

Prime Photonics' TVS+™ is an all optical sensor for measuring speed, torsional vibration, torque and axial movement of rotating shafts, components and assemblies.

Multifunction

TVS+™ is a high speed all-optical sensor that can measure the angular velocity of a rotating component, and when used in pairs, TVS+™ sensors can measure shaft twist, which can be used to calculate torque and perform torsional vibration analysis.

At each probe location, a rugged polyester label is applied around the circumference of the shaft. TVS+™ uses high resolution features on the label to determine both axial and angular position of the shaft. By continually monitoring the shaft pattern, TVS+™ measures changes in angular movement, which can be used to determine speed, torque and torsional vibration, as well as changes in axial position.

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 and axial shaft movement 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 a digital interface (USB).



2-Channel TVS+™ Signal Conditioner with TVS+™ optical probe (main) and shaft coupling with TVS+™ label (insert)

KEY PARAMETERS

Torsional vibration: maximum measurable frequencies up to 32x the rotational rate, no minimum limit

Shaft speed 500 to 20,000 rpm (higher speeds available with reduced accuracy)

Maximum angular acceleration: 10% of rotational speed per revolution

Twist resolution better than 0.01°

Speed accuracy better than 0.02% of speed

Shaft twist measurement up to +/- 160 degrees

Axial shift measurement range of +/- 0.45" (+/- 11 mm) standard; other ranges upon request

Axial shift accuracy better than 0.01" (0.25 mm)

TVS™ vs. TVS+™

Prime Photonics also makes another version of the product, simply called TVS™, which measures speed and torsional vibration of bare shafts without the need for any markings or labels.