

## C & tan $\delta$ Meter for Insulation Materials DAC-IM-D6



DAC-IM-D6 measures capacitance and the dielectric loss tangent (tan  $\delta$ ) of electrical insulating materials with resolution of 1 ppm ( $1 \times 10^{-6}$ ). Measurements in accordance with IEC standards (IEC 60247 and IEC 60554-2) are available by using with an optional liquid or sheet or other appropriate electrode. Furthermore, the relative permittivity of an insulating material can be displayed by saving the capacitance of an empty electrode into memory.

### Features

- Best resolution for measurement of tan  $\delta$ : 0.0001% (1 ppm)
- Output voltage source, built-in power supply for testing:  
AC 200 V to 2100 V (50/60 Hz)
- Display relative permittivity data from the result of capacitance measurements
- Auto-range provided for capacitance and tan  $\delta$  measurements with automatic step-up of voltages
- USB interface provided as standard equipment

### Test Specimen

Electrical insulating oil  
Electrical insulating (ceramic, polymeric) materials  
Other dielectric materials

## DAC-IM-D6

### C AND TAN $\delta$ METER FOR INSULATION MATERIALS

DAC-IM-D6 is ideal for testing electrical characteristics of electrical insulating materials, such as oil, ceramic, polymeric, etc.

The meter can be applied to the test in accordance with JIS (C2101) and IEC (60247, 60554-2) standard, and is also utilizable for development tests of new and composite materials.

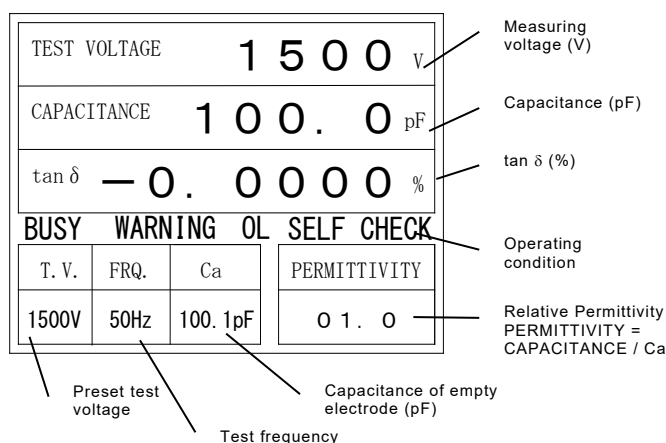
DAC-IM-D6 contains a built-in testing voltage supply (Max 2000V), and allows measurement of  $\tan\delta$  and capacitance with applying the actual voltages to specimens, which helps identify the actual electrical characteristics.

Repeated measurement is possible through simple operating steps. In addition, data can be collected from external PCs through USB interface.

#### Specifications

- Built-in power supply: 0 - 2100 VAC, 50/60 Hz  
(test frequency changed manually)
- Measurement range: Measuring voltage :0 - 2000 V, 50/60 Hz  
Capacitance :20 - 1000 pF (2 ranges: automatic range)  
 $\tan \delta$  :0 - 50% (4 ranges: auto/manual range)  
Relative permittivity:0.02 – 50.0
- Minimum resolution: Measuring voltage :1 V  
Capacitance :0.1 pF  
 $\tan \delta$  :0.0001% (1 ppm)  
Relative permittivity:0.01
- Measuring accuracy: Measuring voltage : $\pm$  (0.5% rdg + 2 digits)  
Capacitance : $\pm$  (0.5% rdg + 2 digits)  
 $\tan \delta$  : $\pm$  (0.001% + 1% rdg + 2 digits)  
Relative permittivity: $\pm$  (1% rdg + 2 digits)
- Interface: USB 2.0/1.1 compliance, B-type connector
- Input power source: 100 - 240 VAC  $\pm$  10%, 50/60 Hz
- Dimensions and weight: 430 (W)  $\times$  200 (H)  $\times$  380 (D) mm, about 13 kg
- Standard Accessory: Measuring Cable with connector/Clip 1 set  
AC Power Cable, Ground Wire, Storage Bag

#### LCD Panel



#### SET MODE Functions

When SET MODE is selected, you can set the following three parameters.

These settings are saved in a nonvolatile memory, and will be available when the Meter power is turned on again, later.

- Test voltage (0 to 2000 V)
- Test frequency (50/60 Hz)
- Electrode without sample (20 to 1000 pF)

## Option Accessories

### ■ Liquid Electrode Model DAC-OBE-2

DAC-OBE-2 is an electrode for testing electrical insulating oil and other liquid insulating materials in accordance with the JIS (C2101) standard.

It is applicable to dielectric loss tangent tests and volume resistivity tests.

- Electrode spacing : 1 mm±0.1 mm (IEC 60247)
- Electrode area : 100 cm<sup>2</sup>
- 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 & Cable



DAC-OBE-2



Adaptor & Cable  
for DAC-OBE-2

### ■ Liquid Electrode Heater Model DAC-OBH series

DAC-OBH series heat the liquid Electrode 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-4

- Made of High Purity Aluminum Heater.
- No thermal oil is required.
- Splash-free, vaporization-free and air pollution-free measurement
- Quick clean-up after use
- Eliminated local heating, Heat is distributed evenly.

| 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    |                |                |

### ■ Electrode for Solid Materials Model DAC-OBE-7

An electrode DAC-OBE-7 can be used for measuring permittivity and dielectric loss tangent of insulating paper, film and other insulating materials in accordance with JIS standard (C2300-2). The electrode is equipped with a cylinder to reserve insulating oil, and designed to withstand temperatures of up to 120°C.

- Electrode : Main electrode 65.5 $\phi$  (mm)  
Guard electrode 66 $\phi$  (mm)  
High-voltage electrode 84 $\phi$  (mm)  
Material Stainless steel
- 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 × 150 $\phi$  (mm)



DAC-OBE-7

### ■ Electrode 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.

- Electrode: Main electrode 78 $\phi$  (mm)  
(JIS K6911) Guard electrode 80 $\phi$  (mm)  
High-voltage electrode 100 $\phi$  (mm)  
Material Stainless steel  
(The other Electrode sizes: on inquiry)
- Test voltage: Max. 1 kV
- Dimensions: W190 × H105 × D190 (mm)



DAC-OBE-8

### ■ $\tan\delta$ 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.

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



DAC-CS-100A

|   | 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 %   |

 $\tan\delta$  Calibration Value

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