

FEATURES

Hybrid Construction

Phase Shift $< 5^\circ$

Phase Match $< 1^\circ$

Load Capacity 10,000pF

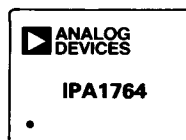
Full Military Temperature Range

APPLICATIONS

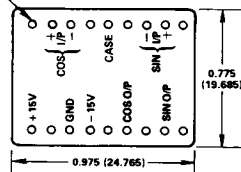
The IPA1764 is recommended for use with the 1S10/20, 1S14/24 and other 10- and 12-bit Inductosyn*/Resolver-to-Digital Converters.

OUTLINE DIMENSIONS

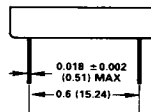
Dimensions shown in inches and (mm).



PIN ONE (GREEN GLASS BEAD)



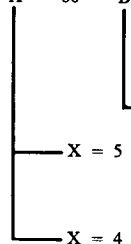
ALL UNMARKED PINS
HAVE NO INTERNAL
CONNECTIONS



ORDERING INFORMATION

IPA1764

X 60 B



High Reliability Processing

0 to +70°C

Operating Temperature Range

-55°C to +125°C

Operating Temperature Range

GENERAL DESCRIPTION

The output signals from an Inductosyn slider are at a low level of the order millivolts and require amplification and buffering before transmission to an Inductosyn-to-digital converter. The IPA1764 provides the necessary gain and output impedance for this purpose.

Any gain mismatch in the two channels amplifying the sine and cosine outputs of the Inductosyn slider contributes to the system error. The IPA1764 with a 0.15% gain match over the temperature range only contributes an error of 0.23 micron using a 2mm pitch Inductosyn. By carefully controlling phase mismatch to less than 1°, the error contribution is only 0.2 micron in a 2mm pitch Inductosyn.

The IPA1764 with an output resistance of less than 3 ohms and a capability of driving a cable capacity of 10,000pF is totally suited to machine tool applications where the Inductosyn-to-digital converter is remote from the measuring Inductosyn.

The IPA1764 is of hybrid manufacturing techniques, and available in two temperature range versions—industrial temperature range (0 to +70°C) and extended temperature range (-55°C to +125°C).

Both versions of the IPA1764 are housed in an 18-pin metal case.

APPLICATION

The diagram below shows a “hookup” with the preamplifier, power oscillator and a 1S60 with an Inductosyn. Precise application information is not possible as the Inductosyn in its application has many variables.

Current Set Resistor

This resistor is used to match the voltage output of the oscillator to the Inductosyn track resistance and provide the manufacturer's recommended current. By variation of the voltage outputs and current resistance, track by this up to approximately 10 feet (3 meters) can be accommodated.

Decoupling

The preamplifier and oscillator have internal high frequency decoupling capacitors on the supply lines, however, it is recommended that electrolytic decoupling capacitors are connected close to the hybrid pins.

*Inductosyn is a registered trademark of Farrand Industries, Inc.

IPA1764 – SPECIFICATIONS

(typical @ +25°C over full range of power supply inputs unless otherwise noted)

Model	IPA1764/560	IPA1764/460
GAIN	1250 ± 5%	*
GAIN MISMATCH Channel to Channel Over Full Temperature Range	± 0.15% (equivalent to 2.5 arc mins)	± 0.3%
PHASE SHIFT	< 5°	*
PHASE MISMATCH Channel to Channel	< 1°	*
CROSSTALK	< 0.1%	*
OPERATING FREQUENCY	10kHz	*
INPUT RESISTANCE	5kΩ ± 10%	*
OUTPUT RESISTANCE	< 5Ω	*
MAX LOAD CAPACITY	10,000pF	*
MAX SIGNAL OUTPUT LEVEL	3V rms	*
POWER SUPPLIES		
Voltage	± 12V to ± 15V	*
Current	± 70mA max	*
TEMPERATURE RANGE		
Operating	0 to +70°C	– 55°C to +125°C
SIZE	0.775" × 0.975" × 0.175" (19.7mm × 24.8mm × 4.5mm)	*
WEIGHT	0.25 ozs (7 grams)	*

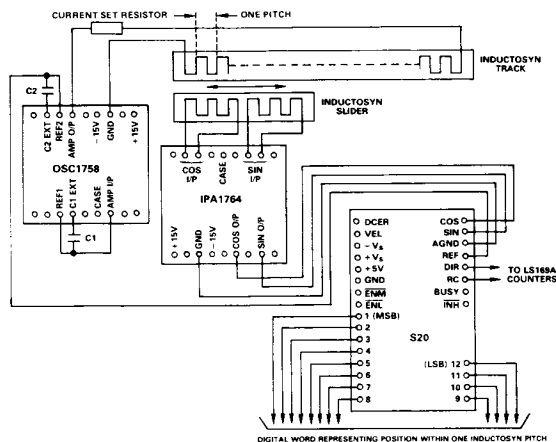
NOTES

*Specification same as IPA1764/560.

Specifications subject to change without notice.

ABSOLUTE MAXIMUM VALUES WITH RESPECT TO SUPPLY GROUND

Sin and Cos I/P +V
 +V Pin +17V
 –V Pin –17V
 Sin and Cos O/P 1k Load +10V
 Indefinite Short Circuit Proof



Use of 1S20 with Inductosyn Preamplifier IPA1764, Hybrid Power Oscillator OSC1758