

Universal Nano+Micro+Macro Tribometer mod. UMT

The Universal Nano+Micro+Macro Tester platform comes in three main configurations:

UNMT-1 for comprehensive nano and micro mechanical tests of thin films and nano-structured materials with the load range of 10 nN to 10 N

UMT-2 for comprehensive micromechanical tests of coatings and materials with the load range of 1 mN to 200 N

UMT-3 for macromechanical tests of lubricants, metal and ceramic materials with the load range of 0.1 N to 1 kN.

The Universal Tribometer UMT can perform numerous ASTM and ISO standard tests, as well as various custom tests, on thin and thick coatings, bearings and gears, liquid and solid lubricants and greases, MEMS, electric contacts, ceramics, paper etc. It is utilized in chemical, petroleum, microelectronics, semiconductor, automotive, aerospace, machine tools and many other industries for both Research & Development and Quality Assurance testing.



UNMT-1



UMT-3

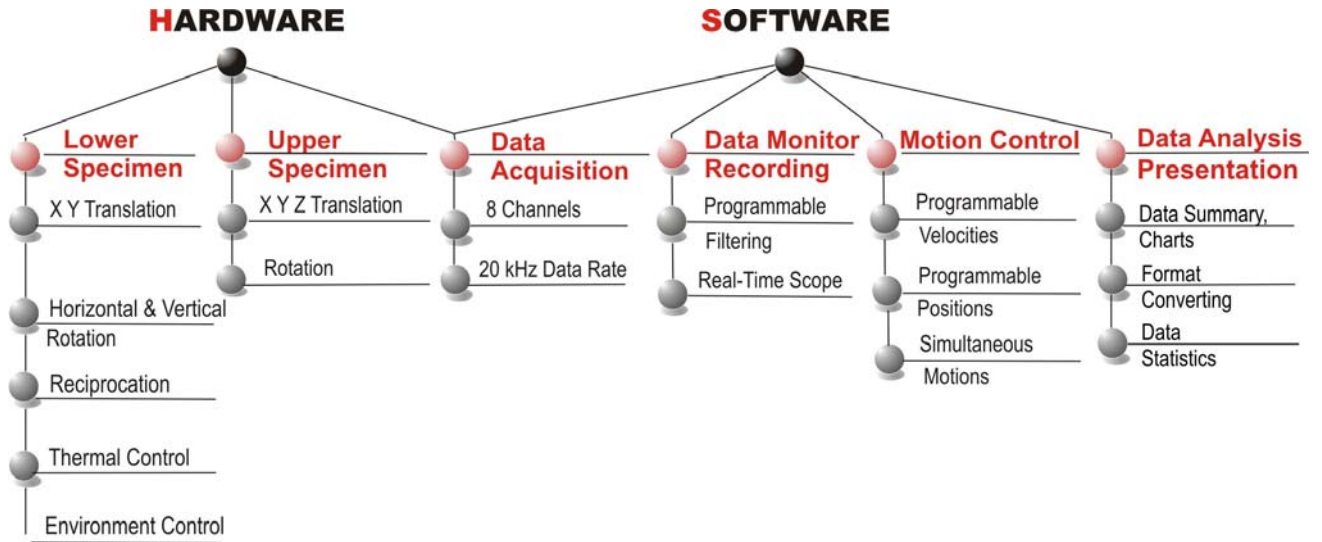
This universal, high precision, fully automated instrument can accommodate both frictional pairs like pin-on-disc, ball-on-disc, 4 balls, ring-on-block, disc-on-disc, etc., and real industrial assemblies like piston ring-cylinder, screw-in-nut, pin-in-chain, sliding and rolling bearings, orthopedic joints, shaft-in-seal, semiconductor wafers, magnetic and optical media, etc. The specimens can be of practically any shape, with dimensions from micrometers to 200 mm. The UMT can provide a combination of rotational and linear motions, including fast oscillations, in all directions, with speeds ranging from 0.1 micron/s (0.001 rpm) up to 25 m/s (6,000 rpm). The servo-controlled loads can be programmed together with speeds and positions.

Numerous test parameters, including forces and torques, wear and deformations, electric resistance and capacitance, acoustic emission and temperature can be simultaneously measured and recorded.

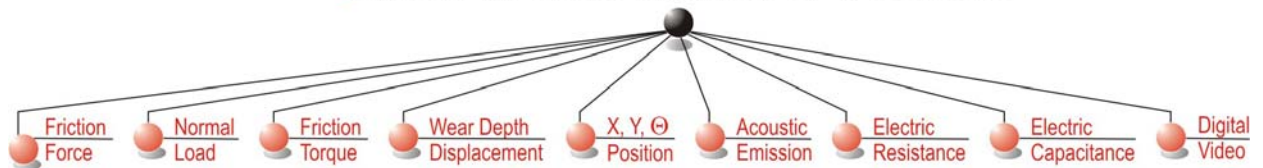
Digital video imaging and atomic force microscopy are optional.

Heating (up to 1,000°C), humidity and vacuum chambers are optional too.

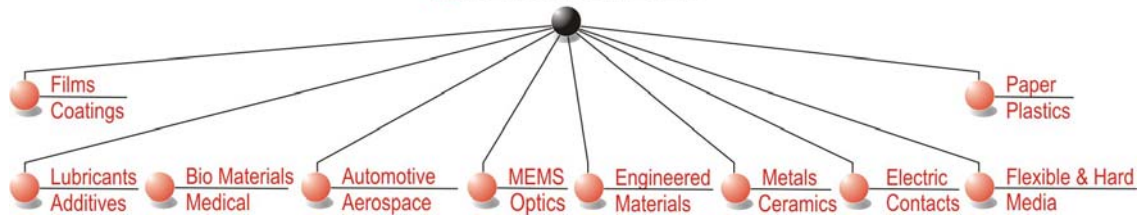
Universal Nano+Micro+Macro Tribometer mod. UMT



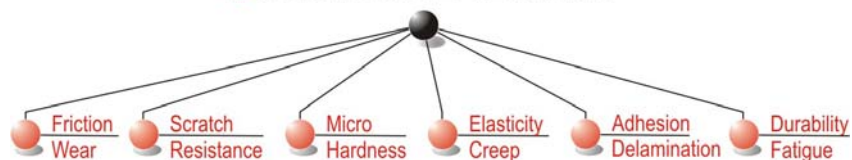
PARAMETERS MEASURED & RECORDED



AREAS APPLIED



FUNCTIONAL TESTING



CETR IS A WORLD LEADER IN TRIBOLOGY TEST INSTRUMENTATION AND SERVICES
 TTZH IS AN AUTHORIZED CETR DISTRIBUTOR IN EUROPE