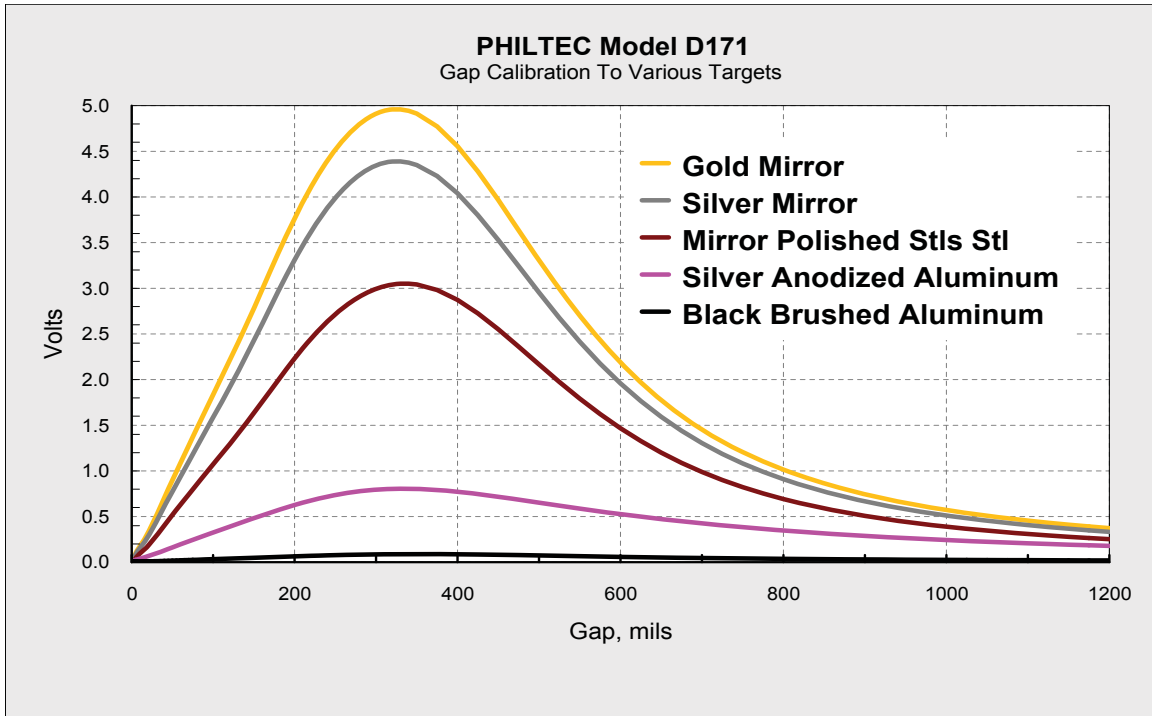


Reflectance Dependent (D) Sensors

With **REFLECTANCE DEPENDENT** fiberoptic sensors, the output is proportional to the distance between the sensor tip and target surface **AS WELL AS** the reflectivity of the target.



TARGET	% REFLECTANCE
Gold Mirror	100
Mirror Polished Aluminum	85 - 90
Mirror Polished Stls Steel	60 - 70
Brushed Aluminum	40 - 50
Copper Clad PC Board	45
Matte Finish Aluminum	30 - 35
Anodized Aluminum	20 - 25
Silver Paint, Glossy	15 - 20
Inkjet Paper, Bright White	8
Fiberglass, Glossy	7
Black Plastic, Glossy	6
Black Matte Finish	3
Flat Black Rubber	1

REFLECTANCE DEPENDENCE

The effect of changing target reflectance is to shift the output voltage higher or lower. With Philtec's D model sensors, a gain adjustment is provided to scale (calibrate) the sensor to the present target surface. This is accomplished by setting the peak voltage level to full scale: 5.0 volts. The factory supplied calibration can then be applied to perform precision linear displacement measurements on most materials.

The reflectivity of some common materials are shown in the table.

APPLICATIONS FOR D TYPE SENSORS

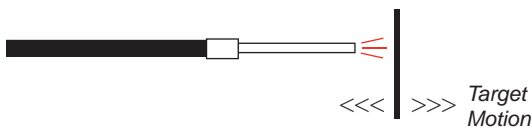
Actuator Stroke
Bearing Vibration
Diaphragm Deflection
Displacement In Fluids
Impact & Shock Studies

Parts Positioning
Piezoelectric Crystal Vibration
Piston Registration (TDC)
Piston Stroke
Read/Write Head Tracking

Scratch Detection
Servo-Control
Solenoid Travel
Structural Deformation
Surface Finish Evaluation

Tachometry
Turbine Blade Vibration
Ultrasonic Vibration
Vacuum Process Control
Valve Dynamics & Stroke

Recommended for applications where the target moves parallel to the axis of the sensor...



Single Axis Motion

Applications for Philtec's D models are usually limited to targets having a reciprocating or vibratory motion parallel to the axis of the sensor. With that single-axis motion, the target reflectivity remains constant, and accurate distance measurements can be made.

Speed Sensing Applications (Tachometry)

Standard Machinery

Reflectance Dependent sensors can also be used to measure rotor speeds, turbine blade rate and turbine blade flutter. They generate a fast rising pulse in response to one of two conditions: a) a sharp change in reflectance (i.e., black to shiny) or b) the passage of the edge of a part such as a narrow turbine blade.

Micro-Turbomachinery

MEMS Researchers (micro-electromechanical systems) in leading universities use Philtec sensors in their experiments. The smallest model, the D6, has been popular in this field. These sensors have been provided with bandwidths of 1 MHz and higher.

