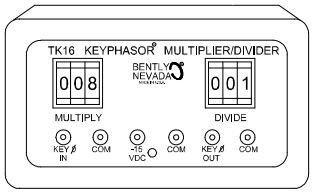
TK16 Keyphasor® Multiplier/Divider

Bently Nevada™ Asset Condition Monitoring



Description

The TK16 is an externally powered portable instrument that enables you to obtain data on a rotor system which does not have its own once-per-turn Keyphasor signal, but has a speed-related pulse output (typically provided by a proximity transducer or magnetic pickup). By multiplying and/or dividing the frequency of the pulse output, the user can observe the characteristics of a rotor system at multiples and submultiples of shaft rotative speed when the unit is used in conjunction with diagnostic instruments.

TK16 Keyphasor Multiplier/Divider is capable of the following:

- Conditioning signals from proximity transducers and magnetic pickups.
- Conditioning tape recorded signals from transducers or amplifier rack outputs.
- Multiplying and/or dividing the input signal frequency by integer numbers from 001 to 999.
- Maintaining the phase integrity of a signal between input and output for any multiply number when the divide number is 001.

Note: If a divide number other than 001 is used, phase measurements between machinery runs may not be consistent.

Specifications

Inputs

Signal Bias Voltage:

+9 to -26 Vdc.

Signal Voltage Minimum:

0.25 to 3.25 volts peak-to-peak (adjustable).

Signal Frequency

Minimum:

48 cpm (0.8 Hz)

Maximum:

1,200,000 cpm (20,000 Hz) divided by MULTIPLY switch setting, or 300,000 cpm (5,000 Hz) whichever is smaller.

Signal Ramp Rate:

Up to ±25% of period (per period).

Signal Input Impedance:

50k Ω nominal when signal is within signal bias voltage range. 27.5 k Ω minimum.

MULTIPLY Switch Setting:

Integer numbers from 001 through 999.

DIVIDE Switch Setting:

Integer numbers from 001 through 999.

Power Requirements:

-17.7 to -28.0 Vdc relative to common.

Power Supply Current:

20 mA typical, 30 mA maximum.

Outputs

Signal Frequency:

Input frequency × M × 1/D , where M = MULTIPLY switch setting, and D = DIVIDE switch setting (steady state).

Pulse Width:

2.0 to 4.0% of output period between 48 cpm (0.8 Hz) and 60,000 cpm (1,000 Hz), 30 µs typical above 60,000 cpm (1,000 Hz).

Signal Amplitude:

0 volt (high level) to -15 volts (low level) nominal.

Signal Output Impedence:

1.5 k Ω at low level, 11.5 k at high level; can drive up to 30 feet of coaxial cable (100 picofarads/foot).

Phase Error:

Less than ±2 degrees with DIVIDE switch set to 001, MULTIPLY switch set between 001 and 020, and with output frequencies up to 30,000 cpm (500 Hz).

Phase Correlations:

Falling edge of output corresponds to falling edge of input.

Environmental Limits

Operating Temperature:

+0°C to +55°C (+32°F to +131°F).

Storage Temperature:

-40°C to +85°C (-40°F to +185°F).

Relative Humidity:

To 90% noncondensing.

Physical

Size

Height:

70 mm (2.75 in)

Width:

140 mm (5.5 in)

Depth:

203 mm (8 in)

Weight:

550 g (1.2 lb)

Ordering Information

TK16 Keyphasor Multiplier/Divider

73783-02

Includes:

1	TK16 Keyphasor Multiplier/Divider
1	User Guide

Accessories

85291-01

TK16 User Manual

80917-01

TK15 Keyphasor Conditioner/Power Supply.

82608-01

TK84 Optical Keyphasor Package.

82609-01

TK85 Proximity Package.

01609140

Coaxial receptacle to double banana plug adapter.

01609296

Binding posts to coaxial plug adapter.

02211505

Coaxial cable 2 metres (6 feet).

01600480

Black banana to banana test lead.

01600482

Red banana to banana test lead.

01600484

Yellow banana to banana test lead.

01600489

White banana to banana test lead

Typical Field Wiring Diagram

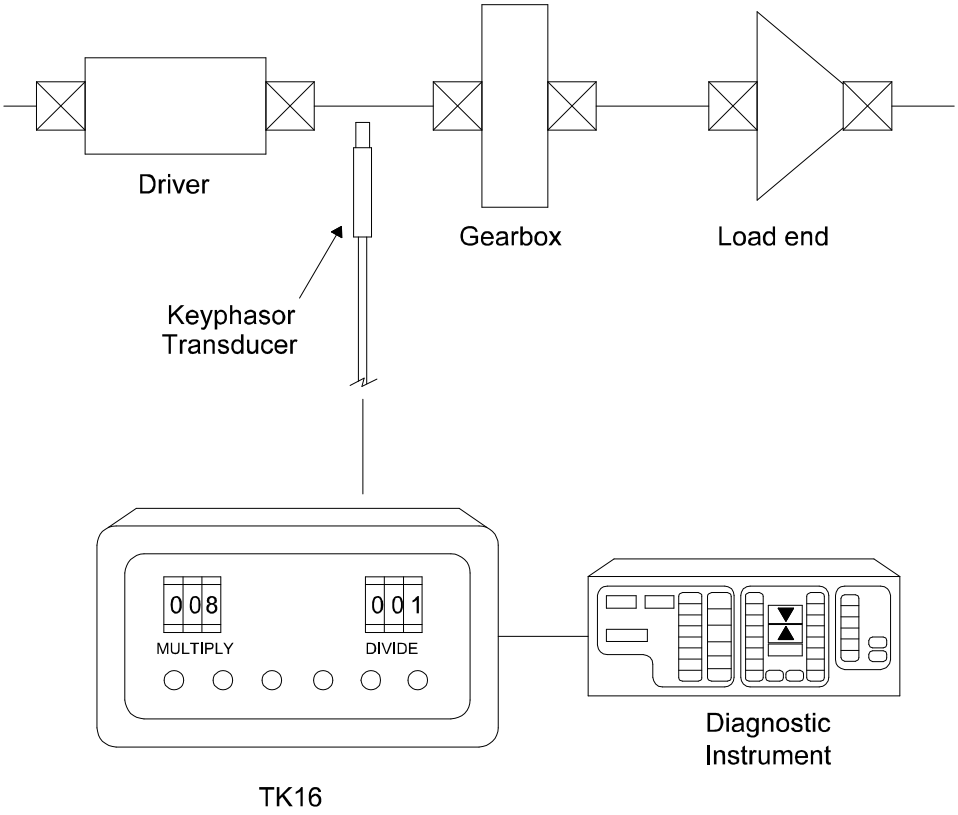


Figure 1: Gearbox application for TK16

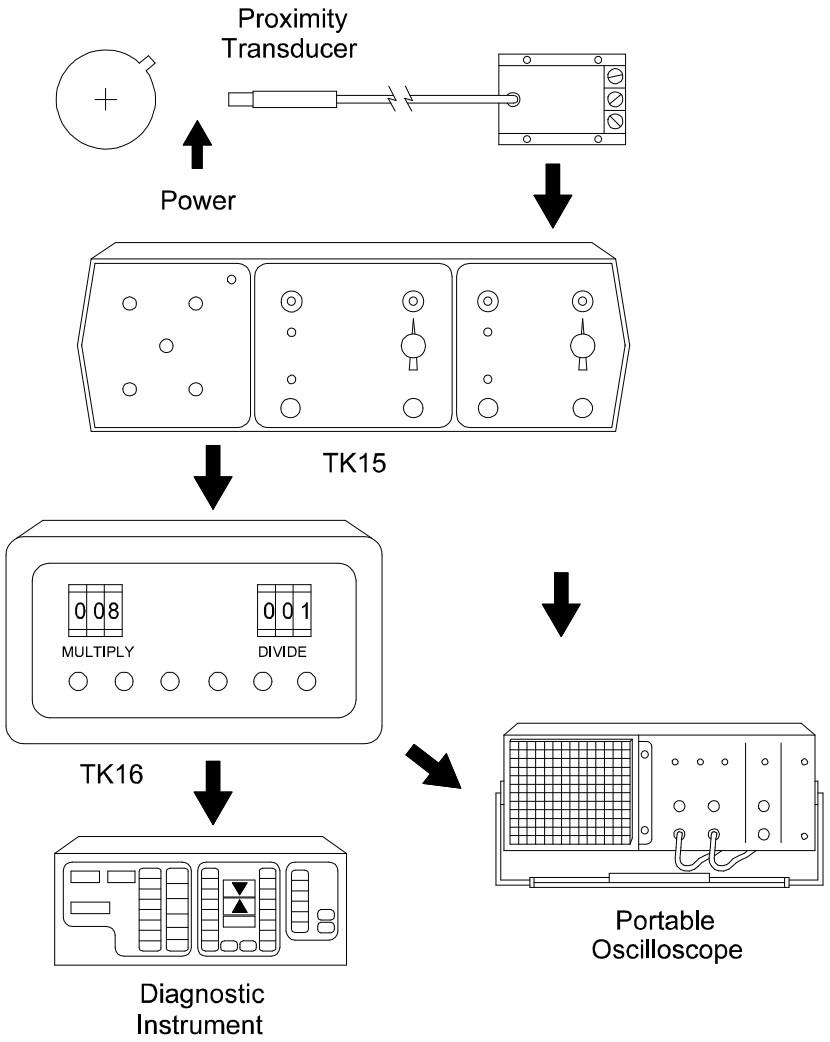


Figure 2: Typical application for TK16

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