

About Us

Precision Devices, Inc. is the American dream come true. Two engineers, Tom Preston and Joe Kormos following a plant layoff saw a narrow unattended segment of the quality control market and moved to fill that void by forming Precision Devices Inc. in 1971.

PDI products and services include Surfometers, Profilometers, and Indi-Ron for roundness and the MicroAnalyzer for surface profile. Indi-AC dimensional gaging, Center Line and Tru-Ax ball arbors and chucks, Hydraulic Arbors and Chucks, Sweep Gages utilizing the Ball Arbor and Hydraulic type arbors.

We design and build special gages of all types. PDI has the ability to work to very close tolerances, in the millionths; this plus all the products offered places us in an exclusive field.

PDI responds quickly to our customer needs and work closely with you to design and develop quality control and inspection products to meet your precise requirements. Let PDI be your next stop for gaging. Let us supply our experience and knowledge to supply you with the finest there is in the gaging industry.

PDI has over 32,500 square feet of floor space and five acres of land to provide room for expansion. We are located close to Detroit Metro airport and interstate highway US 23 is adjacent to our facility. We use all major delivery services such as UPS, FedEx and DHL.



Precision Devices, Inc.

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SURFOMETER SERIES 800

830-840 / 860K-870K



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THE 800 SERIES



Always at the forefront of technological development in surface measurement systems, PDI introduces the completely

modular Series 800.

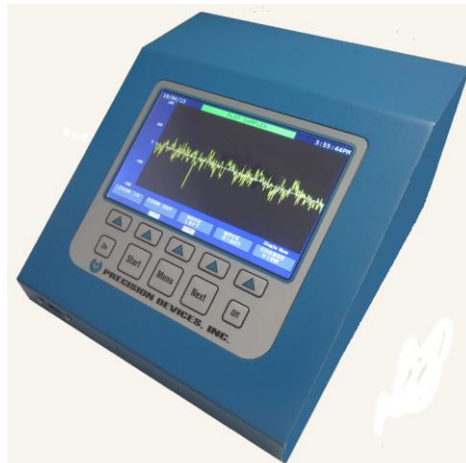
All Series 800 models utilize the same basic hardware, with difference determined by the software installed. Starting with the multiple parameter the units may be upgraded for future needs by sampling adding parameter modules. Simplicity is also inherent in the operation of the instrument, with selected parameter, cutoff and system settings. The display is full color, bright, and has a wide viewing angle, making it easy to read from any position.

THE AMPLIFIER

The Series 800 Amplifier is a sophisticated yet easy to use instrument with a modular surface texture program. All models feature a 7-inch diagonally measured full color display, a remote start switch port and lockout software.

Operation is at once simple, sophisticated and secure. The instrument is configured by an easy-to-read set-up menu. The user selects the proper settings for the cutoff, stroke length, Gaussian or the optional Rk Filter, and parameter functions. Set the exact stroke length required or use the standard 5-cutoffs.

Once configured, the system operates by pressing the Start Button or through use of an optional remote start switch.



Rt, Rti, Rz, Rz(DIN), Rmax

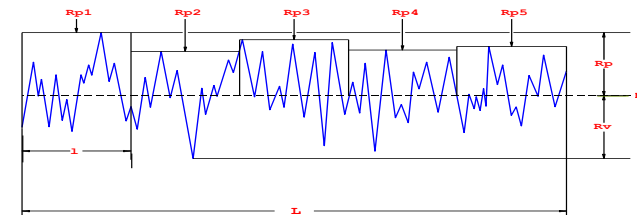
Maximum Height of the Profile, R_t , the vertical distance between the highest and lowest points of the profile within the evaluation length.

Maximum Heights within a Sampling Length, R_{ti} , the vertical distance between the highest and lowest points of the profile within a sampling length.

Average Maximum Height of the Profile, R_z , is the average of the successive values of R_{ti} calculated over the evaluation length. This parameter is the same as $R_z(DIN)$ when there are five sampling lengths within the evaluation length.

Maximum Roughness Depth, R_{max} , is the largest of the successive values of R_{ti} calculated over the evaluation length

Rp, Rpm, Rv

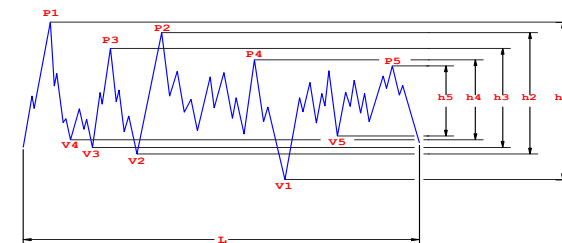


Maximum Profile Peak Height, R_p , the distance between the highest point of the profile and the mean line within the evaluation length.

Average Maximum Profile Peak Height, R_{pm} , is the average of the successive values of R_p calculated over the evaluation length.

Maximum Profile Valley Depth, R_v , is the distance between the deepest valley of the profile and the mean line within the evaluation length.

Rz(ISO)



Ten Point Height of Irregularities, $R_z(ISO)$, is the average value of the absolute values of the heights of five highest profile peaks and the depths of five deepest valleys within the evaluation length.

For additional roughness parameters terminology, please visit our website at www.predev.com.

Surface Roughness Terminology & Parameters

Sampling Length, l , is the nominal wavelength used for separating roughness and waviness. Also known as Cutoff Length or Cutoff.

Evaluation Length, L , is the length over which the values of surface parameters are evaluated. It is recommended that the evaluation length consist of five sampling lengths although it may comprise any number of sampling lengths. Also known as Assessment Length.

Mean Line, M , is the reference line about which the profile deviations are measured. The mean line of the roughness profile is usually established by analog or digital filters with the selected cutoff corresponding to the roughness sampling length.

Profile Peak is the point of maximum height on a portion of a profile that lies above the mean line and between two intersections of the profile with the mean line

Profile Valley is the point of maximum depth on a portion of a profile that lies below the mean line and between two intersections of the profile with the mean line.

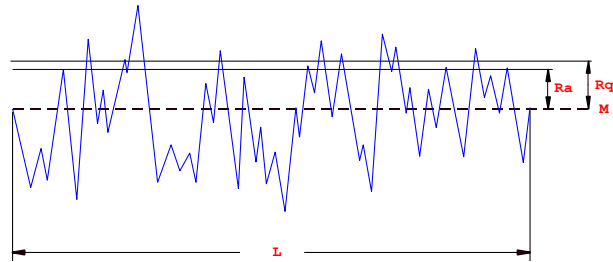
Profile Irregularity is a profile peak and the adjacent profile valley

Maximum Profile Peak Height, R_p , the distance between the highest point of the profile and the mean line within the evaluation length.

Average Maximum Profile Peak Height, R_{pm} , is the average of the successive values of R_p calculated over the evaluation length.

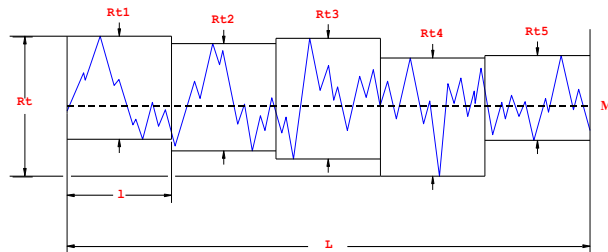
Maximum Profile Valley Depth, R_v , is the distance between the deepest valley of the profile and the mean line within the evaluation length.

Ra, Rq



Roughness Average, R_a , is the arithmetic average of the absolute values of the profile heights over the evaluation length.

RMS Roughness, R_q , is the root mean square average of the profile heights over the evaluation length.



Series 800 Models Skid and Skidless Models

PARAMETERS

MODEL 830/840
Multiple Parameters

Ra, Rq, Rt, Rmax, Rz, Rz (DIN & ISO)
R3z, Rpm, Rp, Rv, Pc & tp

MODEL 860K/870K
Multiple Plus Rk Filter
and Parameters

All the above plus, Htp, Hsc, Sm, Rku,
Rk, Rvk, Rpk, Mr1, Mr2, Rpk*, Rvk*, Vo,
Rsk, Δa , Δq , λa & λq parameters

Piloters/Motor Drives



The 830 Skid-Referenced Piloter Systems are designed to measure normal I.D., O.D., and flat surfaces. The skid-referenced motor drive (piloter) contains a motor which moves the linkarm with the tracer across the surface to be evaluated. The tracers have skid-pad(s) which establish a reference line. The transducer translates the vertical motion of the diamond tip stylus in relation to the reference line. The piloter traverses at a speed of 0.100 in/sec (2.54 mm/sec) for the assigned travel length and can be set to acquire data in any direction. Our patented Lite-Touch Linkarm protects the tracer and surface from inadvertent damage and comes standard with each system, unless otherwise specified.



The 840 Skidless Piloter Systems has an internal reference in the drive unit. Skidless instruments of the 800 series are designed to evaluate small difficult-to-reach areas that are not accessible by skid-type tracers. The motor drive is mounted on a granite base to minimize vibrations and to provide a level, stable surface for locating the workpiece. Stroke length is adjustable for the surface being measured. The drive may also be programmed to acquire data in either direction.



The rotary piloter is designed to measure inside and outside diameters of parts such as balls, ball studs, and extruded tubing. The part is rotated across a stationary tracer, through an arc perpendicular to the lay. The drive, with proper tooling will trace parts with a range from 6.35 mm to 63.5 mm (0.250 in to 2.500 in) inner or outer diameter. The amplifier will automatically adjust the speed of the rotary piloter, based upon the diameter of the measurement area, to attain a constant speed of 0.1 in/sec (2.54 mm/sec). The piloter is able to take readings in clockwise or counterclockwise directions. It is easy to use, and can be changed from on part to another in seconds.

Specifications & Features

AMPLIFIER

Filters	Digital Spline Gaussian: Optional DIN 4776 (Rk)
Cutoff Values	0.08 mm (0.003 in) 0.25 mm (0.010 in) 0.8 mm (0.030 in) 2.5 mm (0.100 in)
Pc Threshold Values	Adjustable from 0 um to 12.7 um (0 µin to 500 µin)
Wavelength Sensitivity	Cutoff to 2.5 µin (100 µin)
Dynamic Range	150 µm (6000 µin)
Display	Full color 800 x 480 pixel TFT unit
Keypad	Sealed membrane
Serial Port	USB
Lockout Feature	Standard; software locks amplifier so settings cannot be changed
Remote Start	Standard; allows for optional external START switch
Connector	
Power Supply	Input: 120 +/- VAC, 60hz Output: 12VDC, 1.2A Other options available
Temperature Range	Operation: 10° to 32°Celsius (50° to 90°Fahrenheit)
Relative humidity	10% to 90% non-condensing
Physical Dimensions	254 mm L x 228 mm W x 12 mm H (10 in L x 9 in W x 5 in H)
Weight	3.2 kg (7 lbs 0 oz)

PILOTERS/MOTOR DRIVES

LINEAR

Stroke Length	Adjustable from 0.8 mm to 30.48 mm (0.03 to 1.200 in)
Piloter Speed	2.54 mm/sec (0.100 in/sec)
Set Start Point	Set the exact START of the piloter to a selected position
Dimensions & Weight	Skid-referenced: 235 mm L x 82.5 mm W x 95.3 mm H (8 in L x 3¼in W x 4¾in H) Skidless: 235 mm L x 146 mm W x 121 mm H (9 ¼ in L x 5 ¼in W x 5 in H)

ROTARY

Diameter Range	Standard: 6.35 mm to 63.5 mm (0.250 to 2.500 in)
Piloter Speed	Automatically set by entering part diameter into amplifier
Set Start Point	Set the exact START point of the piloter to a selected position
Dimensions & Weight	Based upon part configuration

TRACER

Detection Method	Moving Coil
Stylus Material	Diamond
Stylus Tip Radius	Standard 10 µin (0.0004 in) Optional 5 µin (0.0002 in) and 2.5 µin (0.0001 in)
Stylus Force	0.016 N (1.6 gf) or less

PRECISION REFERENCE STANDARD

3-Patch Master	Consist of Calibration, Linearity and Diamond Stylus Condition Patches traceable to N.I.S.T.
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