M4100 4th Gen

Diagnostic Test System for Power Apparatus Condition Assessment

The M4100 is the world's premier power apparatus and insulation test instrument. Its unique combination of test capabilities and artificial intelligence analysis software makes it the power industry's most trusted Power Factor/Tan-Delta instrument. These instruments are used around the globe thanks to their comprehensive testing options, safety features and measurement accuracy.

What's the 4th Generation?

Doble continually updates and adds features to our equipment based on your testing needs. The latest features of the M4100 4th Generation test set include:

- Rugged Power Unit Module
- High Accuracy Measurement Module
- Doble Universal Controller interoperability
- High Reliability Interface Module
- Expanded DTA6 Software system & FRANK™ Artificial Intelligence Engine
- GFIC Class B and RCBO Compatibility
- Safety firmware and sensing system

M4100 Diagnostic Capabilities

- 12 kV Power Factor/Tan-Delta capacitance testing to assess insulation condition & dielectric loss
- High stress and high accuracy 10 kV TTR with the dobleTTR Capacitor
- Winding Leakage Reactance testing with the M4110 to detect winding deformation or damage
- 10 kV Single-Phase Excitation Current testing to detect degraded turn-to-turn insulation damage and magnetic circuit anomalies

M4100 4ᵗʰ Gen Testing Features

Quick and Safe Testing
Safety is our priority - from safety switches, power strobes and ground earth relay interlocks.
Our software firmware system is now even faster and more precise in sensing abnormal current, temperature and voltage operation before a user would notice.
Testers can use safety switches to manually cut power.
The system conducts a continuous temperature analysis and adjusts set-points based on the changing test environment.
The power conditioning system to also meet the requirements for Class B type GFIC and RCBO systems.

Test with the DUC
The Doble Universal Controller (DUC) is Doble's new industrial test tablet, designed in partnership with Xplore Technologies for the harsh electrical testing environment.
The DUC runs all our instruments and you can configure its apps to your own MS-Windows based software.

Smarter testing with DTA6 & FRANK™
All M4100s come with DTA6 Basic and include FRANK™, the First Response Analytics Knowledgebase, an artificial intelligence engine that not only looks at limits, it thinks about the results.
We've taught it about individual apparatus service advisories millions of data points for comparison. No matter where you are in the world, you have FRANK helping you instantly analyse your test results, providing clear recommendations and explanations.

Measurement Accuracy & Stability
Doble's power factor/tan-delta accuracies are now typically less than 0.005%, which is the best in the industry. We can achieve this under all conditions. Our specifications are also reported under test lead usage, not just instrument terminals.

Key Specifications*

OPERATING TEMPERATURE:	-20° to 50° C / -4° to 122° F
DRY HEAT:	IEC60068-2-2
COLD:	IEC 60068-2-1
SHOCK & VIBRATION:	IEC 60068-2-27, IEC 60068-2-7 & ASTM D999.75
DROP TEST:	IEC 60068-2-6
WEIGHT:	95 lb / 43 kg
DIMENSIONS: (cm)	10.3 H x 20 W x 25.3 D (in) 26 H x 50.8 W x 64.1 D
SOFTWARE:	DTA6 Basic
POWER INPUT:	95-264 VAC, Auto Sensing 47 to 63 Hz Accommodates Inverter and Portable Generators 16 A max at 110 V 10 A max at 220 V Accommodates GFIC/RCBO Class A & B
FIELD VERIFICATION & CALIBRATION:	Integrated Self-Calibration & Verification Module 3 Resistive Standards Amplifier Test Range: 7-All Nominal Test Ranges Coverage: Watts, Amps, PF/Tan-Delta, Internal Source Loss, HV Cable, LV Cable(s)
SAFETY FEATURES:	Open Ground Detection Circuit Abnormal Current Sensing System with continuous temperature compensation Safety Switches: 2-Deadman Safety Strobe
SOURCE OUTPUT:	3 kVA 25 V to 12 kV Output Current o Continuous @ 100 mA at 10 kV o 30 minutes @ 200 mA at 10 kV o 4 minutes @ 300 mA at 10 kV
POWER FACTOR/TAN-DELTA MEASUREMENT:	Range: 0 to ±100.00% Resolution: 0.01% (0.0001) Typical Accuracy: ± 0.005%
CAPACITANCE MEASUREMENT:	Range: 0 to 100 µF Resolution: 0.01 pF
INDUCTANCE MEASUREMENT:	Range: 6H to 10MH Resolution: 0.01 H
WATTS MEASUREMENT:	Range: 0 to 2 kW, actual power Resolution: 0.5 mW
ADDITIONAL ACCESSORIES INCLUDED:	4 Bushing Tap Adapters Integrated Temperature Probe Integrated Humidity Probe

Ordering Information

Part Number	Product
M4K60	M4100 with cables, strobe, T/H Sensor, safety switches(2), DTA6 Basic software, M4151 Field Calibration Module & 65' HV Cable.
M4K100	Includes all of the above with 100' HV Cable instead of 65' HV Cable.
Included Accessories	
02D-0024-02	HV Cable 65' with Hook (included with M4K60)
02D-0024-01	HV Cable 100' with Hook (included with M4K100)
02B-0020-03	Lead, Low Voltage Red 65'
02B-0020-02	Lead, Low Voltage Blue 65'
020-0048-01	1 Set Hot Collars (5 at different lengths)
02B-0026-02	5' Copper Bare Copper Jumper
03B-1137-01	C2 Tap Adapters, ASEA GO Types
02B-0089-01	C2 Tap Adapters, Westinghouse type O "hockey stick"
212-0416	C2 Tap Adapters, Westinghouse type O Plus
02B-0012-01	C2 Tap Adapters, Westinghouse type OS, S
03C-1318-02	Temperature/Humidity Sensor
05B-0493-01	Temperature/Humidity Sensor Cable
2FA-0280-01	Hook M2 Cable 3-inch, M Series
09C-0613-01	Safety Strobe Light
05B-0492-01	Safety Strobe Light Cable
Optional Accessories	
M4300	M4300 Field Transporter for M4100
903-0031	M4100 Transportation Case
903-0034	M4300 Field Transporter Transportation Case
02C-5200-01	MFL (M-Oil) Liquid Insulation Test Cell and carrying case
010-0105-01	M4110 Leakage Reactance Interface (includes cables)
030-1684-01	M4140 CapBank Kit
03D-2010-01	Doble Universal Controller™, Tablet PC Controller
03B-0706-01	doble TTR Capacitor and Carry Case

*Please refer to M4100 Technical Specifications document for complete details.

Specifications are subject to change without notice.

Doble is ISO Certified
Doble is an ESCO Technologies Company

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