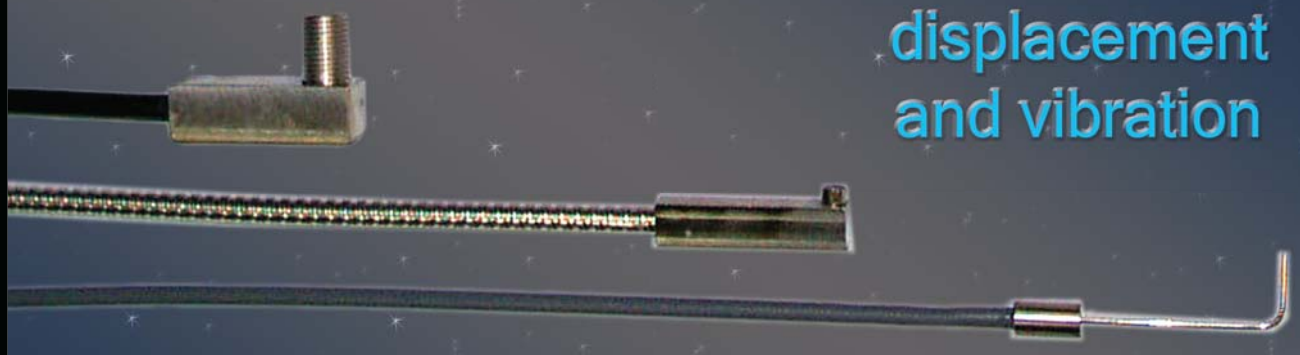
Product Guide
2007

PHILTEC

Fiberoptic Sensors

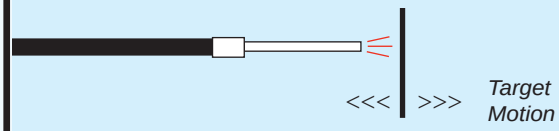
for distance
displacement
and vibration



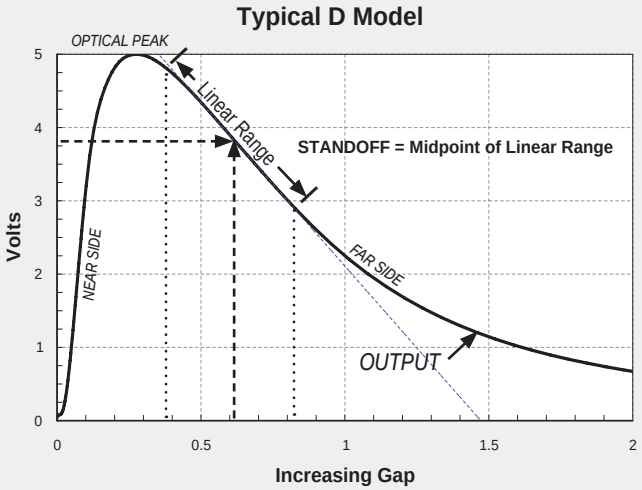
D Sensors

"REFLECTANCE DEPENDENT"

Recommended for applications where the target moves along the axis of the sensor...



D sensors provide an output that is proportional to distance as well as the reflectance level of the target. The output function is double-valued: Near Side operation gives highest resolution; Far Side operation gives moderate sensitivity with larger operating range.



MODEL

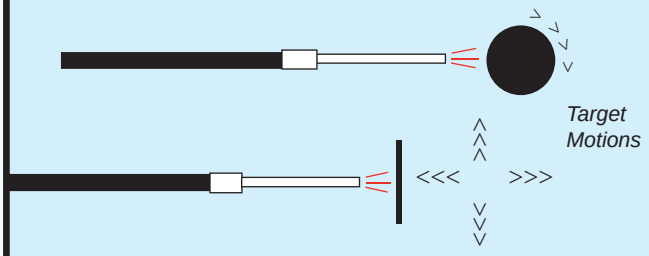
Feature	Unit	D6	D12	D20	D21	D63	D64	D100	D125	D169	D170	D171
Tip Diameter	mm	0.81	0.81	0.81	0.81	3.18	3.18	3.18	3.96	4.76	4.76	4.76
Fiber Diameter	mm	0.15	0.3	0.51	0.53	1.6	1.63	2.54	3.18	4.32	4.32	4.32
Range	mm mils	1 40	2 80	1.3 50	2 80	3 125	6 250	10 400	15 600	20 800	30 1200	50 2000
Optical Pk.	mm	0.23	0.23	0.13	0.28	0.15	0.3	0.43	0.48	0.56	1	9.6
NEAR SIDE												
Standoff	mm	.05	.08	.03	.08	.03	.08	.08	.08	.08	.1	2.0
Linear Range	mm	.04	.05	.02	.03	.02	.04	.04	.05	.06	.06	1.9
Sensitivity	mv/µm	47	40	80	40	90	50	43	40	40	25	0.9
Resolution 100 Hz	µm	.06	.005	.007	.012	.004	.013	.005	.006	.008	.015	0.3
Resolution 20 KHz	µm	.33	.05	.025	.05	.008	.05	.032	.02	.04	.04	0.9
Resolution 200 KHz	µm	1.2	.1	.05	.1	.015	.1	.15	.04	.1	.1	2.5
FAR SIDE												
Standoff	mm	.43	.53	.3	.7	.66	1.1	2.0	2.1	2.5	4.8	15
Linear Range	mm	.23	.48	.25	.4	.76	1.4	2.5	2.9	3.5	6.4	6.1
Sensitivity	mv/µm	5	3	8	3	2.8	1.6	0.8	0.6	0.5	0.3	0.3
Resolution 100 Hz	µm	0.1	.04	.06	.15	.12	.5	.75	.25	.43	1.2	1.7
Resolution 20 KHz	µm	1.3	.4	.25	0.6	.3	1.0	1.5	1.1	1.5	2.5	3
Resolution 200 KHz	µm	4	1.2	.5	1.3	0.55	2.0	3.0	1.5	3.8	6.4	10

APPLICATIONS FOR D SENSORS

- Actuator Stroke
- Bearing Vibration
- Diaphragm Deflection
- Displacement In Fluids
- Fuel Injector Dynamics
- Impact & Shock Studies
- Parts Positioning
- Piezoelectric Crystal Vibration
- Piston Registration (TDC)
- Piston Stroke
- Scratch Detection
- Servo-Control
- Solenoid Travel
- Speed Sensing
- Structural Deformation
- Surface Finish Evaluation
- Turbine Blade Vibration
- Ultrasonic Vibration
- Vacuum Process Control
- Valve Dynamics & Stroke

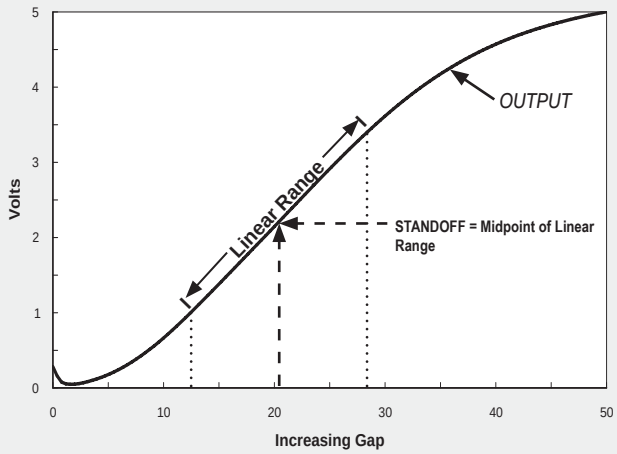
RC Sensors
"REFLECTANCE COMPENSATED"

Recommended for applications where the target rotates or moves past the sensor...



RC sensors provide an output signal that is proportional to distance but independent of the reflectance level of the target. The output function is single-valued.

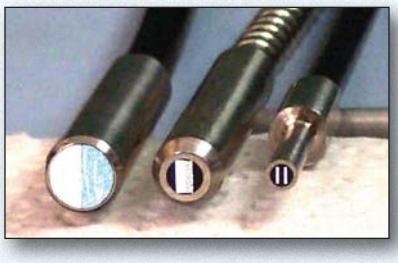
Typical RC Model



MODEL

Feature	Unit	RC12	RC20	RC25	RC60	RC62	RC63	RC90	RC100	RC140	RC171	RC190
Tip Diameter	mm	3.18	0.81	7.14	1.83	7.14	7.14	7.93	3.18	7.93	4.75	7.93
Fiberoptic Area	mm	0.31 x 1.57	Ø 0.51	0.64 x 3.18	Ø 1.52	1.58 x 3.18	1.58 x 3.18	2.29 x 4.75	Ø 2.54	3.73 x 4.75	Ø 4.34	4.83 x 4.75
Range	mm mils	0.5 20	1.3 50	0.76 30	3.2 125	2 80	4 160	9 350	5 200	10 400	12.7 500	21 825
Standoff	mm	0.3	.51	0.3	1.5	1	1.4	3.8	2.2	7.5	5.6	12.4
Linear Range	mm	.09	0.4	0.2	1	.64	1.6	2.3	1.8	1.7	4.0	3.3
Sensitivity	mv/µm	21	6	10	2.2	3	1.6	0.8	1.3	6	0.6	0.55
Resolution 100 Hz	µm	.08	.25	.08	0.6	0.25	0.5	1	0.75	0.9	2.5	2.5
Resolution 20 KHz	µm	0.3	1	.3	1.8	1	2	4	3	3.6	7.5	7.5
Resolution 200 KHz	µm	1	2	1	3.6	2	4	8	6	7.1	15	15

OPERATING PRINCIPLE. Light is transmitted to the target thru one side of a pair of fiberoptic bundles. Light reflected off the target is captured in two separate fiber bundles which follow independent paths back to the sensor. A ratiometric calculation provides the distance measurement which is independent of target reflectivity variations; i.e., **reflectance compensated.**

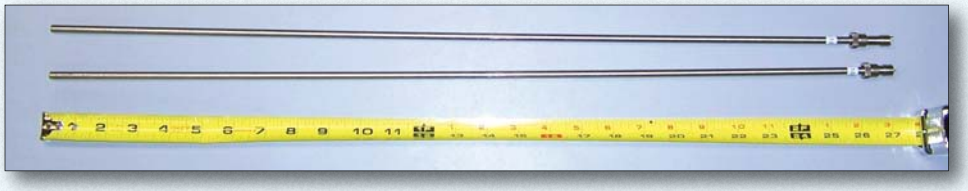


APPLICATIONS FOR RC SENSORS

- Automated Parts Inspection
- Bearing/Rotor Dynamics
- Commutator Profile
- Computer Disc Assembly
- Deformation Studies
- Distance To Glass
- Distance To Paper
- Distance To Plastic
- Dynamic Expansion
- Hard Disc Thickness
- Process Control
- Rotor Runout
- Shaft Orbits
- Structural Deformation
- Surface Finish Evaluation
- Turbine Blade Growth & Flutter
- Ultrasonic Vibration
- Ultra-High Vacuum
- Vibration Studies
- Warpage

We Customize To Your Specifications

Long Straight Tips



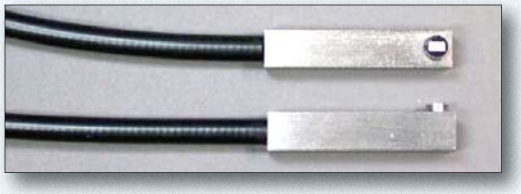
Tiny Straight Tips

Straight Tips, Threaded

Straight Tips, non-metallic

Right Angle Tips, SS Tubing

Right Angle Tip, Square Body

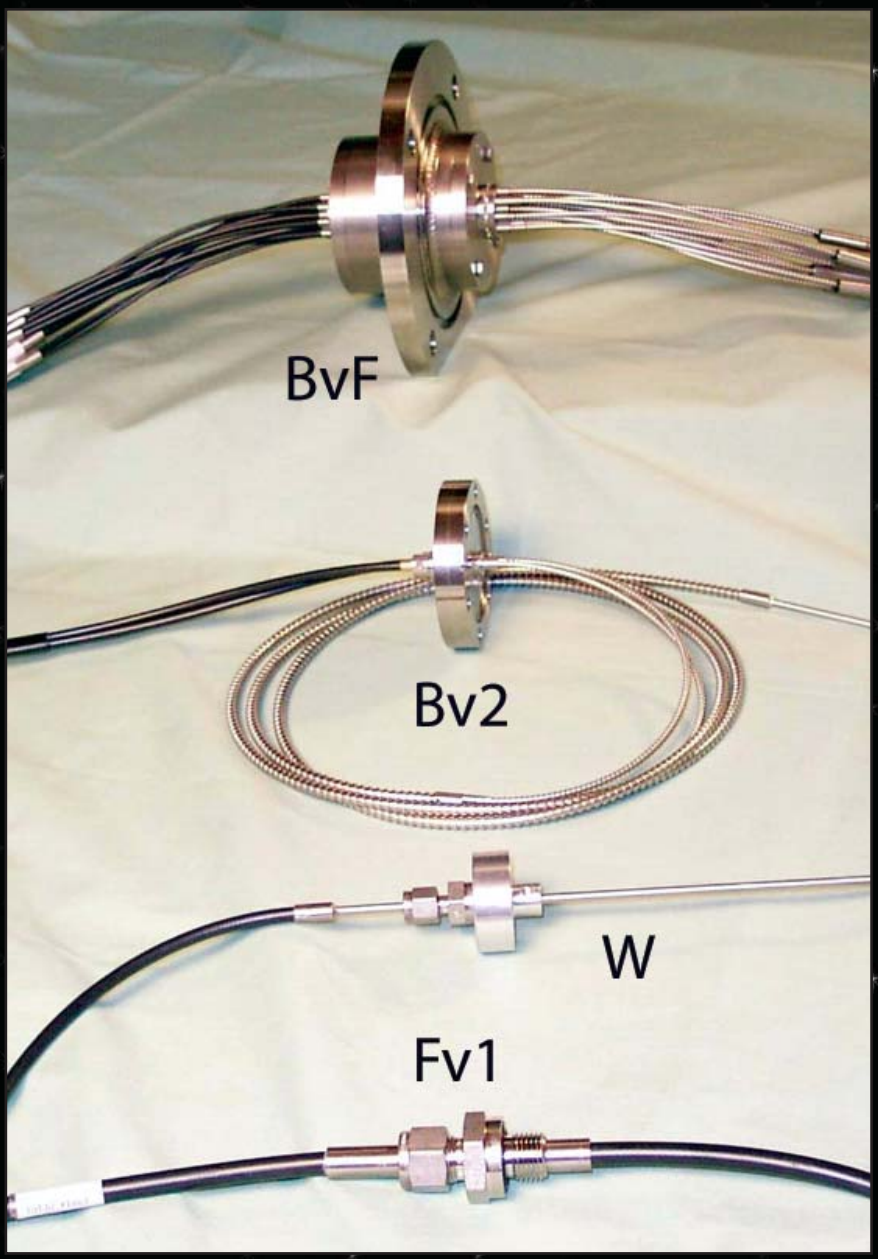


Right Angle Tips, Square Body with Threaded Tip

Built To Customer Specs

Position Control In Vacuum

Philtec's Fiberoptic Displacement Sensors are ideal for wafer stage control, displacement and position measurements in vacuum. They have a wide temperature range, are vacuum compatible, small in size and have sub-micron resolution. "*They are the low cost alternative to laser interferometry*".



Multi-channel Passthru 10 E-7 Torr

Single Channel UHV Passthru 10 E-11 Torr

Window Probe Tip Only In Vacuum 10 E-7 Torr

Low Vacuum Passthru 10 E-3 Torr

Measurements In Vacuum Our Specialty

Electronics for ***Analog or Digital Output***

Analog

sensors are fast responding units ideal for relative motion measurements in dynamic applications. Available in D and RC type single channel packages.

- DC - 20 KHz bandwidth is standard
- DC - 200 KHz or higher is optional
- DC - 100 Hz provides best resolution

See web site for many available Options.

D
Reflectance Dependent

R C
Reflectance Compensated

Digital

Displacement Measurement Systems **(**DMS**)** are the best choice for absolute distance measurements, multiplexing and process control applications, with data rates up to 5 KHz. Linearized RS232 output. Calibration data stored on-board. D and RC models available.

Standard DMS can be provided as single or dual channel sensors. They include:

- Electronics with RS-232 communication
- Keypad/LCD for local operation

Mini-DMS units are single channel sensors full-featured for PC operation only.

mini-DMS

DMS

- *Philtec DMS Control Software included with every DMS sensor. See web site for tutorial.*

10DMS Modular Multi-Channel Rack Accepts Any Combination of Up To 10 Philtec DMS Type Sensors

10 Channel DMS **Rack**

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