



# M4100



## Technical Specifications

The M4100 unit is the foundation of the M4000 Diagnostic Test System for Condition Assessment of Power Apparatus

*Note: A personal computer is required to operate the M4100*

TOGETHER WE POWER THE WORLD

### Power Specifications:

**Output Voltage:** 0 to 12 kV AC

**Output Current:** 100 mA continuous at 10 kV  
 200 mA > 30 minutes at 10 kV  
 300 mA > 4 minutes at 10 kV

Operating time period based on 50°C operating temperature. Longer durations at high currents will be realized at lower operating temperatures

**Output Power:** 3 kVA

Sinusoidal output signal internal generated independent of input supply, No loss in performance when used with portable generator

**A.C. Input\* :** 95-264 V AC 47 to 63 Hz  
 16 A max at 110 V,  
 10 A max at 220 V

### Measurement, Accuracy and Range Test Frequency:

#### Test Frequency:

**Range:** 45 to 70 Hz independent of input signal

**Resolution:** 0.1 Hz

**Accuracy:** ±1% of reading

#### Test Voltage:

**Range:** 25 V to 12 kV

**Resolution:** 1 V

**Accuracy:** ±1% of reading, ±1 V

#### Test Current:

**Range:** 0 to 5.0 A

**Resolution:** 0.1 µA

**Accuracy:** ±1% of reading, ±1 µA

### Capacitance:

**Range:** 0 to 100 µF

**Resolution:** 0.01 µF

**Accuracy:** ± 0.5% of reading, ± 1 µF

### Inductance:

**Range:** 6 H to 10 MH

**Resolution:** 0.01 H

**Accuracy:** ± 0.5% of reading

### Watts:

**Range:** 0 to 2 kW, actual

**Resolution:** 0.5 mW

**Accuracy:** ± 2% of reading at 10 kV,  
 ± 0.03% of VA, ±0.5 mW

### Dissipation Factor:

#### Range:

**%PF** 0 to ±100.00%

**PF** 0 to ±1.0000

**% Tan δ** 0 to ±999.99%

**Tan δ** 0 to ±9.9999

**mW/Var** 0 to ±9999.9

**Resolution:** 0.01% / 0.0001

**Accuracy:** ± 0.5% of reading, typical  
 ±0.04% PF/Tan δ  
 ±0.0004 PF/Tan δ



\* There are power restrictions for input voltages below 190 V AC.

## Temperature Measurement:

**Range:** -20 °C to +50 °C

**Resolution:** 0.1 °C

**Accuracy:** ±4 °C

Requires optional temperature probe

## ENVIRONMENTAL

### Temperature:

**Operating:** -20 °C to +50 °C

**Storage:** -40 °C to +70 °C

**Humidity:** 90% non-condensing

## DIMENSIONS

**Instrument:** 10-1/4 in. H x 20 in. W x  
25-1/4 in. D 26 cm H x  
50.8 cm W x 64.1 cm D

**High Voltage Cable:** 60 ft./18 mt (other lengths  
available as options)

**Weights  
Instrument:** 95 lbs/45.5 kg

## MAXIMUM INTERFERENCE CONDITIONS AT LINE

### Frequency

**Electrostatic:** 15 mA rms of interference  
current into any lead or  
cable with no loss of  
measurement accuracy.  
Applicable to a maximum  
ratio of interference  
current to specimen  
current of 20:1.

**Electromagnetic:** 500 µT, at 50 Hz in any  
direction

For more information, contact  
M4000@doble.com

## STANDARDS

### EMC Emissions

FCC 47 CFR Part 15 Class A Emissions requirements (USA)

EN 55011:1998/A1:1999/A2:2002 Group 1 Class A ISM Emissions requirements (EUROPE)

AS/NZS CISPR 11:2004 Class A ISM Emissions requirements (Australia)

### EMC Immunity

EN 61326:1997/A1:1998/A2:2001/A3:2003

IEC 61000-4-2/3/4/5/6/11

IEC 801-2(1984) Electrostatic Discharge

ANSI/IEEE C37.90.1 Surge Withstand Capability

### SAFETY

EN 61010-1 :2001 (2nd Edition)

### ENVIRONMENTAL

IEC 60068-2-2 Dry Heat

IEC 60068-2-1 Cold

IEC 60068-2-30 Damp Heat

### MECHANICAL

IEC 60068-2-27 Shock

IEC 60068-2-6 Vibration

IEC 60068-2-6 Drop test

ASTM D999.75 Transport Shock Test

*Specifications are subject to change without notice.*



*The M4100 unit is the foundation of the M4000 Diagnostic  
Test System for Condition Assessment of Power Apparatus*



**Doble Engineering Company**

85 Walnut Street

Watertown, MA 02472 USA

tel +1 617 926 4900

fax +1 617 926 0528