

Prime Photonics makes a number of optical probes for blade tip clearance (BTC) measurement. These probes are versatile and a single probe can be used for both blade tip clearance (BTC) and blade tip timing (BTT) measurement.

### Working Range

Each blade tip clearance probe is designed and optimized for a given working range. We make a short range probe with a working range of 0.02" to 0.4" (0.5 mm to 10 mm) and a long range probe with a working range of 1.1" to 1.8" (25 mm to 48 mm). Other ranges can be designed upon request. Shorter range probes can detect smaller clearance changes while longer range probes have a wider working range.

### Environment

Blade tip clearance probes are rated for applications up to 590 °C (1100 °F) uncooled.

Gas flow can be added to most probes. This is used both for cooling and for maintaining cleanliness of the probe tip in dirty environments.

Blade tip clearance probes feature a front window which is resistant to fouling and easy to clean, so they are the preferred choice in environments where contaminants are present such as in turbine stages.

### Configurations

The most common configuration is an axial probe to measure blade tips.

Probes can be manufactured with a right angle on the back of the probe head, making them shorter in height. This probe configuration is used in tight spaces where height is limited for installation and removal.

Lensed probes can also be configured with a look-down angle from 0 to 90°, meaning that the light exits the probe head at an angle from the axis of the probe.



Clockwise from top left: Right Angle Probe; Front Window; Standard Lensed Probe; Gas Cooled Probe

### PARAMETERS TO SPECIFY A PROBE

Dimensions of the probe tip, particularly diameter and length

Environmental conditions (especially maximum temperature) for the probe tip and cable

Probe mounting scheme (flange or other interface)

Length and type of cable

Cable routing details

Connector type (FC, ST, and SMA standard)