

Prox Probe Cable Errors Produce Alarming Trend

Problem 1: Leads to False or Late Alarm Trips

Incorrect cable lengths and types create proximity probe system output errors. Alert and alarm levels in the vibration protection system rely on consistent dynamic output, often 200 mV/mil (7.87 mV/ μm), from the non-contact displacement sensors. When incorrect cabling is used, dynamic output from the system is erroneously high or low depending upon the severity of the cabling error. As such, alert and alarm levels trip too early or late, causing false trips or catastrophic failure.

Problem 2: Gap Voltage Corrections Magnify Cable Error

Cabling errors cause incorrect gap voltage. This DC voltage measurement indicates the distance from probe tip to shaft. A cabling error makes it appear as if the prox probe is installed too close or too far away from the rotating shaft. When the position of the proximity probe is adjusted to correct gap voltage, the probe is inadvertently moved such that the shaft is no longer in the center of its measurement range. This compounds the dynamic error and further compromises the alert and alarm thresholds designed to protect assets such as gas and steam turbines.

Solution: Simulate Shaft Motion With Portable Shaker

Ensure the validity of the entire vibration protection channel by simulating shaft motion at actual running speeds using The Modal Shop's Model 9100D or 9110D Portable Vibration Calibrators. These rugged and lightweight shakers run on battery power for all-day usage in the field. Proximity probes are easily mounted and calibrated against a 4140 steel target per the American Petroleum Institute (API) 670 standard. Displacement, scaled in mils or microns (μm) peak to peak, is adjusted with the simple turn of a knob and is displayed along with frequency (in Hz or CPM) at all times. Accuracy is ensured via a NIST-traceable internal quartz reference accelerometer and ISO 17025-accredited calibration certificate.

Benefit:

- Confidence that vibration monitoring systems relying upon proximity probes are protecting the plant's critical assets
- Efficiency is increased when the vibration, maintenance or operations teams are not chasing false trips
- Decrease downtime by ensuring alert and alarm thresholds are properly programmed
- Improved quality and peace of mind thanks to saved calibration records that are kept in-house



Incorrect cabling can trip alarms too early or late



Model 9110D Portable Vibration Calibrator discovers a proximity probe cabling error despite correct gap voltage



9100D Portable Vibration Calibrator also checks accelerometers and velocity sensors