

# HOT LINE COIL RESISTANCE METER DAC-HRE-1



DAC-HRE-1 is designed for temperature rise tests of motors, transformers, coils, chokes and etc, under energizing AC voltage. The direct reading of resistance is possible with 4-terminals measurement method, and temperature is calculated from measured resistance values and displayed.

## Features

- Automatic Test with PC through RS 232C interface.
- Temperature rise test of electric coils under energizing AC Voltage Max 450V.<sup>(\*)</sup>  
(\* ) AC Max 700V (sine wave) is available by using an optional adaptor.
- By using an optional thermal printer kit, print-out of measured values and temperature conversion values is possible. Also, print-out every given time is available with an interval mode.
- In accordance with JIS 5311 : Testing methods of power transformers for electronic equipment.

## Test Specimen

Motors, Transformers, Coils, Chokes and etc.

# DAC-HRE-1 HOT LINE COIL RESISTANCE METER

## Specifications

- AC Voltmeter : 0-500V (rms)
- Measuring range :
  - 2Ω Range : 0-4.000Ω (Superimposed Current DC100mA)
  - 20Ω Range : 3.00-40.00Ω (Superimposed Current DC10mA)
  - 200Ω Range : 30.0-400.0Ω (Superimposed Current DC1mA)
  - 2000Ω Range : 300-4000Ω (Superimposed Current DC0.1mA)Measurement accuracy ±(0.2%F.S. + 2digits)
- Testing Voltage : AC450V max (50/60Hz)
- Measuring Input Impedance : 200kΩ or more (50/60Hz)
- Minimum Resolution : 1mΩ (2Ω range)
- Interface : RS232C
- Power Source : AC100V-240V±10% 50/60Hz
- Dimensions : W430×H150×D385mm Approx. 18kg
- Option : Thermal Printer  
DC Blocking Capacitors  
(Capacitor 2A, 7A, 23A, 45A,  
C-box for single phase/3-phase type, etc)  
Voltage adaptor, Model DAC-HVA-3, to apply AC Max 700V

## Conversion to temperature

A relationship between electrical resistance and temperature can be expressed as follows.

$$R_t = R_{t_0} \{1 + \alpha_{t_0}(t - t_0)\}$$

$R_t$  = Electrical resistance at  $t^\circ\text{C}$

$\alpha_{t_0}$  = Temperature coefficient at  $t_0^\circ\text{C}$

$R_{t_0}$  = Electrical resistance at  $t_0^\circ\text{C}$

Using the above relationship, temperature can be calculated from the difference in electrical resistance.

Usually,  $1/\alpha_0 = 234.5$ , where  $\alpha_0$  is the temperature coefficient at  $0^\circ\text{C}$ , is used for the conversion to temperature as described in the following formula.

$$t_c = \frac{R_t - R_{t_0}}{R_{t_0}}(234.5 + t_0) + t_0$$

$$\Delta t = t_0 - t_c$$

$t_c$  = Converted temperature (  $T_c$  )

$\Delta t$  = Temperature rise (  $\Delta T$  )

$R_t$  = Measured electrical resistance (  $R$  )

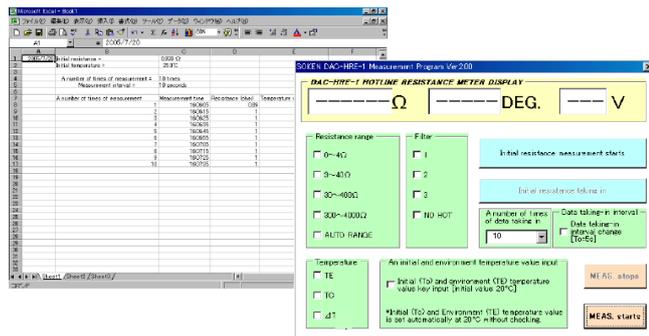
$R_{t_0}$  = Initial resistance (  $R_0$  )

$t_0$  = Initial temperature (  $T_0$  )

Temperature conversion of metal other than copper is also possible by changing the coefficient value.

## Auto Calculation Sample Software

By using the Software, measured values are saved and displayed in an Excel sheet.  
Time Interval set-up is also possible through PC.



## DC Blocking Capacitor Box

DC Blocking Capacitor must be required for measurement with DAC-HRE-1, so that testing current may not flow into AC line.

An appropriate Capacitor must be selected in accordance with testing current, and inserted between the power supply and the specimen.



DC Blocking Capacitor

## Option Accessories

### ■ DC Cut Capacitor Box [Model DAC-CHR-1B](#)

DAC-CHR-1B is one of option Capacitor Boxes which can use by simple connection. Select an appropriate capacitor range in accordance with testing current.

- Built-in Capacitor : Electrolytic Capacitor
- Maximum-allowed-current value : 470 $\mu$ F...2A, 4,700 $\mu$ F...7A, 47,000 $\mu$ F...23A (one-each built in, with protection diode and arrestor)
- Size & weight : W210xH133xD160(mm) Approx. 3kg



Model DAC-CHR-1B

**Optional Capacitors for single phase, 3-phase, and large current specification etc. are also available.**

### ■ Thermal Printer

It is possible to print out measured values and temperature conversion values by connecting the printer directly with DAC-HRE-1.

Print-out every given time is available with an interval mode.

- Size & weight W93xH70xD125(mm) Approx. 265g



Thermal Printer

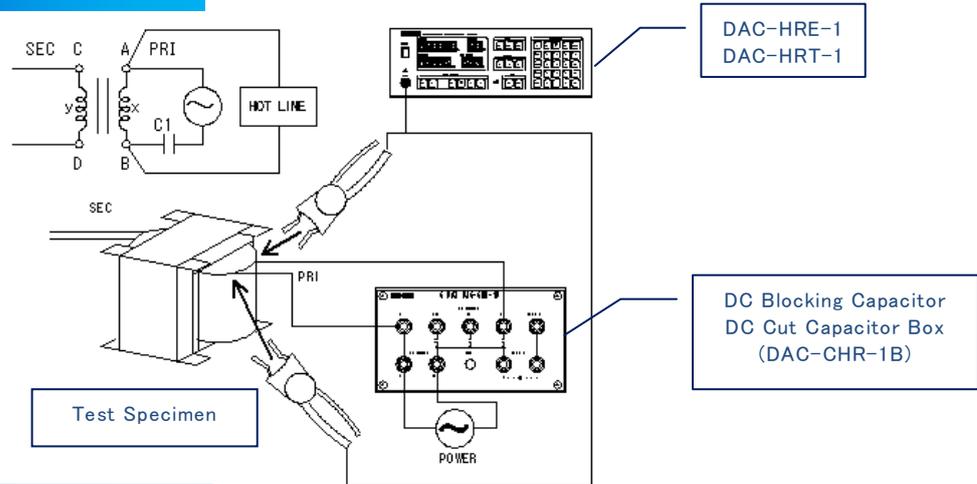
### ■ Voltage Adaptor [Model DAC-HVA-3](#)

By using the optional adaptor, measurement of test voltage at 450 VAC or more is available with Hot Line Measuring Instrument Model DAC-HRE-1/DAC-HRT-1.

- Max test voltage : 700VAC (Sine Wave)
- Size & weight : W430xH200xD385(mm) Approx. 35kg

# DAC-HRE-1 HOT LINE COIL RESISTANCE METER

## Connection Diagram



## Product Line-up

MODEL	DAC-HRE-1	DAC-HRT-1
		
AC Voltmeter	0-500V	0-500V
Measuring range	2Ωrange : 0 - 4.000Ω 20Ωrange : 3.00 - 40.00Ω 200Ωrange : 30.0 - 400.0Ω 2000Ωrange: 300 - 4000Ω	20Ωrange : 0 - 40.000Ω 200Ωrange : 20.00 - 400.00Ω 2000Ωrange : 200.0 - 4000.0Ω 20000Ωrange: 2000 - 40000Ω
Accuracy	±(0.2%F.S. +2disits)	±(0.05%F.S. +2disits)
Applied Voltage	MAX 450V (50/60Hz)	MAX 450V (50/60Hz)
Measuring input impedance	200kΩ or more (50/60Hz)	200kΩ or more (50/60Hz)
Display		
Resistance	4 digits (Max "4100")	5 digits (Max "41000")
Temperature	5 digits (Max "999.9" (°C)) (Max "1999.9" (°F))	5 digits (Max "999.9" (°C)) (Max "1999.9" (°F))
Voltage	3 digits (Max "550")	3 digits (Max "550")
Communication	RS-232C	GP-IB RS-232C
Main power supply	AC100V-240V ±10% 50/60Hz	AC100V-240V ±10% 50/60Hz
Dimensions	W430 x H150 x D385 mm	W430 x H150 x D385 mm
Weight	approx. 18kg	approx. 18kg
Option	<ul style="list-style-type: none"> <li>Thermal Printer</li> <li>DC Blocking Capacitor (Various kinds)</li> <li>Voltage Adaptor(DAC-HVA-3)</li> </ul>	<ul style="list-style-type: none"> <li>Temperature sensor(DAC-PT-100)</li> <li>Selection control Box(DAC-SCB-2)</li> <li>Thermal Printer</li> <li>DC Blocking Capacitor (Various kinds)</li> <li>Voltage Adaptor(DAC-HVA-3)</li> </ul>
Rated Standard	JIS 5311	JIS 5311

Another line-up: Inverter Hot Line Resistance Meter Model DAC-HRI-3 for measurements with Inverter Motors.

2013/08/23