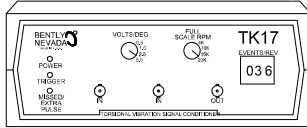


TK17 Torsional Vibration Signal Conditioner

Bently Nevada™ Asset Condition Monitoring



Description

The TK17 Torsional Vibration Signal Conditioner measures torsional vibration by electronically processing the signals from up to two proximity transducers. These transducers are located on opposite sides of the shaft and observe a precision machined, toothed wheel attached to the shaft. The two-input feature of the TK17 minimizes radial vibration that may be present at the location of measurement and provides effective noise reduction. Each time a tooth passes under a probe, its output signal changes, producing a pulse. Without torsional vibration, the pulse rate of the probe is a constant. The probe signals are connected to the instrument for conditioning. The TK17's circuitry sums both input signals and provides one output in units of volts/degree, ready for further processing using standard diagnostic equipment. For single channel applications, the probe signal should be connected to both TK17 inputs.

The signal conditioner accepts inputs from displacement transducers and optical sensors. Both transducers typically observe teeth at a gear. Additionally, the optical sensors may observe reflective tape with contrasting bars. The use of this tape is recommended as a temporary solution in cases where no gear wheel is available.

Specifications

Inputs

Power

Requirements:

115 Vac, rated from 105 to 125 Vac; or

220 Vac, rated from 200 to 240 Vac; 50/60 Hz.

Signals:

Minimum peak-to-peak voltage of 2.0 volts.

Maximum peak-to-peak voltage of 28 volts.

Machine Speed:

Minimum 400 rpm.

Maximum 20,000 rpm.

User selectable full-scale rpm of 4,000; 10,000; 15,000; or 20,000; selectable at front panel.

Events per shaft revolution:

20 to 199, selectable at front panel.

Range of Torsional Vibration:

0.1 degree peak-to-peak to 2 degrees peak-to-peak.

Number of Events:

Maximum events/minute of 1.5 million (75 teeth at 20,000 rpm, or 200 teeth at 7,500 rpm are two examples).

Minimum events/minute of 8,000 (20 teeth at 400 rpm).

Output

Signals:

An analog signal representative of torsional vibration, scale factor front panel selectable at 0.5, 1.0, 2.0, or 5.0 volts per degree.

Maximum Detectable Frequency of Torsional Vibration:

(Shaft rpm) × (events-per-revolution) × (0.0053), expressed in Hertz, or 500 Hz, whichever is smaller. (Increasing events per revolution increases resolution and range of detectable torsional vibration. Therefore, it is desirable to maximize events per revolution.)

Physical Size

Height:

89 mm (3.5 in)

Width:

216 mm (8.5 in)

Depth:

279 mm (11 in)

Weight:

2.7 kg (6 lb)

Ordering Information

Torsional Vibration Signal Conditioner (TK17)

100279-AXX

A: Power Input Option

01 115 Vac; 50/60 Hz

02 220 Vac; 50/60 Hz.

Graphs and Figures

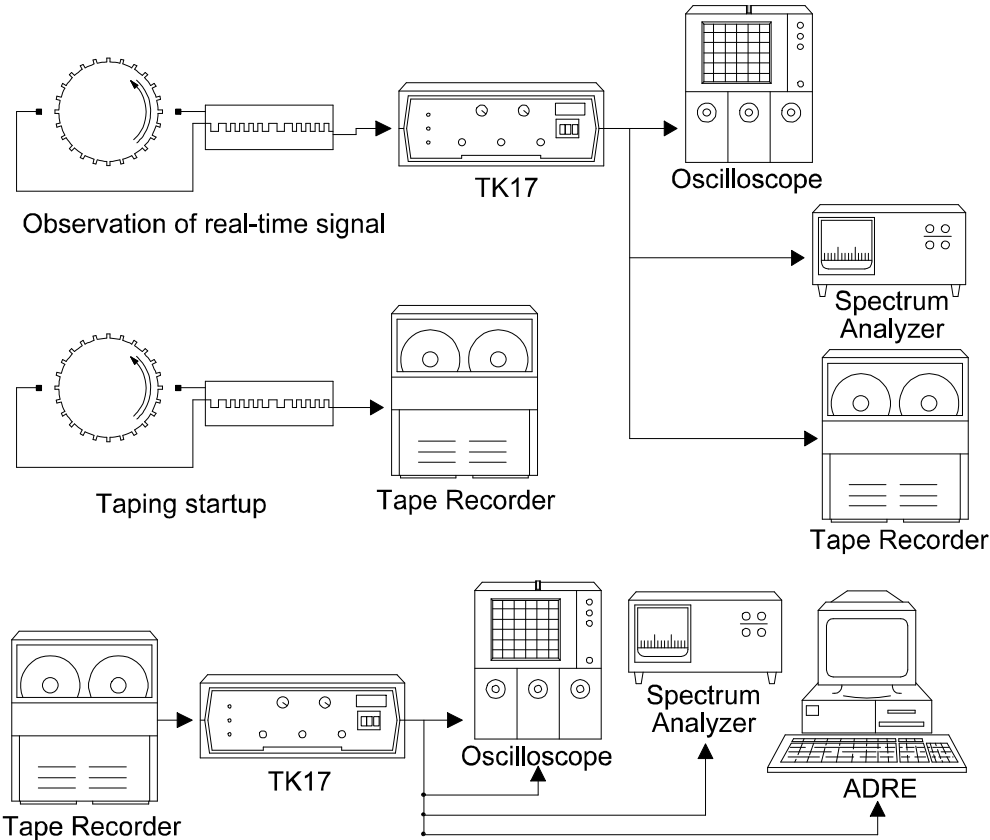


Figure 1: Typical application for TK17 Torsional Vibration Signal Conditioner

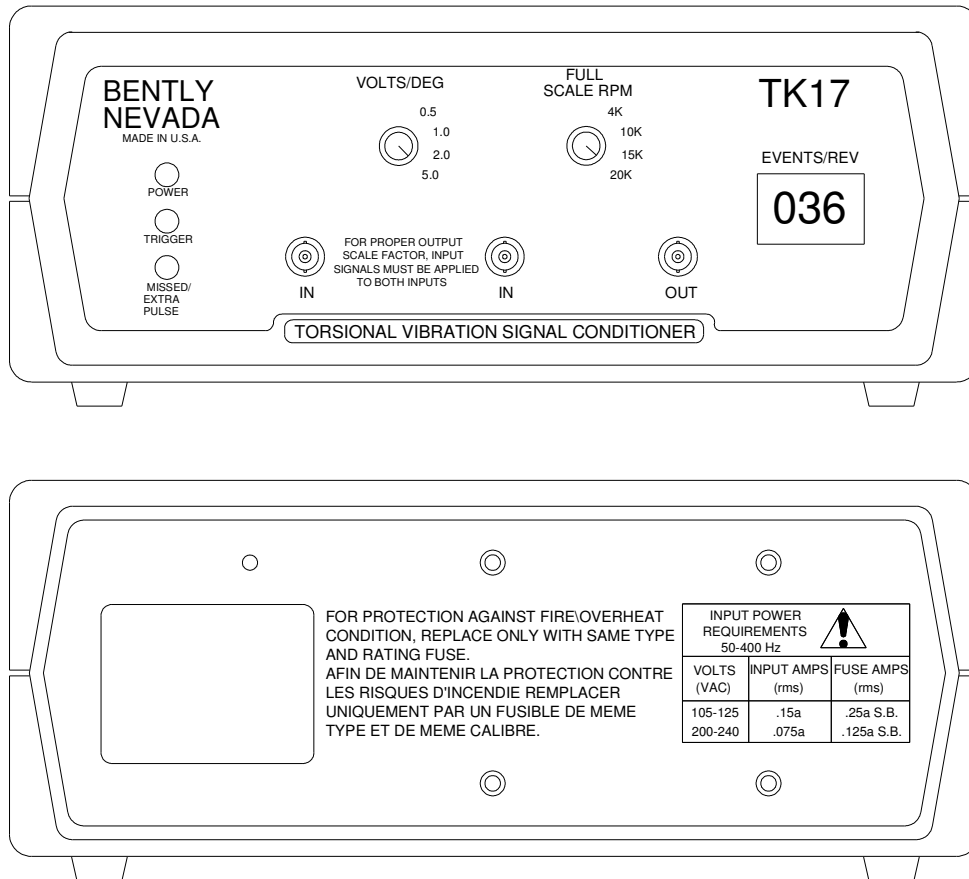


Figure 2: Front and rear panel

Copyright 2000. Bently Nevada LLC.
 1631 Bently Parkway South, Minden, Nevada USA 89423
 Phone: 775.782.3611 Fax: 775.215.2873
www.ge-energy.com/bently
 All rights reserved.

Bently Nevada is a trademark of General Electric Company.