C & tanδMeter for Insulation Materials

DAC-IM-D6

Test Cell for Liquid materials
DAC-OBE-2

DAC-IM-D6 is a high-precision instrument for measuring the capacitance and dielectric loss tangent (tan δ) and relative permittivity of wide range of insulating materials, including oils, ceramics, polymer-based materials, with a resolution of 1 ppm (1×10^{-6}).

Equipped with a built-in power supply (up to 2000V), DAC-IM-D6 enables measurements under realistic operating conditions. By applying actual test voltages to specimens, it delivers highly reliable and reproducible evaluations of electrical insulation performance, making it an ideal tool for both quality control and R&D applications.

Its user-friendly design allows for repeated measurements with minimal setup, and the data can be easily transferred to external PCs via a USB interface for further analysis and documentation.

DAC-IM-D6 provides a powerful and practical solution for verifying the electrical properties of the insulation materials.

Features

- Tan delta measurement with resolution of 0.0001% (1×10^{-6}).
- Built-in power supply from AC 200 V to 2100 V (50/60 Hz).
- Measurement of relative permittivity.
- Auto-range for capacitance and tan δ measurements with automatic voltage step-up.
- USB interface for PC communication.
- Relay output for alarm/warning lamp.
- Interlock terminals.
- Test cell (optional) according to IEC 60247, JIS C2101, ASTM D924, ASTM D1169.
- Simple and easy-to-read LCD display.
- User-friendly and straightforward operation.

SOKEN ELECTRIC CO., LTD.

DAC-IM-D6

C & tan δ Meter for Insulation Materials

Specifications

- Built-in power supply: 0 - 2100 VAC, 50/60 Hz
  (test frequency selectable)

- Measurement range: Measuring voltage :0 - 2000 V, 50/60 Hz
  Capacitance :20pF - 1000 pF (2 ranges: automatic range)
  tan δ :0 - 50% (4 ranges: auto/manual range)
  Relative permittivity :0.02 – 50.0
- Minimum resolution: Measuring voltage :1 V
  Capacitance :0.1 pF
  tan δ :0.0001% (1 ppm)
  Relative permittivity :0.01
- Measuring accuracy: Voltage :± 3%
  Capacitance :± (0.5% rdg + 2 digits)
  tan δ :± (0.001% + 1% rdg + 2 digits)
  Relative permittivity :± (1% rdg + 2 digits)

- Standard Capacitor (Installed): 100.0pF ±1.0pF tan δ <0.001%

- Interface: USB 2.0/1.1 compliance, B-type connector

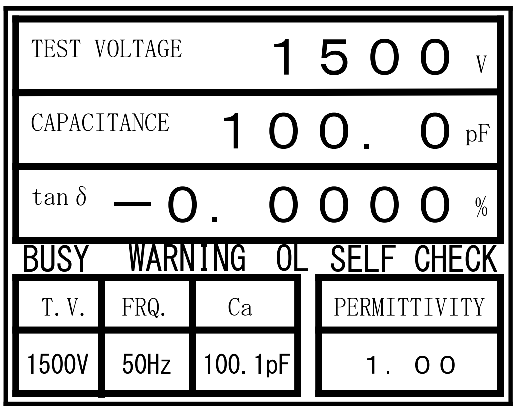
- Input power: 100 - 240 VAC ± 10%, 50/60 Hz

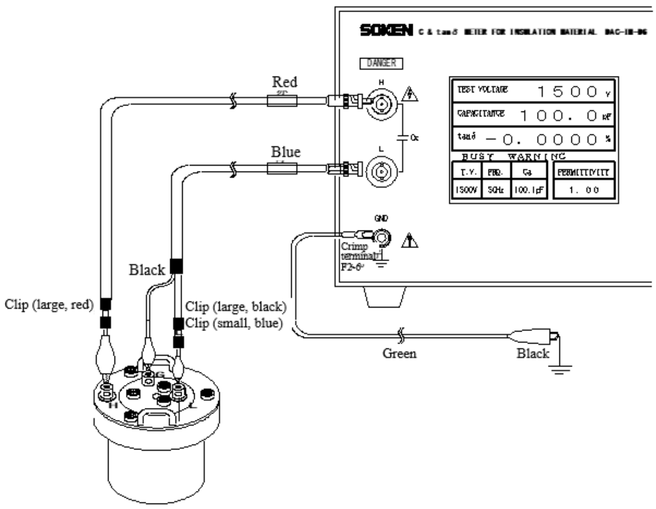
- Dimensions and Mass: 430 (W) × 200 (H) × 380 (D) mm, about 13 kg

- Standard Accessory: Measuring Cable with connector/Clip 1 set
  AC Power Cable, Ground Wire, Storage Bag

- Options: Test Cells, Test Cell Heater, Calibration Test Set

LCD Panel and wiring example





Option Accessories

■ Test Cell for Liquid Materials [Model DAC-OBE-2]

DAC-OBE-2

DAC-OBE-2 is a test cell (electrode) designed for testing electrical insulating oils and other liquid insulating materials.
It is suitable for both dielectric loss tangent factor (tan δ) measurements and volume resistivity tests.

- ●Applicable Standards :IEC 60247, JIS C2101, ASTM D924, ASTM D1169
- ●Electrode gap :1 mm±0.1 mm (Electrical stress 1000V/mm)
- ●Electrode area :100 cm^2
- ●Electrode constant :1000±50 cm
- ●Capacitance :88.5 pF±5 pF
- ●Sample volume used :50 cc
- ●Dimensions & Weight :89.5ϕ × 105 (mm) Approx. 1.3 kg
- ●Option accessory : Adaptor & Cables

Adaptor & Cable
for DAC-OBE-2

■ Test Cell Heater [Model DAC-OBH series]

DAC-OBH series heat the test cell DAC-OBE-2 (1, 2 or 4 pcs) without using thermal oil.
The uniform heat conductivity eliminates possible differences in temperature between each electrode.
Combining a controller, nominal temperatures are maintained within ±1°C, ensuring conformity to JIS C2101.
DAC-OBH-1 heats a single cell, while OBH-2 and OBH-4 can simultaneously heat two or four cells, making them ideal for laboratories handling a large number of tests and reducing testing time.

DAC-OBH-4

- ●Made of High Purity Aluminum Heater.
- ●No thermal oil is required.
- ●Splash-free, vaporization-free, and pollution-free operation.
- ●Quick and easy clean-up after use.
- ●Even heat distribution with no local hot spots.

DAC-OBH-2 (Heater part)

Model	DAC-OBH-1	DAC-OBH-2	DAC-OBH-4
Number of electrodes	1	2	4
Allowable maximum setting temperature	Max. 100°C (Setting temp.±1°C)		
Input power	AC 100 V/200 V 50 Hz/60 Hz		
Power consumption	500 W	800 W	1500 W
Dimensions (mm)	W190xD190xH160	W360xD190xH160	W360xD360xH160
Weight	5 kg	9 kg	18 kg
Dimensions & Weight of Controller	W210xD292xH250 (mm), 3.5 kg		

■ Test Cell for Solid Materials Model DAC-OBE-7

DAC-OBE-7 is a test cell designed for measuring the tan delta and permittivity of insulation paper and films, in accordance with the JIS C2111 standard. It includes an oil reservoir cylinder for immersing samples in insulating oil and built to withstand temperatures up to 120℃, ensuring stable measurements under high-temperature conditions.

DAC-OBE-7

- ●Electrode : Main electrode 65.5ϕ (mm)
  - Guard electrode 66ϕ (mm)
  - High-voltage electrode 84ϕ (mm)
- ●Applicable Standard: JIS C2111
- ●Test voltage : Max. 10 kV
  - <1kV : No insulating oil is necessary.
  - 1kV to 5kV : Fill insulating oil in the cylinder.
  - 5kV to 10kV : Fill insulating oil in the cylinder and submerge the electrode entirely in oil bath.
- ●Test temperature : Max. 120°C
- ●Cylinder Capacity : Approx. 350 cc
- ●Dimensions : H210×150ϕ (mm)

■ Test Cell for Sheet Materials Model DAC-OBE-8

DAC-OBE-8 is designed for measurement of permittivity, dielectric loss tangent, and insulation resistance of insulating paper, plastic films, and other sheet Materials.

DAC-OBE-8

- ●Configuration : Main electrode 78ϕ (mm)
  - Guard electrode 80ϕ (mm)
  - High-voltage electrode 100ϕ (mm)
  - (The other Electrode sizes: on inquiry)
- ●Applicable Standard: JIS K6911
- ●Test voltage : Max. 1 kV
- ●Dimensions : W190×H105×D190 (mm)

■ tanδ Calibration Set Model DAC-Cs-100A

DAC-Cs-100A accommodates a gas-filled standard capacitor of 100pF capacitance, and is used to calibrate DAC-IM-D6 by utilizing commercial frequencies 50, 60Hz.

DAC-CS-100A

- ●Integrated reference capacitor: Gas filled capacitor of 100 pF
- ●Working voltage: AC 2000 V
- ●Capacitance : 100pF
- ●tan δ calibration value: 0 to 8.0% at 50 Hz
  - 0 to 9.6% at 60 Hz
- ●Dimensions & Mass: W200×H177×D233 (mm)
  - Approx. 4.5 kg

	50Hz		60Hz	
1	0.0000	%	0.0000	%
2	0.0020	%	0.0024	%
3	0.0080	%	0.0096	%
4	0.0800	%	0.0960	%
5	0.800	%	0.960	%
6	8.00	%	9.60	%

tan δ Calibration Value

2025/09

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