

## Fiberoptic Sensor - Reflectance Dependent\*

**Model DMS-D20**

Fiberoptic Cable &amp; Sensor Tip - Actual Size



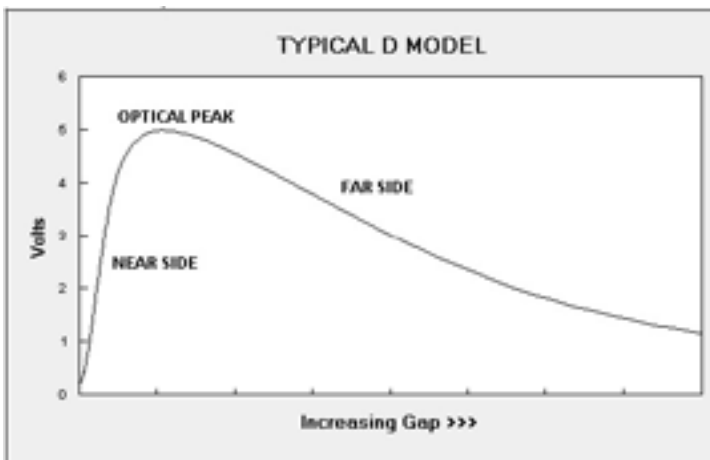
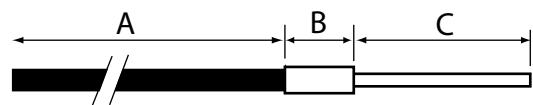
mDMS Sensor

These sensors provide a linear distance output with RS232 or USB communication.

For The Measurement of Distance, Displacement and Vibration  
of Small Targets >  $\varnothing$  510  $\mu$ m

**Features**

- Reflectance Dependent Output
- $\varnothing$  510 Micron Target Spot Size (0.020 inch)
- 1.27 mm Total Operating Range

**Tip & Cable Dimensions**

FEATURE	mm	inch
Tip Outer Diameter, $\varnothing$ C	0.81	0.032
Fiberoptic Diameter	0.5	0.020
Tip Length, C	38.1	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	4.27	0.168
Cable Min. Bend Radius	19	0.75

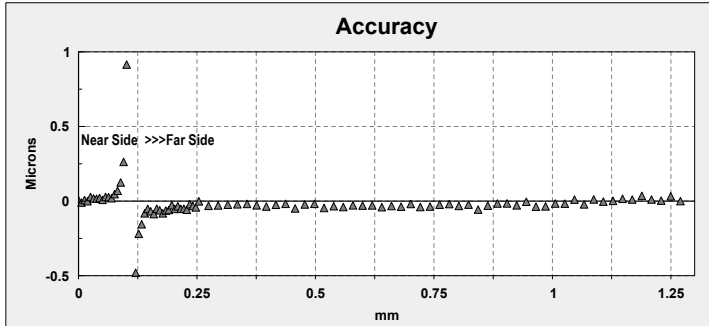
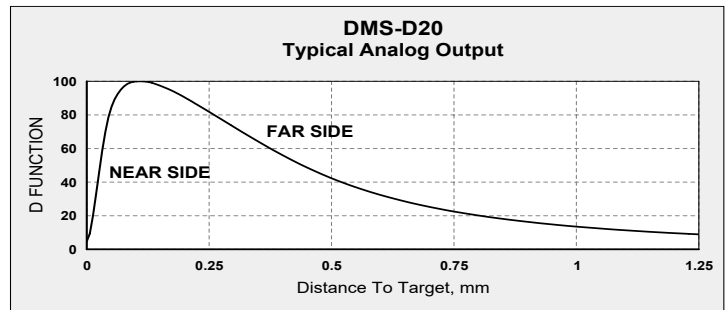
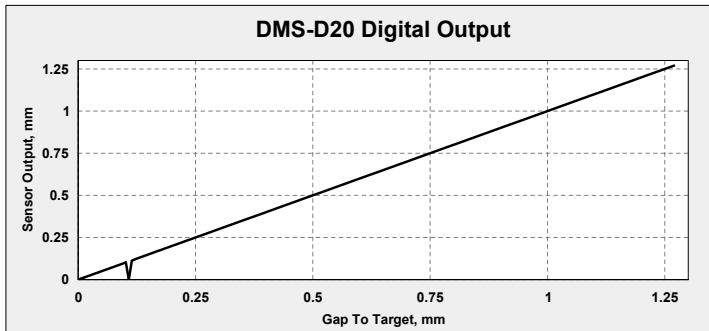
The analog input function includes NEAR and FAR SIDE regions. NEAR SIDE operation gives highest resolution with limited operating range. Operation on the FAR SIDE gives moderate resolution with much greater operating range.

\*These are reflective type transducers based upon detecting the intensity of reflected light. The output is proportional to:

- distance between the sensor tip and target; and,
- the reflectivity of the target surface.

**DISTANCE (GAP) OUTPUT**

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



The chart above shows the analog signal input to the sensor's microprocessor. That signal 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 input signal has the steepest slope:

- Near Side ~0 - 120 microns
- Far Side - ~0.2 to 1.2 mm

Accuracy is a measure of the sensor's repeatability. It is measured at 2.5 samples/sec.

Standard Specifications, Model DMS-D20							
Electronics		Fiberoptics		USB or RS232	Near Side	Far Side	
Light Source	850 nm	Light Beam Spread	66°	Total Range	120 µm	1.15 mm	
Input Voltage	+12 VDC	Cable Sheathing	PVC / Steel Monocoil	Linear Range	120 µm	1.15 mm	
Input Current	500 ma max	Tip Epoxy Outgas	0.3% @ 200°C 2.4% @ 300°C	Reflectance Resolution	0.5%		
Bandwidth	5 KHz	Tip Operating Pressure	10 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	ADC AVG	Samples/Sec	* Pk-Pk Resolution	* Pk-Pk Resolution
				2	5208	50 nm	200 nm
				16	651	40 nm	150 nm
				256	41	10 nm	40 nm
4096	2.5	2.5 nm	8 nm				
Weight	1.1 kg 2.4 lbs.	Fibers	Glass				

\* Pk-Pk Resolution is the smallest measurable displacement limited by the sensor's self-noise.

**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 10,416.75 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 2DMS-D20** ... Two Channel DMS with RS232 output
- **Model mDMS-D20** ... miniDMS with RS232 output
- **Model muDMS-D20** ... miniDMS with USB output



**2DMS-D20**



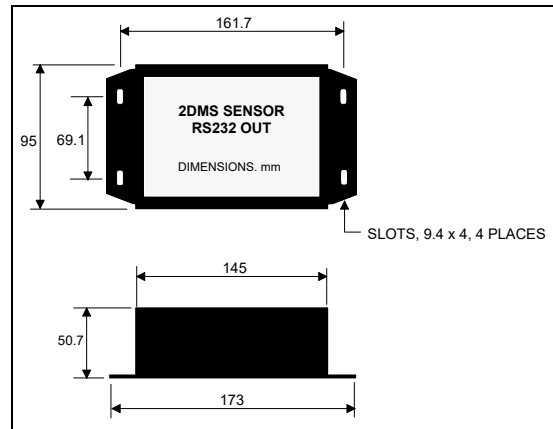
**mDMS-D20**



**muDMS-D20**

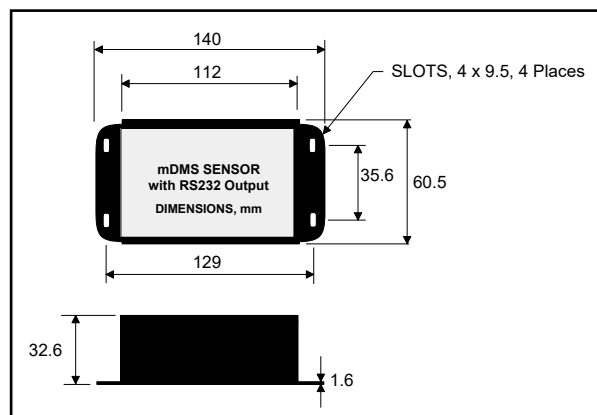
### 1. 2DMS units include:

- Electronics with RS-232 communication



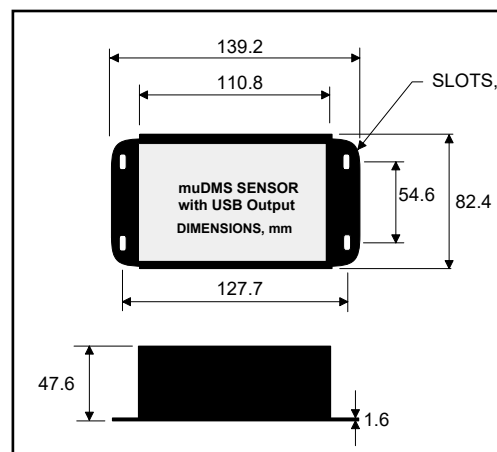
### 2. mDMS units include:

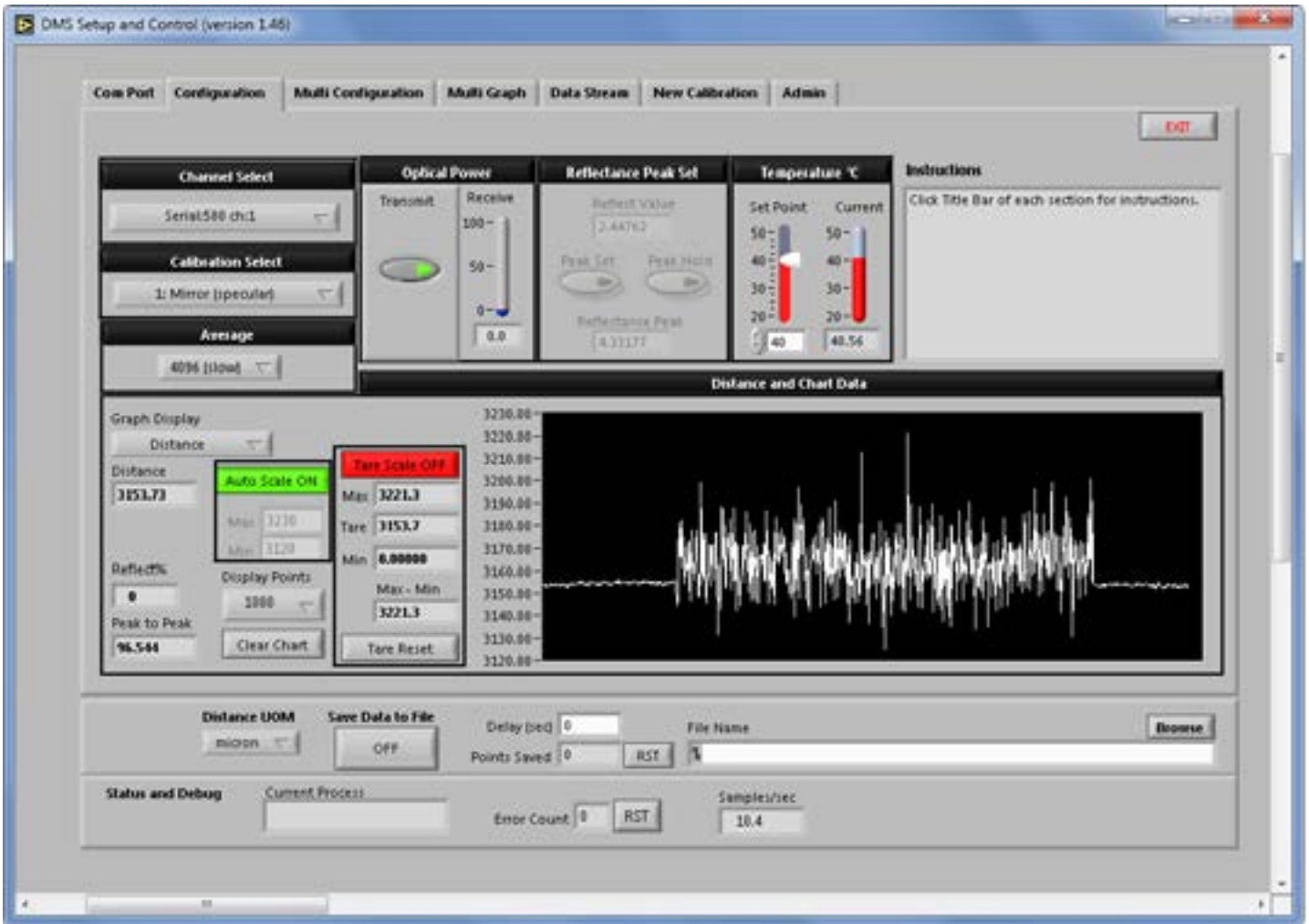
- Electronics with RS-232 communication



### 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/downloads/firmware-software>. A short tutorial video link is also available there.