



PDI MicroAnalyzer Profiling Systems

Product Summary

The MicroAnalyzer 2000 is a total profiling system designed for detailed surface texture analysis.



Being a computer-based system, the MicroAnalyzer 2000 is capable of meeting your current and future surface texture requirements. The system offers the high accuracy of an optical flat reference combined with the most advanced surface texture profiling software available. Our profiling software operates under Microsoft® Windows™, providing a system with great flexibility that is easy to use.

Key Features

System Features















The system offers many unique features which are not available on other instruments:

- **Single stroke operation allows multiple profile evaluation without retracing the part**
- **Compare profiles directly using the comparison window**
- **View multiple profiles on the screen at the same time**
- **Selectable roughness filters - 2RC (ANSI), 2RC Phase-Correct, Gaussian, Rk or No Filter**
- **Select from over 50 roughness, waviness, texture and form parameters**
- **Detailed material ratio curve analysis and tables**
- **Straightness, slope and radius calculations**
- **Export text, graphics, and data into other Windows applications or documents**
- **Zoom, pan and measurement commands permit detailed surface evaluation**
- **Automatic or adjustable graphics appearance**
- **Single stroke inch/metric conversion**

COMPONENTS AND ACCESSORIES

The part fixture allows the part to be positioned precisely below the tracer. The part can be rotated and translated relative to the tracer without being disturbed on the top mounting plate.



PDT TRACER	PSM STEP MASTER
	
STYLUS ASSEMBLIES FOR PDT TRACERS	
 PDS-100  PDS-200  PDS-300  PDS-400  PDS-500  PDS-600	 PDS-10  PDS-20  PDS-30  PDS-40  PDS-50  PDS-60
<p>Stylii above have a .0001" (.0025mm) stylus radius. The PDS-100 stylus assembly will check to within .015" (.38mm) of a shoulder. All other stylus assemblies will check within .040" (1mm) of a shoulder.</p>	<p>Stylii above have a .0002" (.005mm) stylus radius. The PDS-10 stylus assembly will check to within .015" (.38mm) of a shoulder. All other stylus assemblies will check within .040" (1mm) of a shoulder.</p>

MicroAnalyzer 2000 Software

The software for the MicroAnalyzer 2000 includes a number of features for making surface texture measurements accurately, quickly, and with great flexibility.

Instrument set up consists of joystick positioning assisted by interactive on-screen feedback. With the optional motorized column, tracer centering is semi-automatic. Change tracers in the software with a mouse click; there is no need to recalibrate every time you change tracers or stylus tips. Trace speed and data spacing are fully customizable for the right balance of data collection time versus accuracy.

Data analysis is very powerful and includes a fully configurable roughness filter (none, Gaussian, 2RC, phase-correct 2RC, or Rk) with any standard or arbitrary cutoff. The "form" of the part (tilted line or circular crown) is removed automatically by fitting over a user-specified interval. Use the mouse to specify the interval or enter specific constraints to make the specification repeatable in the presence of differences from part to part. If you trace off one or both edges of a part, those edges can be detected fully automatically with all subsequent results restricted to the part itself.

All the profiles in the analysis (unleveled and unfiltered, leveled, waviness, roughness, etc.) can be quickly displayed, either alone or in any combination. Each can be interactively measured by positioning "measuring lines" with the mouse on-screen.

Material ratio curve (bearing area curve) analysis is comprehensive. The instrument operator can control how the curve is displayed, what portion of the roughness goes into the curve, and whether and how outlying peaks and valleys are removed from consideration. Both the ordinary roughness and the Rk-filtered roughness participate in material ratio curve and amplitude distribution function analysis.

A full range of roughness, waviness, and texture parameters is available. The desired parameters may be selectively enabled, simple statistics may be reported for successive measurements, and the naming of parameters may be switched between **ANSI/ASME'85 and ASME'95** standards or ISO standards. Control the interval over which parameters are calculated with simple on-screen mouse movements.

Output information from the program in many ways. Print full or selected results; export profiles or parameters to the Windows clipboard to be pasted into an external document; send repeated measurement (parameter) results to a file for import into an SPC program or spreadsheet; export the raw data in an ASCII format for treatment by any external program.

When **data files** are saved in their ordinary format the entire reading along with all settings for instrument set up and data analysis are saved, ready to measure the same part in the same way at any later time. If desired, files may be password locked so that inexperienced operators may take new measurements but not change the data acquisition and analysis settings.

The software runs under Microsoft® Windows® and includes the usual Windows® software features: mouse and menu-driven control, icons, point-and-click dialogs, and information sharing with other applications.

View multiple measurements in separate sub-windows or bring two measurements into the same window for comparison. Interactively measure the difference between two profiles, or compare two material ratio curves on-screen or in laser printed output.

Advanced Capabilities Package

Purchase the advanced capabilities package will add to the above features: waviness filtering, material probability curve analysis, and power spectral analysis.

Waviness filtering (sometimes called band pass filtering) restricts the waviness to wavelengths above the roughness cutoff but less than a waviness cutoff. Waviness is thus separated from long wavelength form error. By selecting cutoffs appropriately, measure the different aspects of a surface production process by looking at specific horizontal size scales.

Material probability analysis is most useful for "plateaued" or two-process surfaces. Two roughness parameters give the roughness of the plateaus and the roughness of the process that produced the valleys, along with the relative proportion of plateaus and valleys. Parameters are calculated according to emerging international standards.

Power spectral density analysis allows you to look at your surface (roughness, waviness, or both) in the frequency or wavelength domain. Look for machining problems at specific frequencies, or confirm a surface is truly random.

Special Applications

We have a team of engineers who provide a design service for dedicated metrology solutions. This can involve customizing standard PDI instruments to meet your specific requirements or designing unique products.

Precision Devices regularly writes *special software* for specific customer needs. For example, you may wish to measure part crowning or deviation from a desired shape. Or you may need to measure special parameters not already in the large selection of built-in parameters. Or you may have a need to export your data in a specific way for outside analysis or storage

PDI is able to rapidly develop custom additions to the *MicroAnalyzer 2000* software to meet your precise specifications. Or, we can recommend an approach and develop specifications interactively to meet your underlying need.

Specifications

Traverse Length:	64 mm (2.5") and 114 mm (4.5") maximum
Reference:	Optical flat
Leveling:	Semi-automatic software leveling
Stylus Tip:	Diamond with 90° included angle Conical shape with a radius of 2.5 μm (0.0001") (standard), 5 μm (0.0002") and 10 μm (0.0004") (optional)
Transducer:	LVDT with a dynamic range of 0.5 mm (0.020") (standard) or 1 mm (0.040") (optional)
Operation:	Skidless
Filters:	Standard 2RC, Phase-Correct 2RC, Gaussian, Rk Filter or No Filter; User selectable or standard cutoff length
Roughness:	Ra, Rt, Rp, Rv, Rtm (RzDIN), Rpm, Rvm, Rti(1-5), Rz(1-5), tp, Rq, Rsk, Rku, R3zISO, PC, Sm, Rk, Rpk, Rvk, RzISO, Mr1, Mr2, Rpk*, Rvk*, Vo, Rqp, Rqv, Mr2c, λ_a , λ_q , Δ_a , Δ_q
Waviness:	Wa, Wt, Wp, Wv
Texture:	Pt, Pp, Pv
Form:	Straightness, Slope, Radius
Printer/Plotter:	HP LaserJet or equivalent