

## USB Powered Fiberoptic Displacement Sensor

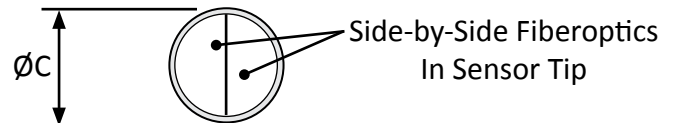
# Model $\mu$ DMS-RC20



For The Measurement of Distance, Displacement and Vibration

### Features

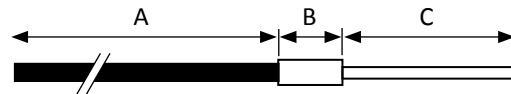
- Reflectance Compensated USB Output\*
- $\varnothing$  0.5 mm Spot Size
- 1.5 mm Operating Range
- USB Powered



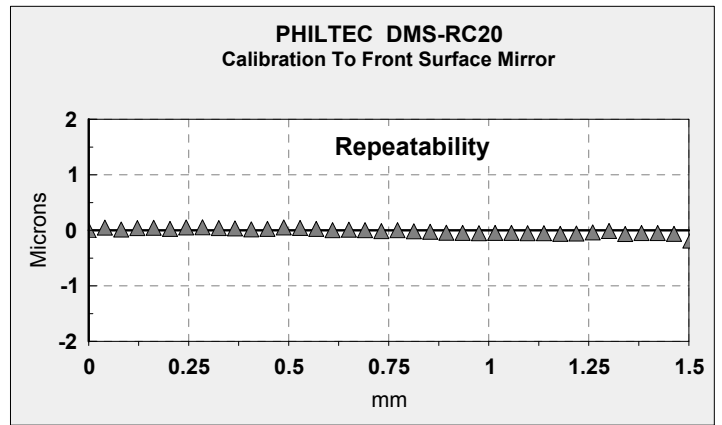
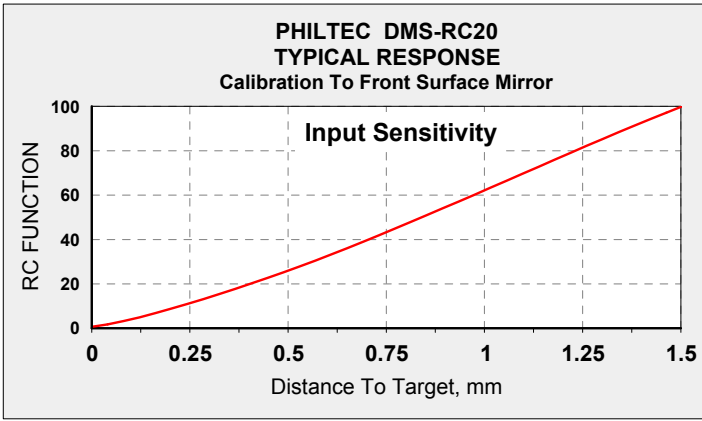
Powered via any standard USB port, or multiplexed via any standard USB hub, this sensor has a maximum data sample rate of 16,000 samples per second in a 145 gram enclosure of LWH dimensions 75 x 50 x 23 mm. With Philtec's fully-featured DMS Control freeware, this sensor is a powerful solution to many measurement problems.

\*OPERATING PRINCIPLE. These are reflective type transducers based upon detecting the intensity of reflected light. With a pair of fiberoptic detectors in the sensor tip, light reflected off a target follows two separate paths to the electronics where a ratiometric calculation provides the distance measure which is independent of varying surface reflectance; i.e., **reflectance compensated**.

### Tip & Cable Dimensions



FEATURE	mm	inch
Tip Outer Diameter, $\varnothing$ C	0.83	0.032
Fiberoptic $\varnothing$	0.5	.020
Tip Length, C	38	1.5
Collar Length, B	12.7	0.5
Collar Diameter, $\varnothing$ B	6.35	0.25
Cable Length, A	914	36
Cable Diameter, $\varnothing$ A	5.2	0.205
Cable Min. Bend Radius	12.7	0.5



The fiberoptic probe generates an analog input signal that is sent to a digital processor where calibration data is stored on-board the sensor. The processor interpolates the calibration data table and converts the analog input into a linearized distance measure. The sensor can be gapped for measurements anywhere within the sensor's total operating range.

Standard Specifications - $\mu$ DMS-RC20					
Electronics		Fiberoptics		USB OUTPUT	
Light Source	850 nm	Light Beam Spread	30°	Total Range	1.5 mm
Input Voltage	+12 VDC	Cable Sheathing	PVC over Steel Monocoil	Linear Range	1.5 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
Iso-thermal Drift	0.05%	Tip Operating Temperature	-55 to 175°C continuous; to 300°C intermittent 1-2 hours	Resolution* ADC AVG = 2 ADC AVG = 16 ADC AVG = 256 ADC AVG = 4096	** samples/sec    pk-pk 16000    100 nm 2000    40 nm 125    20 nm 7.8    10 nm
Weight	145 grams	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 (highest resolution).

Internally, the sensor continuously reads target data at a clock rate of 32 KHz.  
ADC AVG = the number of internal readings averaged at 32KHz clock rate before sending data out to the PC.

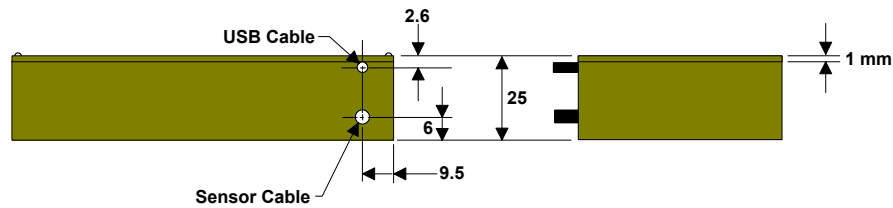
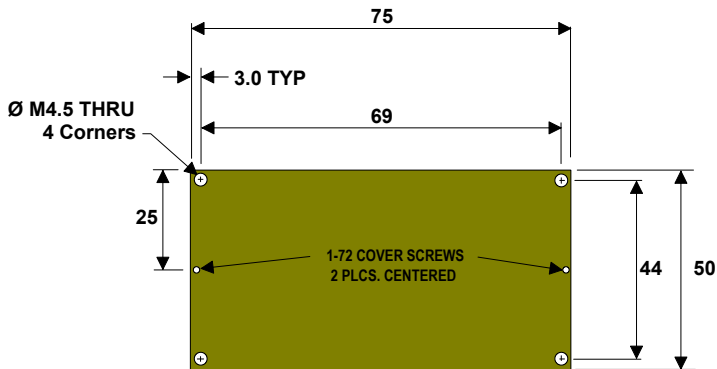
Samples/Sec for any ADC AVG setting can be calculated as follows:

- S/S = 32000 / ADC AVG

**Custom Hardware To Customer Specifications**

## SENSOR ELECTRONICS ENCLOSURES

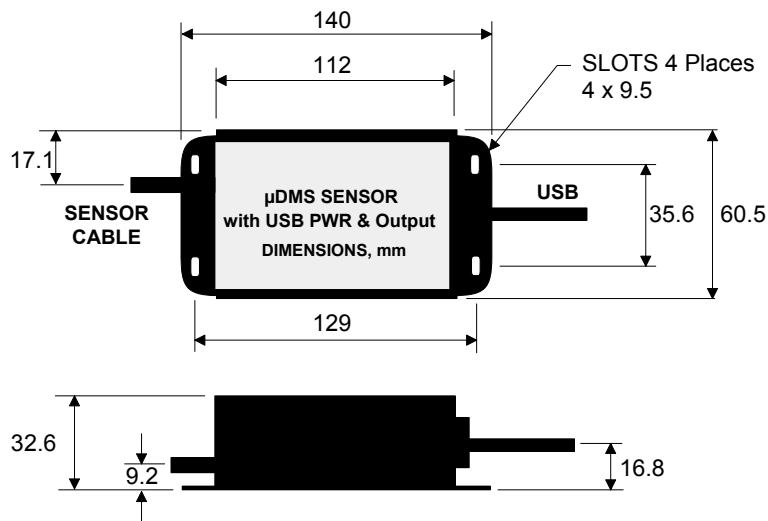
- *For Models  $\mu$ USB-RC100 and smaller*
- *For Models  $\mu$ USB-D100 and smaller*



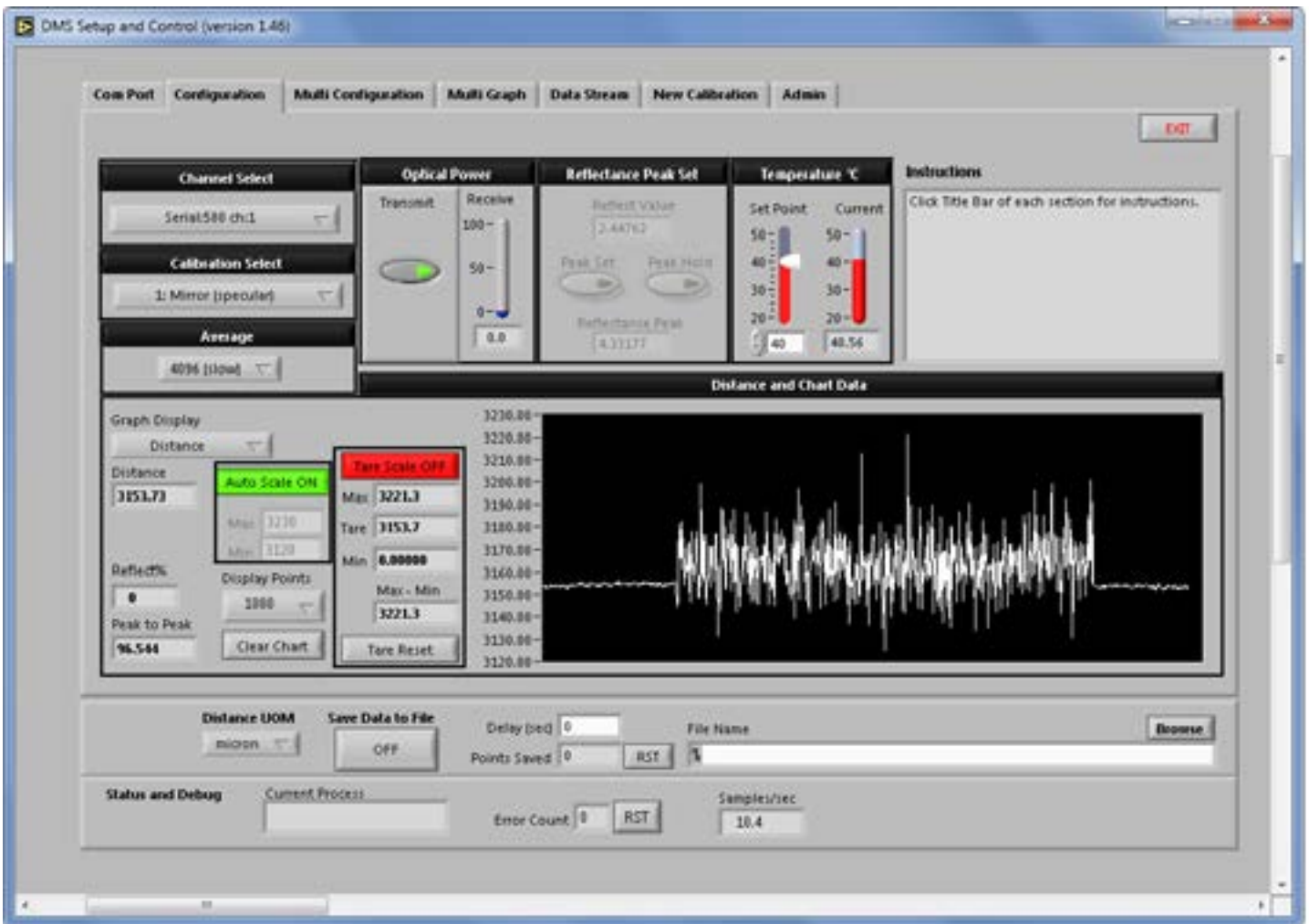
### **$\mu$ DMS SENSOR ENCLOSURE WITH LID**

MAT'L: ALODINED ALUMINUM  
DIMENSIONS = MM

- *For Models Larger Than  $\mu$ USB-RC100*
- *For Models Larger Than  $\mu$ USB-D100*



MAT'L: Diecast Aluminum, Black Powder Paint



## **DMS SETUP and CONTROL SOFTWARE**

Philterc 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://philtec.com/downloadssupport/firmware.html>. A short tutorial video link is also available there.