *)	500	$\pm 0.005 \%$	60 - 90	260x260x310 (10.2x10.2x12.2)	12	26.4
3320/1'000	1'000	$\pm 0.005 \%$	70 - 90	260x260x310 (10.2x10.2x12.2)	13	28.6
3320/2'000 *)	2'000	$\pm 0.01 \%$	140 - 200	360x360x450 (14.2x14.2x17.7)	24	53
3320/5'000 *)	5'000	$\pm 0.02 \%$	140 - 200	360x360x450 (14.2x14.2x17.7)	29	64
3320/10'000	10'000	$\pm 0.02 \%$	170 - 250	360x360x450 (14.2x14.2x17.7)	35	72

* special design

RELATED TETTEX PRODUCTS

Capacitance and $\tan \delta$
bridges 2840 and
2820a
and accessories



Resistance units
series 3720 for
 $\tan \delta$ standards



Partial discharge
detectors and
accessories



Europe, Asia, South & Central America, Australia

Haefely Test AG
Birsstrasse 300
4052 Basel
Switzerland
☎ + 41 61 373 4111
☎ + 41 61 373 4912
✉ sales@tettex.com

www.tettex.com

China (Sales & Service Office)
Haefely Test AG – Beijing Office
8-1-602, Fortune Street
No. 67, Chaoyang Road, Chaoyang District
Beijing, 100025
P. R. China
☎ + 86 10 8578 8099
☎ + 86 10 8578 9908
✉ sales@haefely.com.cn

North America

Hipotronics Inc.
1650 Route 22
PO Box 414
Brewster, NY 10509
USA
☎ + 1 845 279 3644
☎ + 1 845 279 2467
✉ sales@hipotronics.com

a brand of

HAEFELY



Haefely is a subsidiary
of Hubbell Incorporated.

