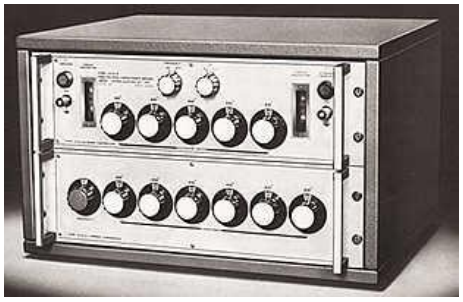
High Voltage Tan δ • Capacitance Bridge 1210-A



Features

- High voltage tandelta capacitance bridge Model 1210A adopts high precision current comparator transformer bridge system by using a coiled magnetic balanced current comparator as current comparator.
- Any high voltage standard condensers on market (with the spec of 1210-A) are able to read tandelta and electrostatic capacity directly.
- Easy operation in measuring because the transformer bridge system adoped does not need earth circuit as Schering bridge does.
- Model 1210-A Can measure dielectric and condenser by putting any voltage at random from low one to high one. And it is also ale to add DC bias.
- Easy to carry to any field due to its small size and light weight.

1210A

- Tandelta Measurement Scope / 10-6 ~ 10-1
- Accuracy / ±10-5 ~ 10-3
- Electrostatic Capacity
- Measurement scope / 50pF ~ 1.1μF
- Accuracy ±10-5 ~ 10-3
- Direct readable standard condenser
- Externally connected / 50, 70, 100, 200,500, 700, 1000pF (tan δ, c, direct readable)
- Maximum current (Bridge body) / Cs1A, Cx1A(Measurement current is expandable)
- Measurement frequencies / 50, 60Hz(20 ~ 500Hz usable)

Specifications

Electrostatic Capacity	Measurement Scope	111.1110 pF ~ 1.111110 μF 6digit, decimal, 6dial
	Resolution	0.0001 pF (Cs=100 pF) 0.001 pF (Cs=1 nF)
	Accuracy	Direct reading ±0.01 ~ 0.1 % Comparison ±0.001 ~ 0.01 %
	Amplification	1 ~ 103
Tandelta	Measurement Scope	10-1 ~ 10-5 5digit, decimal, 5 dial
	Accuracy	±10-5 ~ 10-3
Measurement Current (AC)		Cs: 1 Amax Cx : 1 Amax (Bridge)
Measurement frequency		50,60Hz fixed, Within 20 ~ 500Hz
Arrester		Ceramics, hermetic SI-A230 Surge discharge current 20 KA
Dimensions		524(W)×406(D)×313(H)mm, 30kg

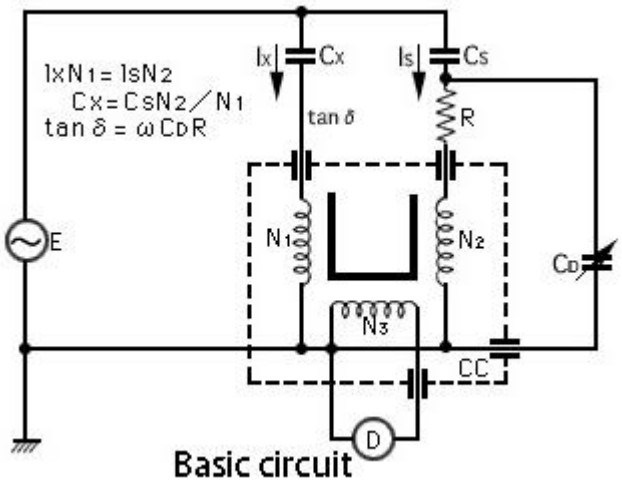
Equipments	
Detecting Amplifier	Gen Rad Type 1232-A or equivalent
*Standard Condenser	50 ~ 1,000 pF 100 V ~ 700 V
*Current Transformer	Primary Side : 100 A MAX Secondary Side : 1 A

*The Products with mark * are subject to voltage, accuracy and material tested, so please contact us when you have inquiries.

- Specifications are subject to change without notice due to improvement
- SunJEM will design products to meet your individual requirements. Please feel free to consult with us for products other than ready-made ones.

Principle of Voltage Tandelta Capacitance Bridge

When it is needed to compare a standard condenser (Cs) with a condenser to be measured (Cx), a current comparator transformer bridge is used to compare each current flows of Is.
And Ix by connecting them parallel to the power supply (E).
The magnetic flux in steel core of the current comparator become zero and then inductive voltage of detecting coil (N3) become zero at the balanced position because the current comparator is to be balanced at ampere turn as IxN1=IsN2.
At the balanced position, the residual impedance is only consist of coil resistance and it is very little.
Accordingly, the power supply (E) applies high voltage to the condenser almost completely.
The balance of tandelta become possible to be measured the resolution in accuracy 10-6 by flowing the divided current to the paralleled coil (N2) via CD using the residual resistance (R).
By use of magnetic balanced current comparator with detecting coil, the instrument become a high precision current comparator bridge which has a lot of advantages against Schering bridges.



Basic circuit

- The instrument can get high accuracy because it uses high quality magnetic material.
- The instrument can gain high resolution (up to 10-6) the while high voltage Schering bridge has a limit of resolution for variable resistance because it can't make material to high resistance so much.
- At the balanced position of tandelta the residual impedance of the instrument is so extremely little that it doesn't get effect from the earth.
  Also even if there is a change if circuit current, there doesn't happen error caused by circuit current because the moving point of the instrument is at same position when the instrument is balanced position.
- The instrument can accurately measure tandelta and electrostatic capacity in very little volume (Below 1μF) such as insulation material, power cable, condenser insulation oil and electrical equipments applying any voltage from low to high at random.
  Furthermore to expand measurement current, it is possible to connect the more accurate current transformer to the random.
  Furthermore to expand measurement current, it is possible to connect the more accurate current transformer to the primary side externally in place of conventional shunt resistor with in great error.
  As a result, it is readable tandelta and electrostatic capacity directly even after expansion of measurement current.