

## Fiberoptic Displacement Sensor

## Model DMS-RC32

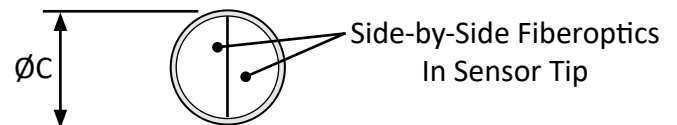
Fiberoptic Cable &amp; Sensor Tip - Actual Size



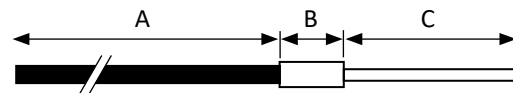
For The Measurement of Distance, Displacement and Vibration  
of Targets > Ø 0.81 mm

## Features

- Reflectance Compensated Output\*
- Ø 0.8 mm Spot Size
- 3 mm Operating Range



## Tip &amp; Cable Dimensions



OPERATING PRINCIPLE. 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**.

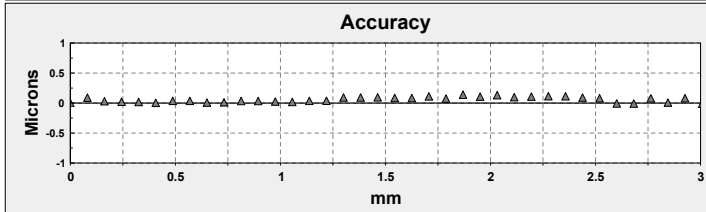
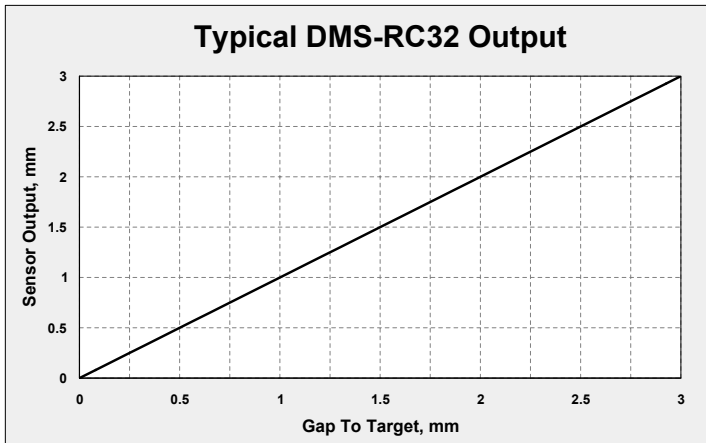
FEATURE	mm	inch
Tip Outer Diameter, Ø C	1.27	0.050
Fiberoptic Diameter	0.81	0.032
Tip Length, C	38.1	1.5
Collar Length, B	12.7	0.5
Collar Diameter, Ø B	4.31	0.170
Cable Length, A	915	36
Cable Diameter, Ø A	3.3	0.130
Cable Min. Bend Radius	12.7	0.5

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

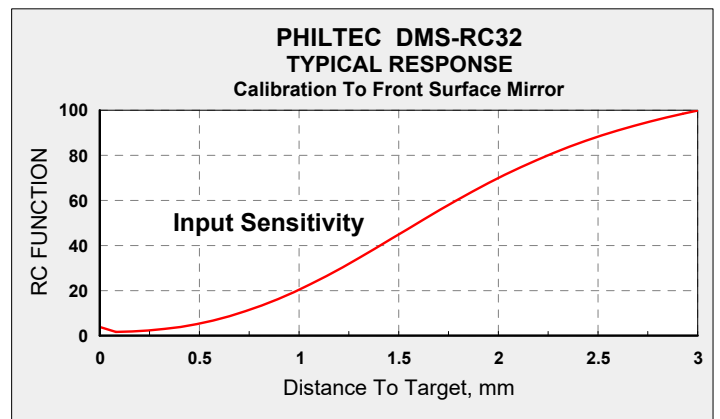
[www.philtec.com](http://www.philtec.com)

Precision Dynamic Measurements

DRC32:1



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, ~0.2 - 2.5 mm).

Standard Specifications - DMS-RC32					
Electronics		Fiberoptics		USB or RS232	
Light Source	850 nm	Light Beam Spread	30°	Total Range	3 mm
Input Voltage	+12 VDC	Cable Sheathing	PVC over Steel Monocoil	Linear Range	0.25 - 3 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	15 bar	Temperature Resolution	0.06°C
Iso-thermal Drift	0.05%	Tip Operating Temperature	-55 to 200°C continuous to 300°C intermittent 1-2 hours	Resolution*	** <u>Samples/Sec</u> <u>pk-pk</u>
Weight	0.48 kg -1.0 lbs.	Fibers	Glass	ADC AVG = 2	5208    75 nm
				ADC AVG = 16	651    50 nm
				ADC AVG = 256	41    25 nm
				ADC AVG = 4096	2.5    10 nm

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)
- fiber optic 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.

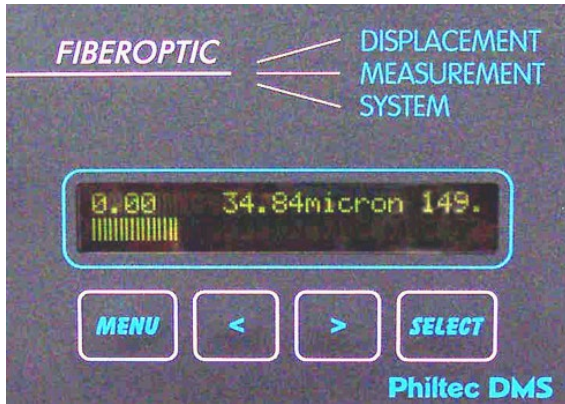
Samples/Sec for any ADC AVG setting can be calculated as follows:

- S/S = 10,416.75 / ADC AVG

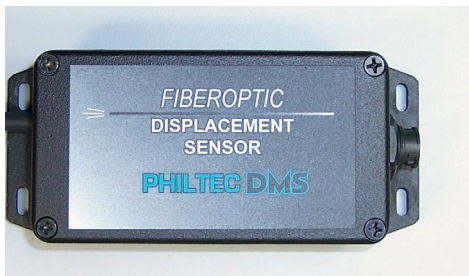
### Custom Hardware To Customer Specifications

## Three Instruments To Choose From:

- **Model DMS-RC32** ... Full Size DMS with RS232 output and Keypad/LCD
- **Model mDMS-RC32** ... miniDMS with RS232 output
- **Model muDMS-RC32** ... miniDMS with USB output



**DMS-RC32**



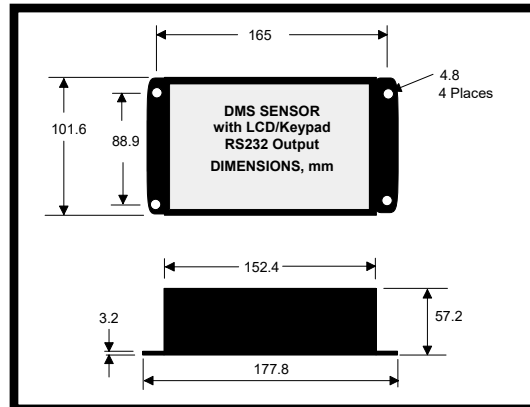
**mDMS-RC32**



**muDMS-RC32**

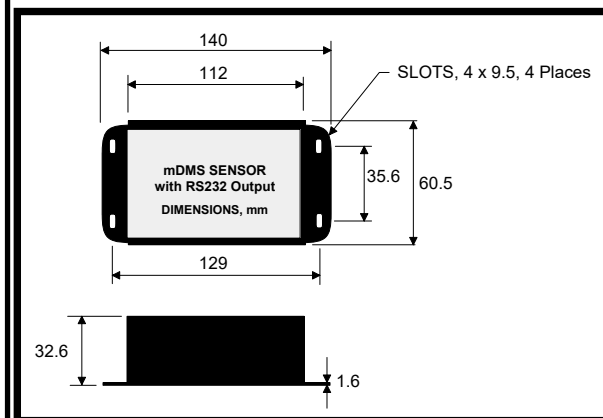
### 1. Standard DMS units include:

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



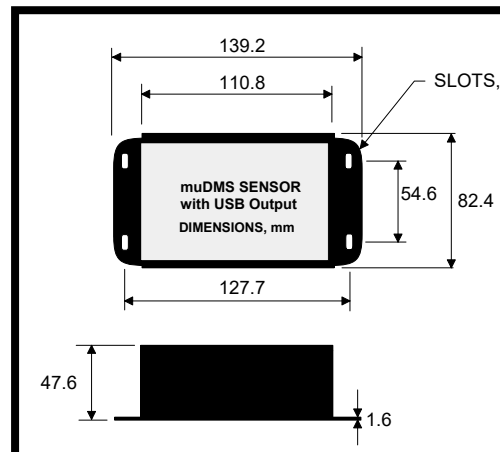
### 2. mDMS units include:

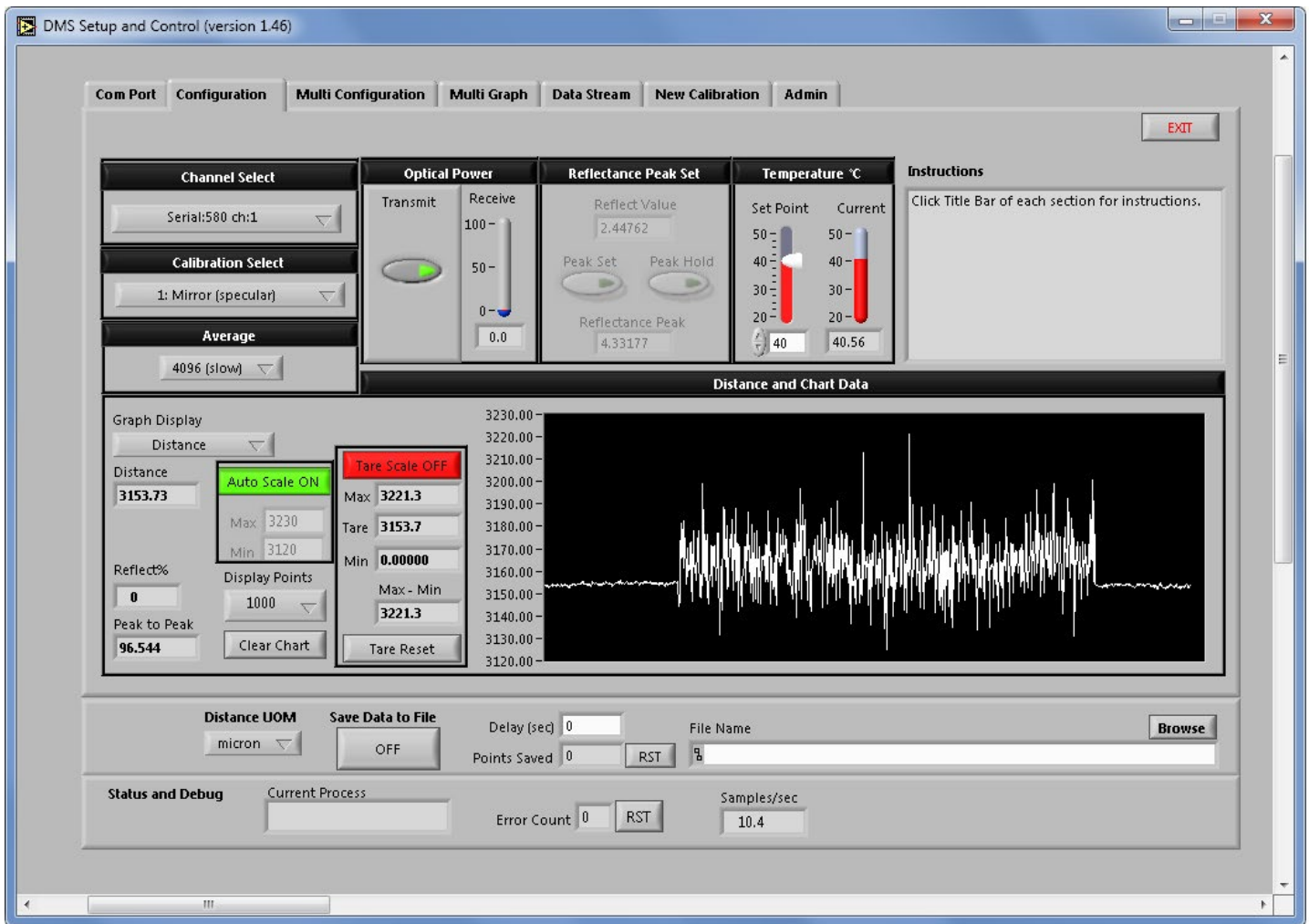
- Electronics with RS-232 communication



### 3. muDMS units include:

- Electronics with USB communication





## **DMS SETUP and CONTROL SOFTWARE**

Philtec provides freeware with every digital sensor purchase. This powerful software is a very useful tool for controlling sensors, viewing live data, and for saving data to files.

Sensors have storage capacity for 25 calibration tables. Every new sensor is provided with calibrations to:

1. A front surface mirror
2. A diffuse aluminum target

The DMS software provides means for copying and pasting sensor calibration data, as well as for creating and storing new calibration tables.

## **SOFTWARE & FIRMWARE UPDATES**

DMS sensors can be updated remotely at any PC. The most current edition of software and firmware is posted at <http://www.philtec.com/downoalssupport/firmware.html>. A short tutorial video link is also available there.