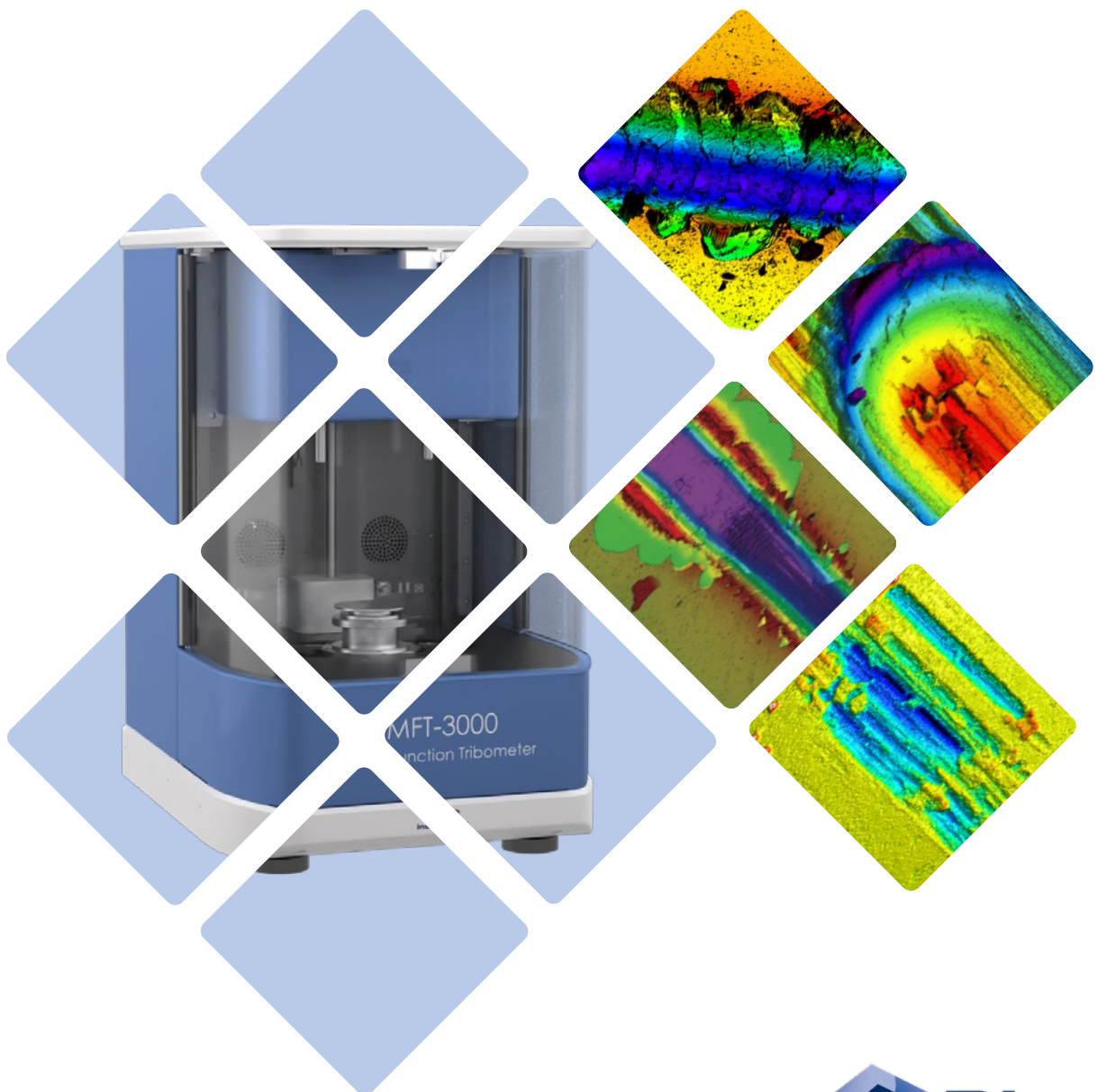


Universal Tribometer

MFT-3000

Tribology and Materials Testing
Dual Range Technology

Multiple ASTM, DIN, ISO Standards Compliant



A Bench Top Like No Other

- Wear
- Friction
- Coefficient of Friction
- Adhesion
- Scratch Hardness
- Scratch, Mar Resistance
- Hardness
- Modulus

Multi ASTM, DIN, ISO Tests On A Single Platform
Run both standard and non standard tests on coupons or real components

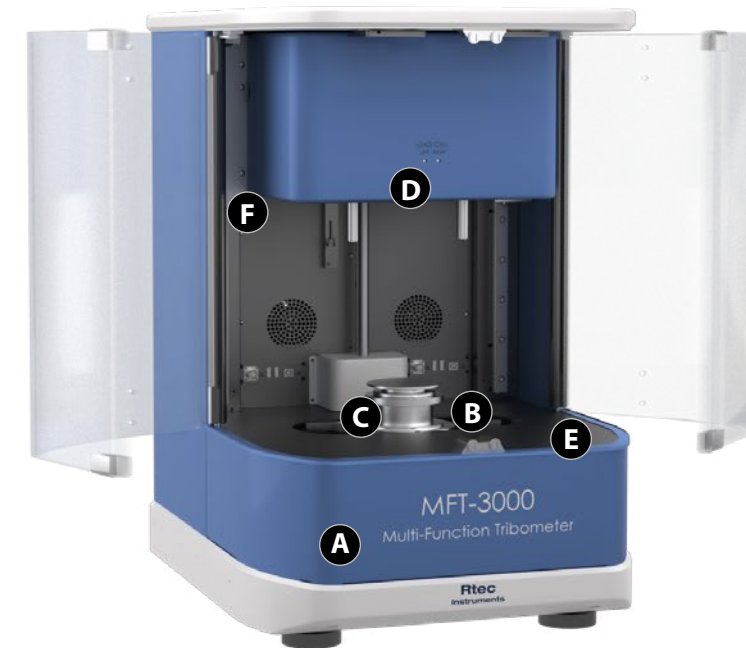
Wide Load Range - Nano, Micro, Macro
Interchangeable load cells to allow a wide range of force ranging from mN to 3000 N

Several Easy To Interchange Test Modules
Test coatings, materials, lubricants across wide test conditions

Two Force Sensors in One Frame
Ease of use, instantly go from nano to macro range

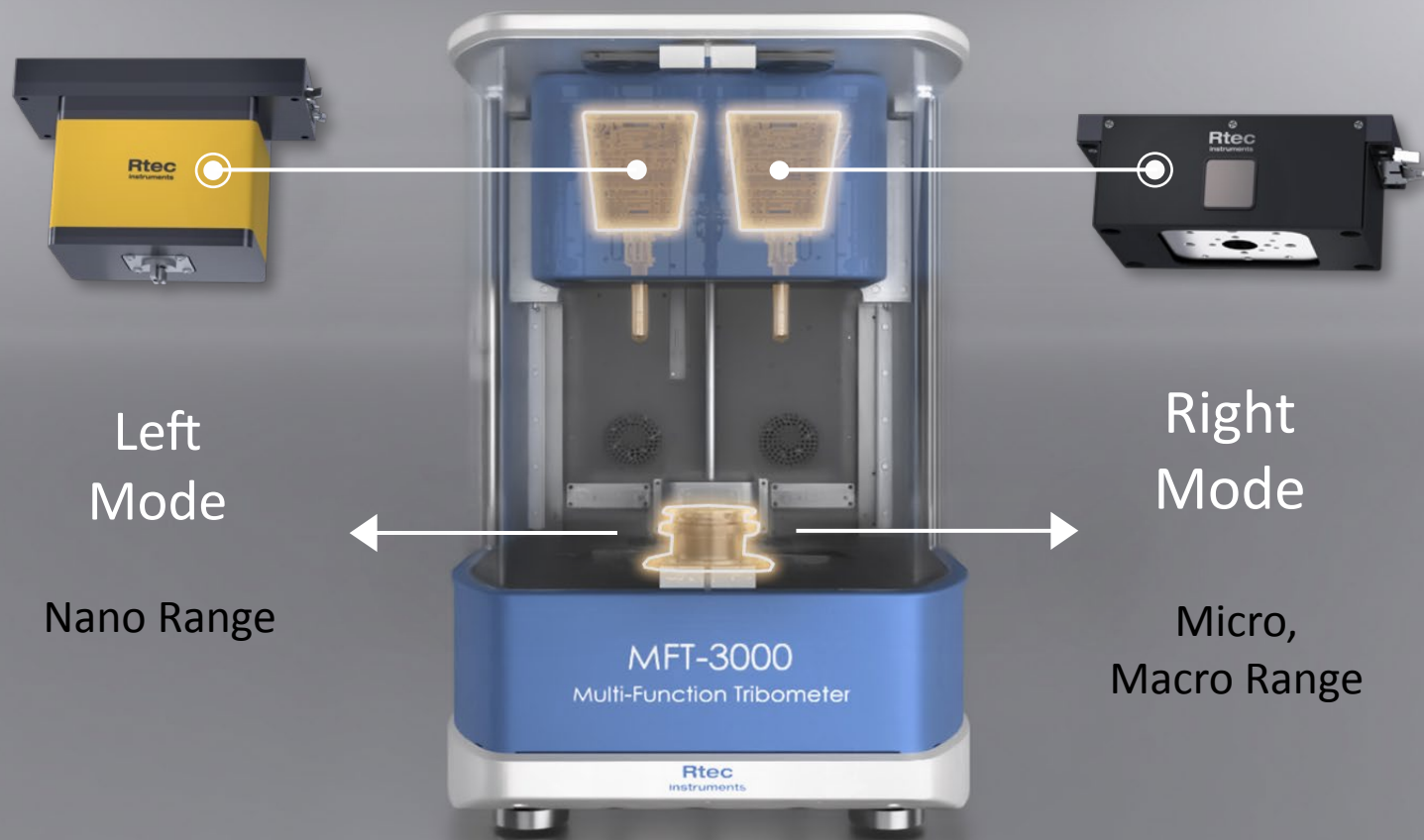
Rigid Design
Unique "I" beam configuration for highest rigidity

Tribometer Configuration



Two Test Ranges On One Setup

Instantaneous Range Change While Maintaining Highest Resolutions



- A Platform** Rigid construction design to conduct mechanical tests on a bench top configuration
- B Environmental Control** Wide temperature (-50°C to 1000°C), humidity (5 to 95% RH), tribocorrosion and many more chambers available
- C Lower Interchangeable Test Modules** Interchangeable fast-exchange test modules: rotary, reciprocating, block on ring, and many more.
- D Dual Force Sensor** Dual simultaneous mounted patented range sensors from mN to 3000 N
- E X Stage** High precision 150 mm X stage to move test modules or samples automatically. Each of the fast exchange lower drives (rotary, reciprocating, block on ring) mounts on top of X stage.
- F Data Acquisition, Motion Controller** Advanced high speed, low noise, multiple channel, high data acquisition rate (200 kHz) controllers

Wide Range Of Sensors With Patented Technology

- Automatic Recognition
- Various In-line sensors
- Highest Resolution
- Wide Choice

Precise mechanical characterization requires the ability to accurately differentiate behaviors between samples. The resolution, repeatability, and the type of data is collected is of prime importance for a comprehensive analysis. The MFT-3000 comes with a wide range of sensors to measure several parameters during the test. The choice of sensors depends on the application and test setup

- Load Cells - Superior accuracy - Negligible drift - Capacitive, strain gauge and piezo technologies
- Acoustic Sensors - Sensors to detect cracks, failures.
- Electrical Contact Resistance - Surface properties with micro ohm resolution.
- One sensor for Normal and Friction force measurement - Complete and accurate measure of both forces,

Force Sensor Technology



Capacitive Sensor



Strain Gauge Sensor



Piezo Sensor

Other Types

Torque Sensors / 1D, 2D, 6D Sensors / In-line Dynamic Torque Sensors

Patent # 1017938GB2

Modular Drives With Fast Exchange

Modular Design For Maximum Versatility

The MFT-3000 runs tests across a wide range applications using its modular concept. Various interchangeable modules can be added on the same platform. The modular nature of this instrument allows it to test coatings, bulk materials, lubricants, real components, and much more.

The test modules can be quickly swapped using fast exchange mechanism. The software automatically recognize the test module and allows the instrument to run the necessary test programs.

Few common examples - it takes 5 minutes to convert the test setup from low temperature rotary wear to high temperature fast reciprocating wear. Similarly, it takes 5 minutes to convert from a friction and wear setup to an indentation and hardness setup. This versatility allows to run several mechanical characterization tests on one platform.

Commonly Used Modules



Rotary Motion Drive



Linear Reciprocating Motion Drive



1000°C Chamber



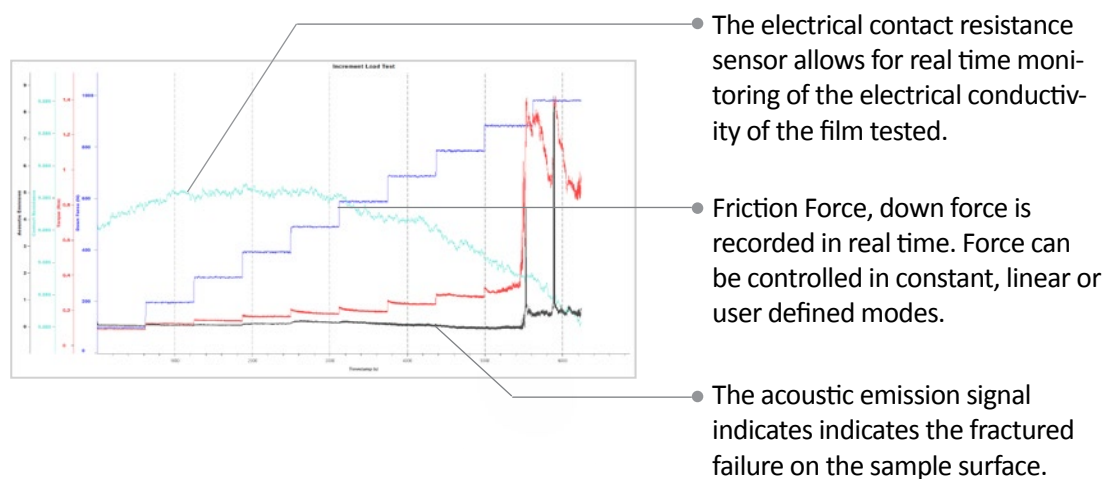
-50°C Chamber

Powerful Software, Controller

Easy And Versatile

The tester comes with a powerful operational and post analysis statistical analysis software. Each test is controlled by an easily user created test method (recipe). The recipe can be recalled for future tests. In addition the MFT-3000 comes with a wide library of preprogrammed tests. The data can be exported to many formats including ASCII format.

The MFT-3000 comes with advanced high speed, low noise, fast feedback, multiple channels, highest data acquisition rate (200 KHz) controllers.



Custom Stop or Logical Choice Criterias

The software provides the user the ability to set up custom stopping conditions or to change the test on the fly using inputs from several in-line sensors. For example, user can set up a stop test condition as - "when friction increase by 30% or when acoustic sensor shows a failure signal, then stop the test". This condition allows the user to do post analysis of the sample the moment failure starts to happen.

Applications

Both Research & Quality Control

The versatility of instrument allows the MFT-3000 to play an important role for several testing applications. It can be used for thin or thick films, lubricants, materials, soft materials, hydrogels, bio materials, smooth or rough surfaces, transparent or opaque surfaces, nano or macro scale, coating or bulk materials, and more.

- Aerospace
- Automotive
- Bio Materials
- Ceramics
- Hard Coatings
- Metal
- Optics
- Pharmaceuticals
- Polymer
- Semiconductors
- Lubricant
- Medical Devices

Platform Specification

- Floor standing- Micro, Macro
- Bench top -Nano, Micro

X Stage

- Range: 150 mm
- Motion resolution: 0.1 μ m
- Maximum speed: 50 mm/s

Z Stage

- Max speed: 10 mm/s
- Motion resolution 0.25 μ m

Computer Console

- Latest Windows OS
- LCD monitor, printer

Facilities Requirement

- Power Requirements: 240 VAC

Environmental Chambers

- 50°C up to 1000°C
- 5 to 95% RH
- Liquid
- Corrosion

Additional Sensors

- Potentiostats
- Acoustic emission
- Electrical resistance
- pH probes

Various Mechanical Heads

- Tribometer
- Indentation
- Scratch

Rotary Drive

- Range 360°
- Standard speed up to 5000 RPM

Block on Ring Drive

- Range 360°
- Standard speed up to 2500 RPM

Fast reciprocating Drive

- Speed up to 80 Hz
- Stroke 0.1 mm to 30 mm

About us

Rtec-Instruments develops and manufactures advanced imaging and surface mechanical property measurement solutions for research and industrial applications. Based in Silicon Valley, we are the leading provider of testing instrumentation, such as tribometer, optical profilometer, 3D scratch tester, and micro/nano hardness tester.

We share a philosophy that embraces collaboration and partnership with customers, leaders in academia and industry, to ensure that our products answer real needs with innovative solutions.



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