

Dissipation factor $\tan \delta$ standards

3721
3723



Type 3722
and 3370 NK/1000/30
capacitor



Type 3721
and 3320/1000
capacitor

Resistance units Series 3720 for type 3320/1000 and 3370 NK/1000 standard capacitors

General

Dissipation factor $\tan \delta$ standards are designed for checking the accuracy of capacitance and dissipation factor measuring instruments.

A $\tan \delta$ standard is basically a standard capacitor in series with a resistor. To avoid excessive resistance values, a 1000 pF capacitor with a negligible dissipation factor is used. Tettex has determined the following $\tan \delta$ values for a measuring frequency of 50 Hz:

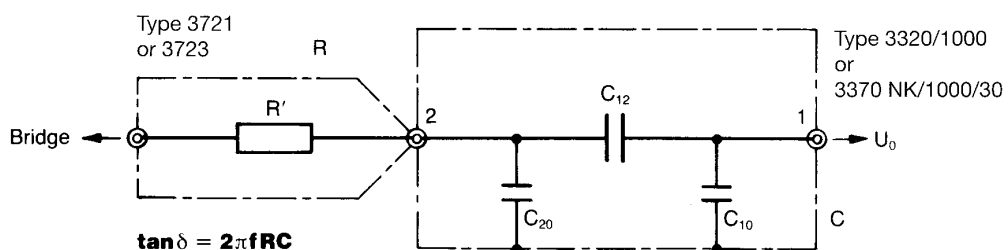
$\tan \delta$	R
5×10^{-5}	159 Ω
1×10^{-4}	318 Ω
5×10^{-4}	1590 Ω
1×10^{-3}	3180 Ω

However, the actual standard-unit resistor values differ from these theoretical values. Owing to quite considerable scatter of the partial capacitance C_{20} the resistance units have to be calibrated jointly with the standard capacitor.

Design

The type 3721 resistance unit contains the resistors for all four $\tan \delta$ values accommodated in a sheet-metal casing. Four sockets for No. 101 cable are provided on one side of the casing and two plugs on the other. The resistance unit plugs directly into the top of the type 3320/1000 standard capacitor (see illustration)

The Type 3723 resistance unit resistors for each $\tan \delta$ value are accommodated in a separate casing. Each casing plugs directly into the top of the type 3370 NK/1000/30 standard capacitor.



Technical specification

Dissipation factor $\tan \delta$ values:

5×10^{-5} , 1×10^{-4} , 5×10^{-4} , 1×10^{-3}

Operating voltage / capacitance

3320/1000 with 3721:
max. 2 kW/1000 pF

3370 NK/1000 with 3723:
max. 30 kW/1000 pF

Accuracy

This depends on the following:

- Dissipation factor of standard capacitor
 $\tan \delta \leq 1 \times 10^{-5}$
- Accuracy and constant value of resistors.
Accuracy class 0,1.

Overall accuracy of dissipation factor $\tan \delta$:

± 1 % of indicated value $\pm 1 \times 10^{-5}$

Technical data for Tettex standard capacitors are specified in leaflets 3320 and 3370 NK.

General indications on measuring accuracy in connection with capacitance and $\tan \delta$ measuring bridges are to be found in Tettex Information No. 22.

Dimensions

Type 3721 150 x 60 x 115 mm
(W x H x L) (5.9 x 2.4 x 4.5 in)

Type 3723 38 x 32 x 130 mm
(W x H x L) (1.5 x 1.3 x 5.1 in)
each unit

Weight

Type 3721 0.85 kg (1.87 lb)
Type 3723 0.65 kg (1.43 lb)
(complete set of four)

Order specification

- Dissipation factor $\tan \delta$ standard, comprising:
1 Standard air capacitor type 3320/1000
and
1 Resistance unit type 3721
 - Dissipation loss $\tan \delta$ standard for up to 30 kV, 50 Hz, comprising:
1 Compressed gas
capacitor type 3370 NK/1000/30
and
1 Set of four resistance units type 3723
- Dissipation factor standards for 60 Hz or with other $\tan \delta$ values are available on request.