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## Описание на мультипликаторы-делители. Модель ТК16

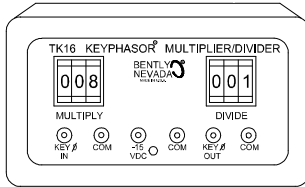


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# TK16 Keyphasor® Multiplier/Divider

Bently Nevada™ Asset Condition Monitoring

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## 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.

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## 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  $\pm 25\%$  of period (per period).

#### Signal Input Impedance:

50k  $\Omega$  nominal when signal is within signal bias voltage range.  
27.5 k  $\Omega$  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.

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## Outputs

### Signal Frequency:

Input frequency  $\times M \times 1/D$ , 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  $\mu$ s typical above 60,000 cpm (1,000 Hz).

### Signal Amplitude:

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

### Signal Output Impedance:

1.5 k  $\Omega$  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  $\pm 2$  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.

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## 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.

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<b>Physical Size</b>	
<b>Height:</b>	70 mm (2.75 in)
<b>Width:</b>	140 mm (5.5 in)
<b>Depth:</b>	203 mm (8 in)
<b>Weight:</b>	550 g (1.2 lb)

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## Ordering Information

### TK16 Keyphasor Multiplier/Divider 73783-02

Includes:

- 1 TK16 Keyphasor Multiplier/Divider
- 1 User Guide

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## Accessories

85291-01

TK16 User Manual

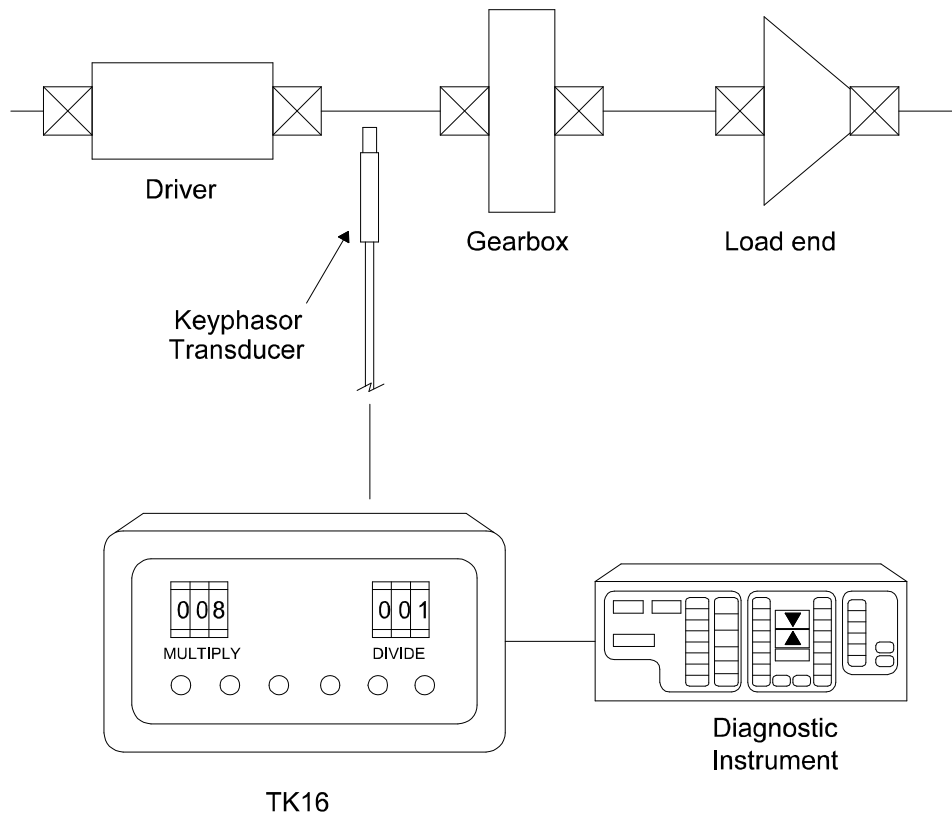
80917-01

TK15 Keyphasor Conditioner/Power Supply.

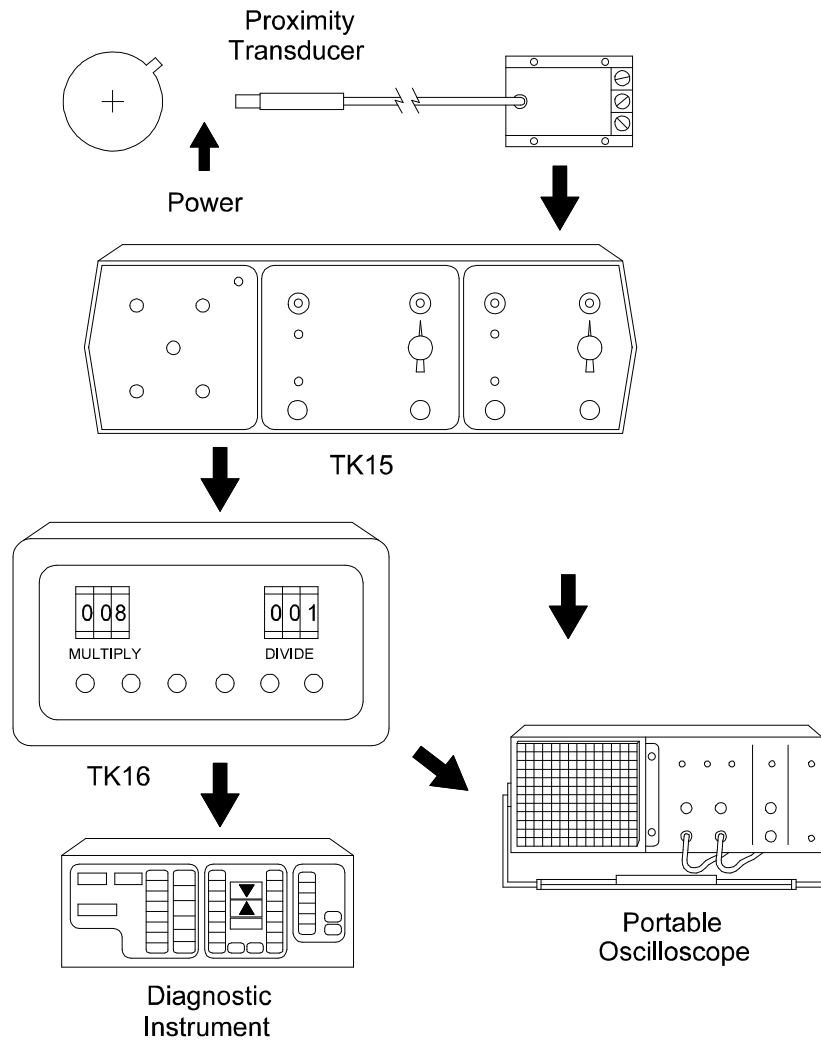
<b>82608-01</b>	TK84 Optical Keyphasor Package.
<b>82609-01</b>	TK85 Proximity Package.
<b>01609140</b>	Coaxial receptacle to double banana plug adapter.
<b>01609296</b>	Binding posts to coaxial plug adapter.
<b>02211505</b>	Coaxial cable 2 metres (6 feet).
<b>01600480</b>	Black banana to banana test lead.
<b>01600482</b>	Red banana to banana test lead.
<b>01600484</b>	Yellow banana to banana test lead.
<b>01600489</b>	White banana to banana test lead

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## Typical Field Wiring Diagram



**Figure 1: Gearbox application for TK16**



**Figure 2: Typical application for TK16**

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