Digital Sensor Data Sheet

PHILTEC, Inc.

Fiberoptic Displacement Sensor

Model DMS-RC225

Fiberoptic Cable & Sensor Tip - Actual Size





For The Measurement of Distance, Displacement and Vibration for Targets > Ø 5.8 mm

Features

- 25 mm Operating Range
- Ø 5.7 Fiber Bundle (Spot Size)
- Reflectance Compensated Output
- Ambient Light Rejection

REFLECTANCE COMPENSATION

These are reflective type transducers based upon detecting the intensity of reflected light. RC Model sensors have a pair of fiberoptic detectors in the sensor tip. Light reflected off a target follows two separate paths back to the electronics where a ratiometric calculation provides the distance measurement which is independent of varying surface reflectance; i.e., **reflectance compensated**.

AMBIENT LIGHT REJECTION

Incoming light signals are bandpass filtered at a wavelength of 850 ±22 nm.

DISTANCE (GAP) OUTPUT

These sensors provide a <u>linearized distance output</u> with RS232 or USB communication. Dynamic light signals reflected from target surfaces are converted to distances by comparing the sensor signals to gap calibration tables stored on-board the sensor.



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Tip & Cable Dimensions



FEATURE	mm	inch	
Tip Outer Diameter, Ø B	7.14	0.281	
Fiberoptic Area	Ø 5.72	0.225	
Tip Length, B	38.1	1.5	
Cable Length, A	915	36	
Cable Diameter, Ø A	6.86	0.270	
Cable Min. Bend Radius	38	1.5	



Sensor Accuracy is measured at 2.5 samples/sec.



The analog signal input to the sensor's microprocessor (shown above) is converted to a linearized distance output by comparing the input signals to gap calibration tables stored on-board the sensor. The sensor can be gapped for measurements anywhere within the sensor's total operating range. Optimum performance is achieved where the RC input signal has the steepest slope (highest sensitivity, ~9 - 18 mm).

Note: The DMS-RC225 response has a 'dead band' from 0-7 mm due to the gap between fiber bundles in the sensor tip. Reflectance Compensation is not active in that band.

Standard Specifications - DMS-RC225								
Electronics		Fiberoptics		USB or RS232				
Light Source	850 nm	Light Beam Spread	25°	Total Range	25 mm			
Input Voltage	+12 VDC	Cable Sheathing	PVC over Steel Monocoil	Linear Range	7 - 25 mm			
Input Current	500 ma max	Tip Epoxy Outgas	0.3% @ 200°C 2.4% @ 300°C	Reflectance Resolution	0.5%			
Bandwidth	5 KHz max	Tip Operating Pressure	10 bar	Temperature Resolution	0.06°C			
lso-thermal Drift	0.05%	Tip Operating Temperature	-55 to 200°C continuous; to 300°C intermittent 1-2 hours	Resolution* ADC AVG = 2 ADC AVG = 16 ADC AVG = 256 ADC AVG = 4096	** <u>samples/sec</u> 5208 651 41 2.5	pk-pk 50 μm 10 μm 0.8 μm 0.4 μm		
Weight	1.1 kg -2.4 lbs.	Fibers	Glass					

NOTES:

*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 (~mid-range)
- · fiberoptic cable lengths are standard and the cables are not connectorized

**DMS Control Software includes a data averaging filter for averaging data samples from: 2 samples (the fastest rate) to 4096 samples (best resolution).

Internally, the sensor continuously reads target data at a clock rate of 10416.75 Hz. ADC AVG = the number of internal readings averaged before sending data out to the PC.

Samples/Sec for any ADC AVG setting can be calculated as follows:

• S/S = 10,416.75 / ADC AVG

Three Instruments To Choose From:

- Model mDMS-RC225 ... miniDMS with RS232 output
- Model muDMS-RC225 ... miniDMS with USB output
- Model mu2DMS-RC225 ... Two Channel DMS with USB & RS232 outputs



mDMS-RC225



muDMS-RC225



mu2DMS-RC225



1. mDMS units include:

· Electronics with RS-232 communication



2. muDMS units include:

· Electronics with USB communication



3. mu2DMS units include:

· Electronics with USB and RS232 communication

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