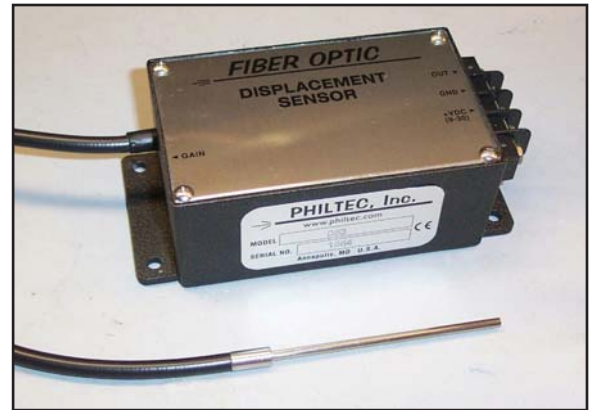


Fiberoptic Sensor - Reflectance Dependent*

Model D64

Fiberoptic Cable & Sensor Tip - Actual Size

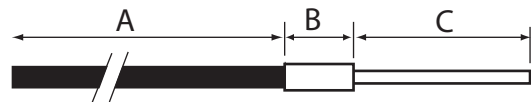


For The Measurement of Distance, Displacement and Vibration

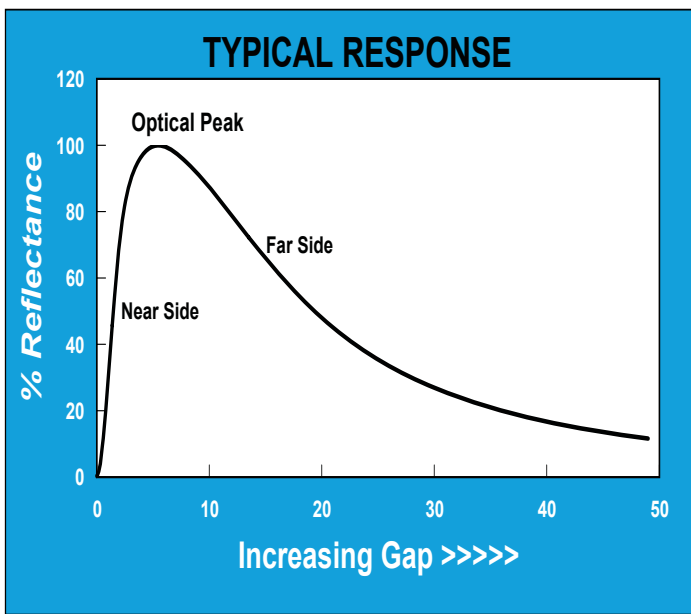
Features

- Reflectance Dependent Output with Dual Functions Far Side/Near Side
- \varnothing 1.6 mm Target Spot Size (0.064 inch)
- 6 mm Total Operating Range (0.240 inch)
- 1.6 mv/ μ m Far Side Sensitivity (40 mv/mil)
- 50 mv/ μ m Near Side Sensitivity (1300 mv/mil)

Tip & Cable Dimensions



| FEATURE | mm | inch |
|-------------------------------------|------|-------|
| Tip Outer Diameter, \varnothing C | 3.18 | 0.125 |
| Fiberoptic Diameter | 1.6 | 0.064 |
| Tip Length, C | 76.2 | 3 |
| Collar Length, B | 12.7 | 0.5 |
| Collar Diameter, \varnothing B | 6.35 | 0.25 |
| Cable Length, A | 914 | 36 |
| Cable Diameter, \varnothing A | 5.7 | 0.225 |
| Cable Min. Bend Radius | 19 | 0.75 |



*These are reflective type transducers based upon detecting the intensity of reflected light. With D Model sensors, the output signal is proportional to: a) the gap distance from the sensor tip-to-target; and, b) the reflectivity of the target surface. D models are commonly used in applications where the target reflectivity stays constant, i.e., the target has a reciprocating or vibratory motion parallel to the axis of the sensor.

PHILTEC

www.philtec.com

Precision Dynamic Measurements



Two Instrument Outputs To Choose From

This sensor can be provided as an analog or as a digital instrument. For available options and how to order go to www.philtec.com

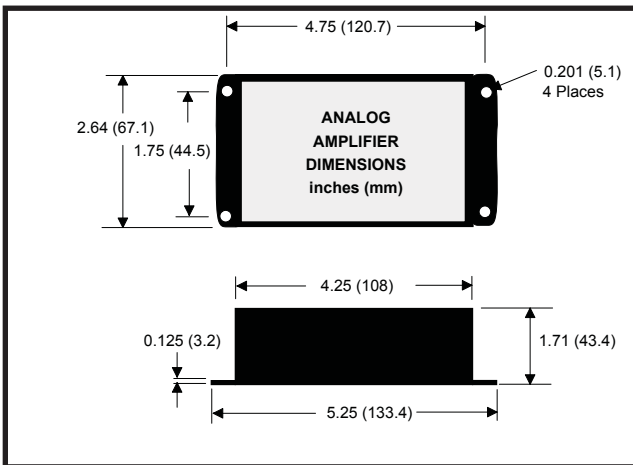


Analog sensors are fast responding units ideal for relative motion measurements in dynamic applications:

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

Standard analog units include:

- Electronics with 0 to +5 VDC output
- 3 foot long fiberoptic cable



ANALOG OUTPUT

Calibration charts are provided with each sensor tip giving the near and far side voltage output responses to distance. There are three ways to derive accurate distance measurements:

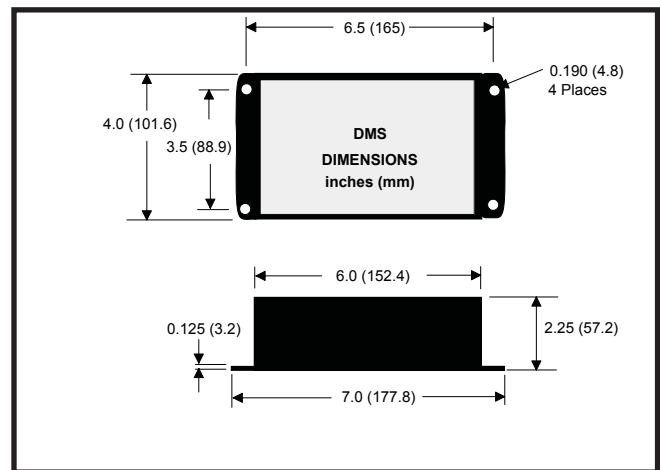
- within the bounds of the linear range, multiply sensitivity by the change in voltage output
- create a lookup table using the XY calibration data points
- use a polynomial curve fit to accurately map the sensor's output function

The effect of changing target reflectance is to shift the voltage output higher or lower. A gain control is provided for calibration of the sensor output to various target surfaces. In-situ calibration is performed simply, by adjusting the sensor's tip-to-target gap until the peak output is attained, and then by using the gain control to set the peak voltage reading to full scale. This allows the sensor to be used to perform precision linear motion measurements on most materials.

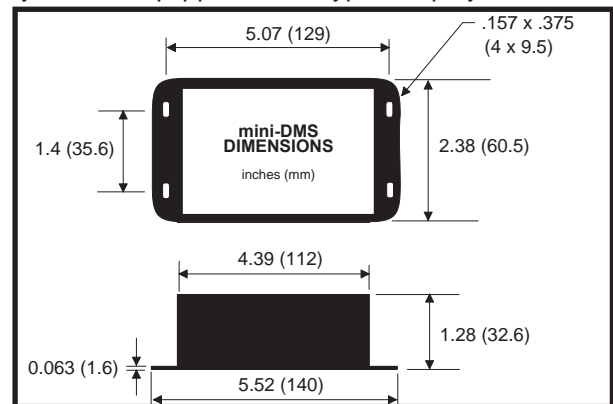
Displacement Measurement Systems (DMS) are the best choice for absolute distance measurements, multiplexing and process control applications, with data rates up to 5,000 readings/second. Two sizes are available:

Standard DMS units include:

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

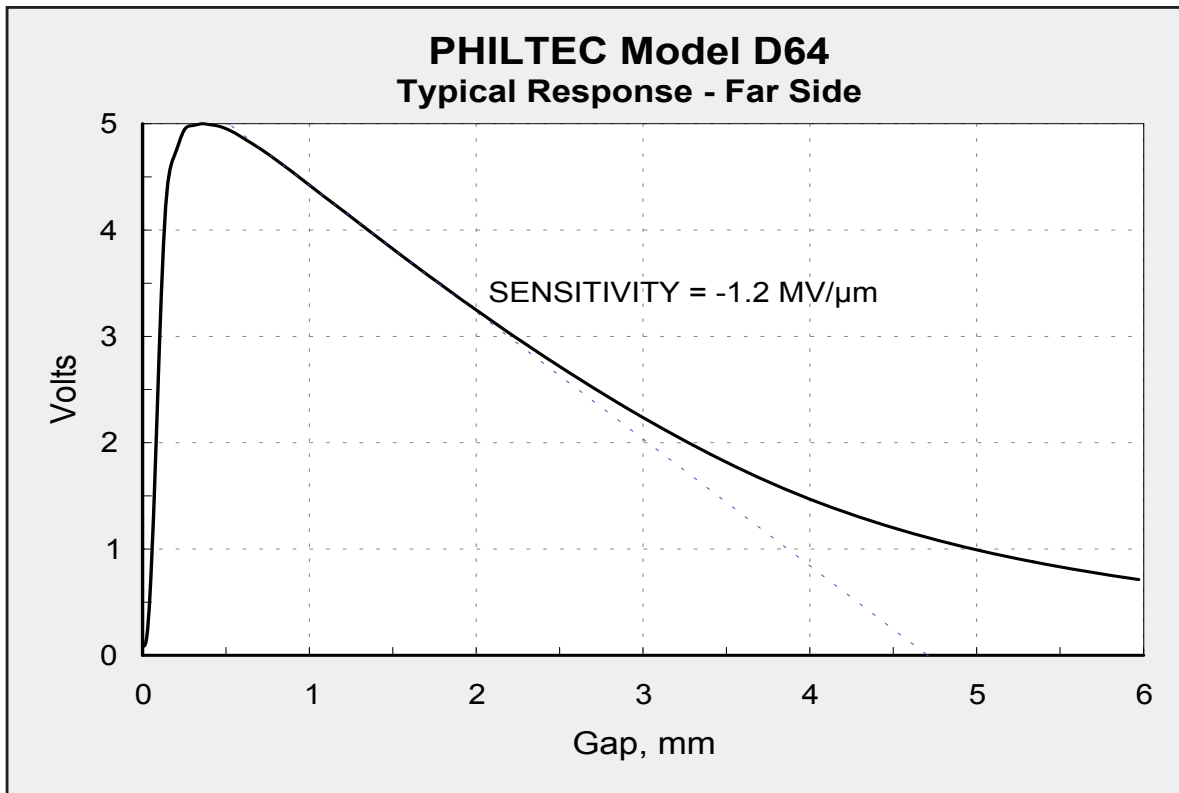


Mini-DMS units are full-featured for PC operation only, they are not equipped with keypad/display.



DIGITAL OUTPUT

DMS units provide distance output via RS232. Gap calibration data is stored on board DMS units. They provide accurate distance measurements over the sensor's entire operating range using a 24 bit internal lookup table. They have storage capacity for many additional calibrations.

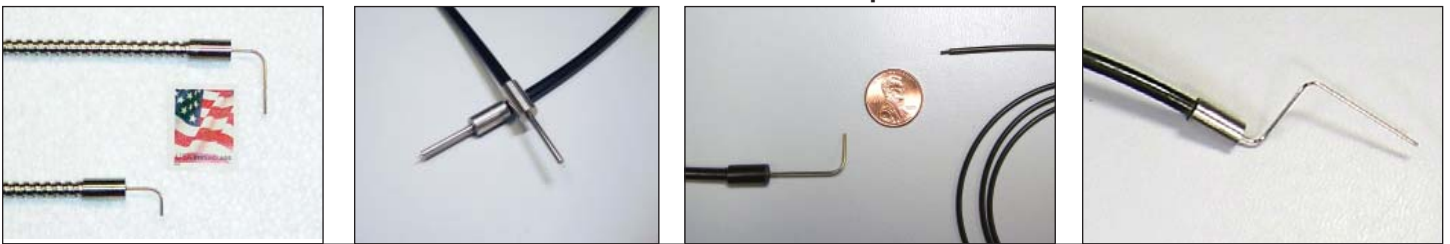


Conversions: 1 micron = 39.37 microinch 1 mm = 39.37 mils 1 mil = 0.001 inch = 25.4 microns = 0.0254 mm

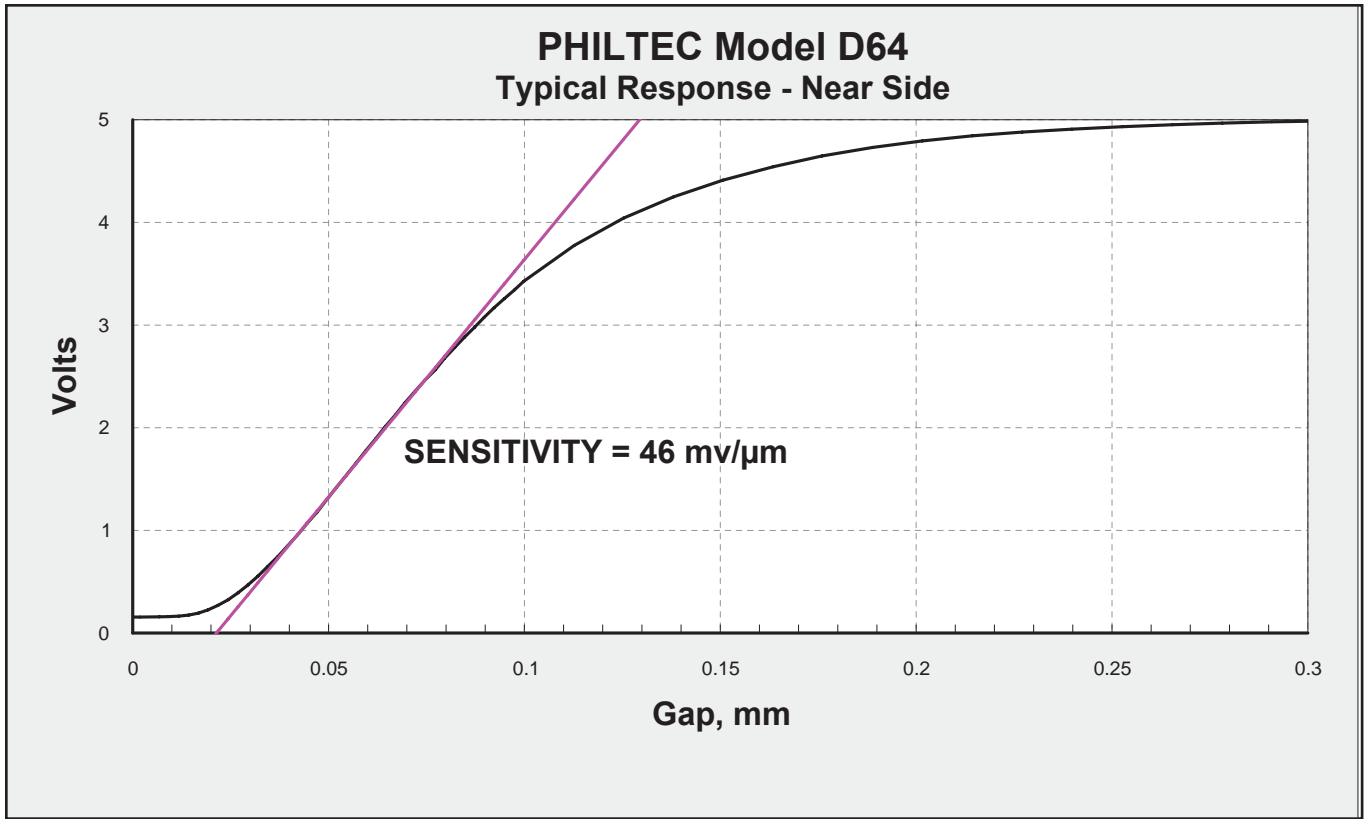
| Standard Specifications - D64 Far Side | | | | | | | | | |
|--|------------------------|------------|---------------------------|---|---|----------------------------|----------------------------|---|--|
| Electronics | | | Fiberoptics | | Outputs | | | | |
| | Analog | DMS | Light Beam spread | 30° | Analog Voltage | | | DMS RS232 | |
| Light Source | LED, 880 nm | | Cable Sheathing | PVC over Steel Monocoil | Total Range | 0.240 in. | 6 mm | Total Range | 6 mm |
| Input Voltage | +12 to +24 VDC | +12 VDC | Tip Material | 300 Series SS | Linear Range | 0.052 in. | 1.3 mm | Distance | 23 bit resolution |
| Input Current | 125 ma max | 500 ma max | Tip Epoxy Outgas | 0.3% @ 200°C 2.4% @ 300°C | Nominal Standoff | 0.045 in. | 1.14 mm | Reflectance | 8 bit resolution |
| Bandwidth | DC-20 KHz 3 db down | 5 KHz max | Tip Operating Pressure | 35 bar | Nominal Sensitivity | 40 mv/mil | 1.6 mv/μm | Amplifier Temperature | 12 bit resolution |
| Iso-thermal Drift | 0.5% | 0.05% | Tip Operating Temperature | -55 to 175°C continuous; to 350°C intermittent 1-2 hours | <u>Resolution*</u> DC - 200KHz DC - 20 KHz DC - 100 Hz | 80 μin 40 μin 20 μin | 2.0 μm 1.0 μm 0.5 μm | <u>Resolution*</u> Pk-Pk Units at Mid Range using 50% Signal Power | ADC AVG = 2 pk-pk = 0.6 μm ADC AVG = 16 pk-pk = 0.3 μm ADC AVG = 256 pk-pk = 75 nm ADC AVG = 4096 pk-pk = 40 nm |

*These specifications represent best case performance where: the target is flat, smooth and highly reflective, the sensor is perpendicular to the target, the sensor is gapped to its range of highest sensitivity, fiberoptic cable lengths are standard and the cables are not connectorized.

Custom Hardware To Customer Specifications



PHILTEC, INC., ANNAPOLIS, MD USA 410-757-4404
800-453-6242 e-mail sensors@philterec.com

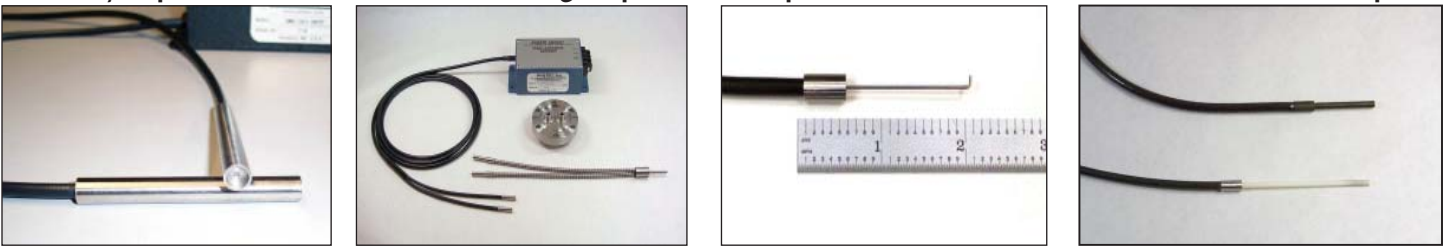


Conversions: 1 micron = 39.37 microinch 1 mm = 39.37 mils 1 mil = 0.001 inch = 25.4 microns = 0.0254 mm

| Standard Specifications - D64 Near Side | | | | | | | | | |
|--|------------------------|------------|---------------------------|---|---|-------------------------------|------------------------------|--|---|
| Electronics | | | Fiberoptics | | Outputs | | | | |
| | Analog | DMS | Light Beam spread | 30° | Analog Voltage | | | DMS RS232 | |
| Light Source | LED, 880 nm | | Cable Sheathing | PVC over Steel Monocoil | Total Range | 12 mils | 300 μm | Total Range | 300 μm |
| Input Voltage | +12 to +24 VDC | +12 VDC | Tip Material | 300 Series SS | Linear Range | 1.5 mils | 40 μm | Distance | 23 bit resolution |
| Input Current | 125 ma max | 500 ma max | Tip Epoxy Outgas | 0.3% @ 200°C 2.4% @ 300°C | Nominal Standoff | 2.4 mils | 80 μm | Reflectance | 8 bit resolution |
| Bandwidth | DC-20 KHz 3 db down | 5 KHz max | Tip Operating Pressure | 35 bar | Nominal Sensitivity | 1300 mv/mil | 50 mv/μm | Amplifier Temperature | 12 bit resolution |
| Isothermal Drift | 0.5% | 0.05% | Tip Operating Temperature | -55 to 175°C continuous; to 350°C intermittent 1-2 hours | Resolution* DC - 200KHz DC - 20 KHz DC - 100 Hz | 4.0 μin 2.0 μin 0.5 μin | 0.1 μm 0.05μm 0.013 μm | Resolution* Pk-Pk Units at Mid Range using 50% Signal Power | ADC AVG = 1 pk-pk = 50 nm ADC AVG = 16 pk-pk = 40 nm ADC AVG = 256 pk-pk = 10 nm ADC AVG = 4096 pk-pk = 5 nm |

*These specifications represent best case performance where: the target is flat, smooth and highly reflective, the sensor is perpendicular to the target, the sensor is gapped to its range of highest sensitivity, fiberoptic cable lengths are standard and the cables are not connectorized.

Many Options are Available Including Replaceable Tips, Vacuum Passthrus and Non-Metallic Tips



PHILTEC, INC., ANNAPOLIS, MD USA 410-757-4404
800-453-6242 e-mail sensors@philtec.com