

Prime Photonics' TVS™ is an all optical sensor for measuring speed and torsional vibration of rotating shafts, components and assemblies without adding any markings to the shaft.

Non Contact

TVS™ is a high speed all-optical sensor that measures angular movement of rotating components. TVS™ is a dynamic sensor and can measure angular velocity and acceleration, and when used in pairs, TVS™ sensors can measure shaft twist, which can be used to perform torsional vibration analysis.

No Shaft Modifications

TVS™ probes use the unique optical patterns that are present on any material surface to determine the instantaneous angular position of the shaft, requiring no modification to the shaft surface.

All Optical

TVS™ sensors are all optical, which makes them intrinsically safe and allows users to easily avoid ground loops when operating them. TVS™ sensors are also inherently immune to electromagnetic interference (EMI) which allows them to be low noise.

Robust Design

TVS™ probes are based on proven optical probe designs developed for harsh environment sensor applications on gas turbine engines. Standard TVS™ probes assemblies are armored and crush-resistant. High temperature probe options are available for uses in 1000 °F / 550 °C or hotter environments.

Easy to Use

Once TVS™ probes are installed, just turn the system on and it will begin measuring shaft speed at each probe location and twist between the two probe locations. Data is available via scalable analog voltage outputs for DAQ applications, as well as through USB, RJ485 twisted pairs, and Ethernet digital interfaces.



TVS™ probe (top left); TVS™ Probes measuring a shaft (center); 2-Channel TVS™ Signal Conditioner (bottom right).

Key Parameters

Torsional vibration: maximum measurable frequencies up to 8x the rotational rate, no minimum limit

Shaft speed 500 to 20,000 rpm

Maximum angular acceleration: 10% of rotational speed per revolution

Can be used with shafts made from steel alloys, titanium, and composites (including non-metallic)

Twist accuracy better than 0.025°

Speed accuracy better than 0.01% of speed

Shaft twist measurement up to 90 degrees

TVS™ vs. TVS+™

Prime Photonics also makes another version of the product, called TVS+™, which uses labels placed on the shaft to measure torque, twist, speed, torsional vibration, and axial displacement of rotating shafts.