

*worms*

# Application Note

Checking Dragonfly®

# 1 Sensor Checking

Checking the sensor functionality is a useful tool for any measurement system debug. The objective of the present document is to provide a complete method to check the Dragonfly®.

Sensor check should be performed:

- After unboxing the sensor
- After sensor installation

It can be repeated at any moment to ensure sensor functionality after an event (ex: mechanical collision or extreme deformation). If there is any doubt about the quality of the signal from the sensor, this is the first check that should be performed.

For recommendations on how to perform measurements with Dragonfly® sensors, please refer to the [Application Note: Measurement](#).

## 1.1 Dragonfly® check using BK890C capacitance meter

We recommend using the capacitance meter BK890C from BK Precision, here displayed on the right.



**Warning:** Measuring a piezo capacitance, with and without conditioning, is highly dependent on the measurement method (current or voltage driven, amplitude and frequency of excitation signal). Other multimeters will use variable methods that can alter the value measured. If you use another multimeter, please consult its user manual to be sure that it performs the measurement using a sine wave of  $\pm 0.5$  V amplitude at 1kHz.



### Connect the coaxial adapter

- Make sure to have the GND pin on the negative input.



### Set the device to "Auto" range

- Select automatic range : long press on RANGE Key.



### Measure the cable capacitance

- Connect the cable which will be used to connect the sensor to the acquisition system..
- Read cable capacitance value  $C_{cbl}$ .



### Set the device to **1000 nf range**

- Short press on RANGE Key until comma and unit displays “XXX.X nf”.

Only this range should be used to measure capacitance. Using other ranges may result in erroneous capacitance values.



### Read the total capacitance

- Connect the Dragonfly® sensor through the cable.
- Read total capacitance value  $C_{tot}$ .

## Retrieve & Check Dragonfly® capacitance with the specsheet

Subtract the cable capacitance to retrieve the sensor capacitance  $C_{DGF}$ .

$$C_{DGF} = C_{tot} - C_{cbl}$$

### Passive sensor

For passive sensor, check that the value corresponds to the sensor capacitance ( $C_p$ ) range in your sensor specsheet.

### IEPE sensor

Since the IEPE sensor has integrated electronics, the overall sensor capacitance is different. Check that the value corresponds to the equivalent capacitance ( $C_{eq}$ ) in the specsheet.

## For more information

- Consult our web site at [www.wormsensing.com](http://www.wormsensing.com)
- Contact us at [contact@wormsensing.com](mailto:contact@wormsensing.com)