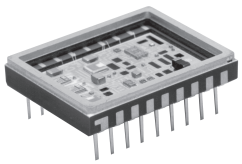


SYNCHRO/RESOLVER/INDUCTOSYN® REFERENCE OSCILLATOR

DESCRIPTION

The OSC-15802 is a power oscillator with two outputs that are 90° out of phase. These outputs provide both the reference and quadrature signals, simultaneously, making the OSC-15802 ideally suited for synchro, resolver, Linear Variable Differential Transformer (LVDT), Rotary Variable Differential Transformer (RVDT) and Inductosyn applications.

The oscillator's outputs are pin-scalable for both frequency and amplitude. The output frequency can be programmed from 400 Hz to 10 kHz by simply connecting two external capacitors. The Reference output voltage, 7 Vrms, can be scaled down by connecting a single resistor.

APPLICATIONS

Packaged in an 18-pin hermetic DDIP, the OSC-15802 operates over a temperature range of -55°C to +125°C. This, combined with its small size and scalable output voltage and frequency capabilities, makes it an excellent choice for synchro, resolver, LVDT, RVDT and Inductosyn applications.

FEATURES

- ***ADI Alternate Source***
- ***Quadrature Reference Output Voltages for Inductosyn Applications***
- ***Scalable Output Frequency to 10 kHz***
- ***Small 18-Pin DDIP***
- ***Scalable Reference Output***
- ***-55°C to +125°C Operating Temperature Range***

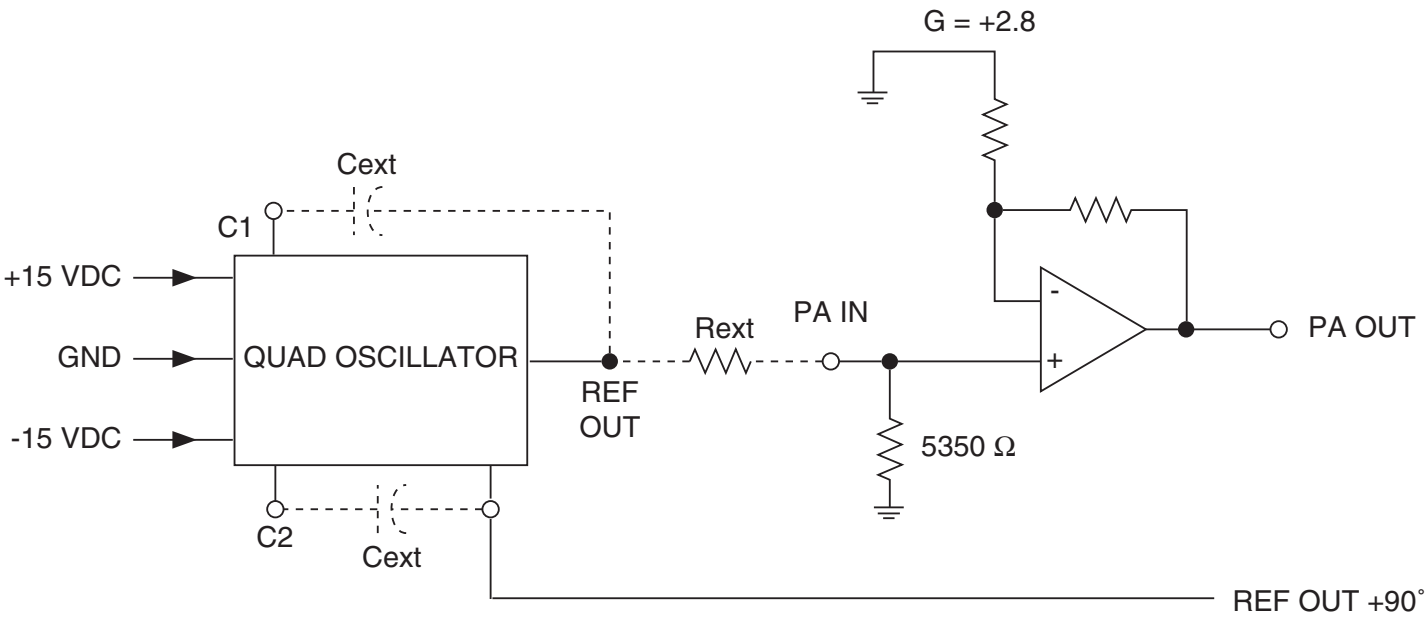


FIGURE 1. OSC-15802 BLOCK DIAGRAM

TABLE 1. OSC-15802 SPECIFICATIONS		
Specifications apply over temperature range and power supply range.		
PARAMETER	**UNITS**	**VALUE**
FREQUENCY	Hz	Scalable from 400 to 10k
OUTPUTS		
PA OUT		
Voltage	V rms	7 ±1% for 2.5 V PA input
Current	mA rms	190mA rms max
REF		
Voltage	V rms	2.5 ±10%
Current	mA rms	continuous current 3mA rms max
REF +90°		
Voltage	V rms	2.5 ±10%
Current	mA rms	continuous current 3mA rms max. Momentary short circuit and transient proof (1 sec. max.)
Protection		
POWER SUPPLIES		
Voltage	Vdc	±15 ±5%
Current	mA	20 max plus current load
Max Voltage without damage	Vdc	±18
TEMPERATURE RANGE		
Operating		
-10X	°C	-55 to +125
-30X	°C	0 to +70
Storage	°C	-65 to +150
JC (Junction to Case)	°C/W	8
PHYSICAL CHARACTERISTICS		
Size	in (mm)	1.0 x 0.8 x 0.2 (25.45 x 20.32 x 4.83) 18 pin DDIP
Weight (Max)	oz (gm)	0.4 (11.3)

SCALABLE FREQUENCY OUTPUT

The output frequency of the OSC-15802 is scalable to 10 kHz. The frequency is programmed using two external equal value capacitors (see FIGURE 2). The value of the capacitors (C_{ext}) is calculated as follows:

$$C_{ext} = \frac{10^7}{f}$$

where: C_{ext} is capacitance in picofarads (use NPO ceramic),

f is frequency in Hertz.

To scale down the PA OUT voltage, an external resistor (R_{ext}) is connected between pins 3 and 7. The value of R_{ext} is calculated as follows:

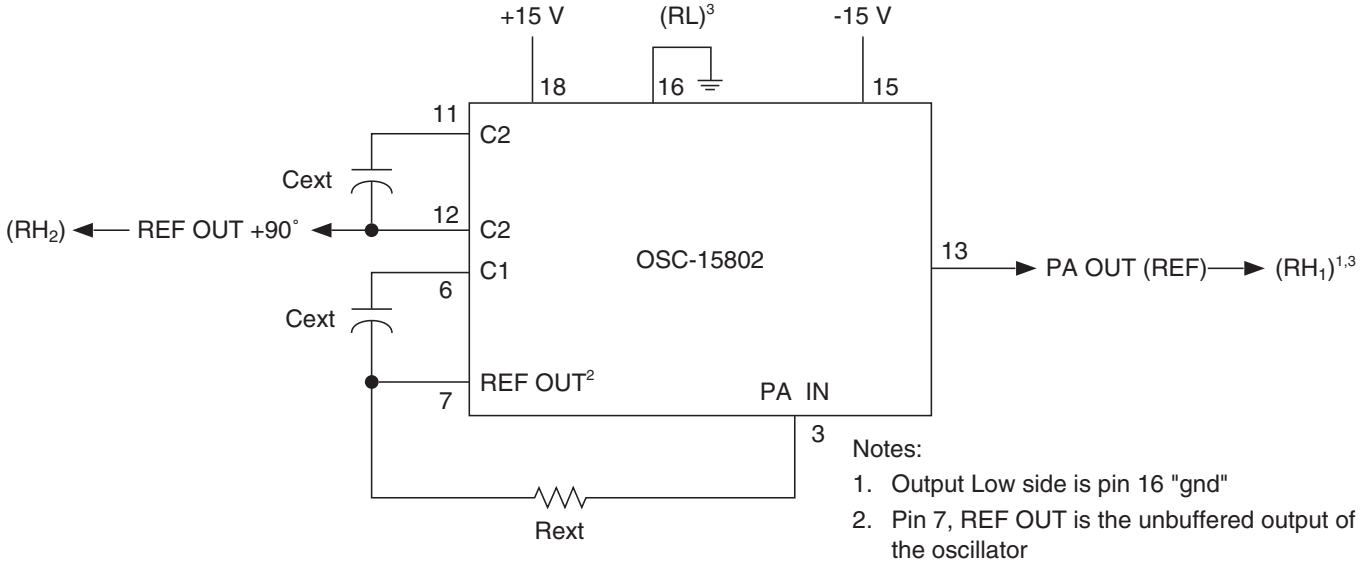
$$R_{ext} = \frac{37.5}{V_{out}} - 5.35$$

where: R_{ext} is in kOhms,

V_{out} is the desired voltage in Vrms.

For connection to converters connect as follows:

Ref Lo (RL) connect to pin 16
Ref Hi (RH) connect to pin 13 or 12.



Notes:
1. Output Low side is pin 16 "gnd"
2. Pin 7, REF OUT is the unbuffered output of the oscillator
3. RH_1 = Typical connection to RD converter Ref Hi.
   RH_2 = Low power +90 degree phase shifted signal for use with inductosyns.

FIGURE 2. PROGRAMMING RESISTOR AND CAPACITOR CONNECTIONS

INDUCTOSYN® TYPICAL CONNECTION

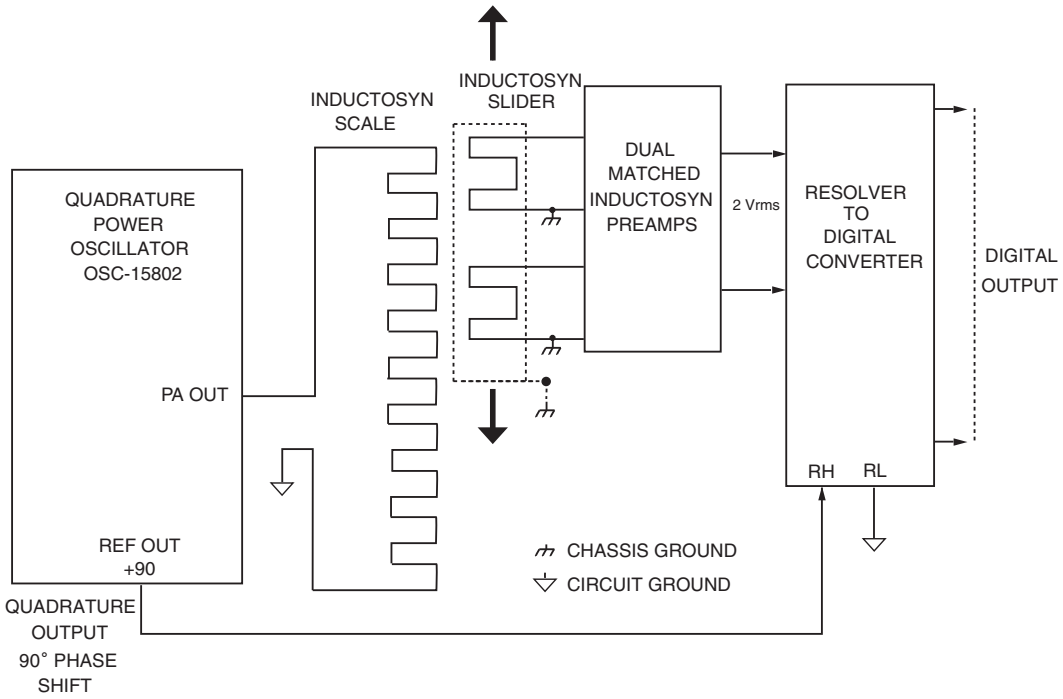
A linear or rotary Inductosyn® consists of a slider and a scale. As the slider moves over the scale there is a low voltage electrical output proportional to the distance moved. Inductosyns usually are excited by a 5 kHz to 20 kHz frequency. The OSC-15802 is an oscillator that was designed with a high frequency output and a +90° phase shift, which is needed for Inductosyn®-to-digital conversion (see figure below).

The figure below will convert each pitch to 360° of digital data. A means to track counts will be needed for multiple pitches. Using an RD-19230 and A quad B zero index pulse for counting pitches is one possible solution.

Note that inductosyns typically have a + or - 90 degree phase shift from input to output. This requires an oscillator with a 90 degree phase shifted second ouptut to be connected to the RD converter reference so that the RD input and reference will now be in phase.

DDC has two oscillators to cover the +90 or -90 phase shift needed. See the OSC-15801 for -90 phase shift and the OSC-15802 for +90 phase shift.

Note: See DDC's Synchro/Resolver Conversion Handbook "Using an R/D with an inductosyn" for further information.



INDUCTOSYN®-TO-DIGITAL CONVERTER SYSTEM

TABLE 2. OSC-15802 PIN FUNCTIONS		
PIN	**NAME**	**FUNCTION**
1	NC	No connection
2	NC	No connection
3	PA IN	Power amplifier input
4	NC	No connection
5	NC	No connection
6	C1	Capacitor connection (pin-scalable freq)
7	REF OUT	Reference Output
8	NC	No connection
9	NC	No connection
10	NC	No connection
11	C2	Capacitor connection (pin-scalable freq)
12	REF OUT +90°	+90° reference output signal
13	PA OUT	Power amplifier output
14	NC	No connection
15	-15 V	-15 Vdc power supply voltage
16	GND	Ground
17	NC	No connection
18	+15 V	+15 Vdc power supply voltage

Note : NC pins have no connection in package.

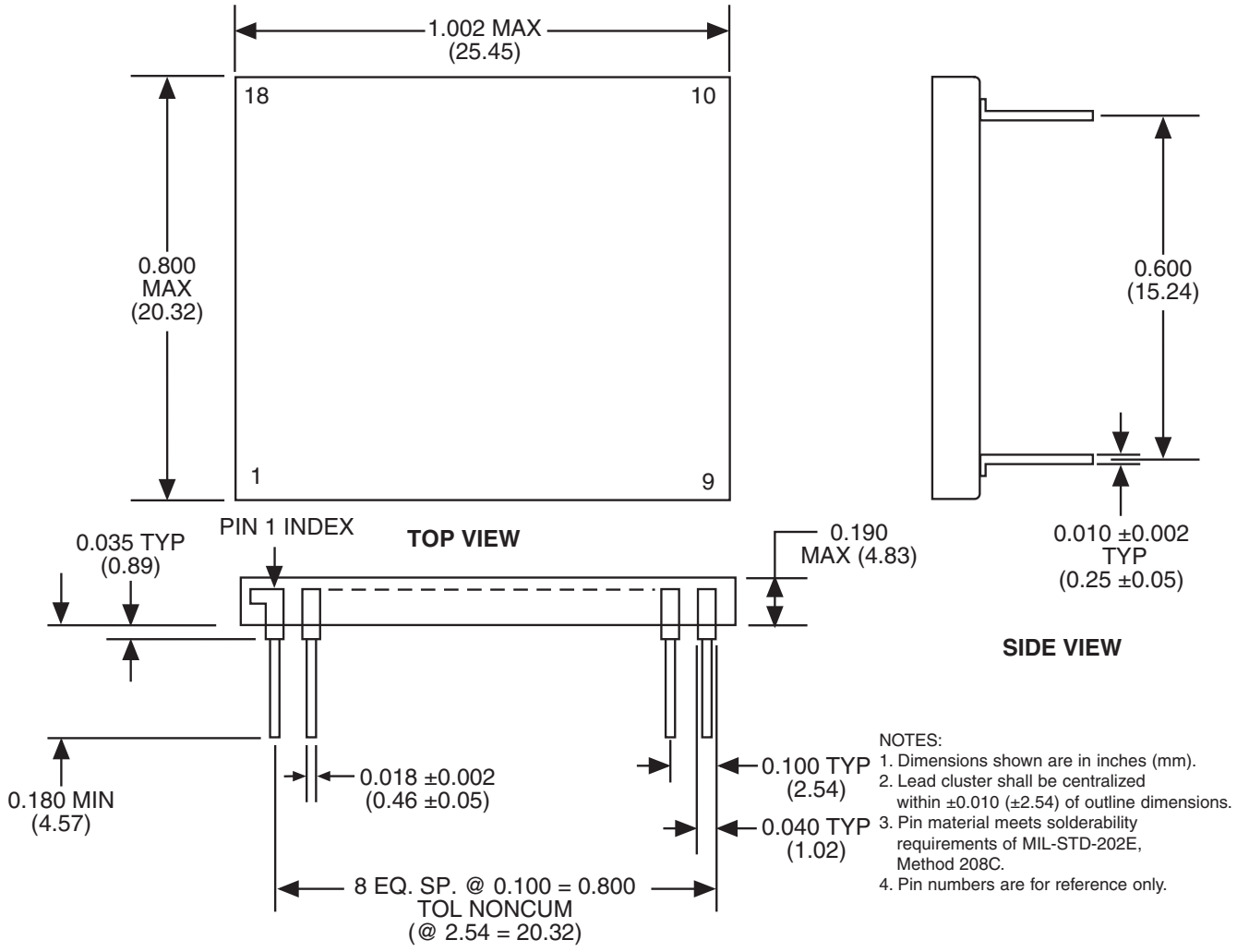


FIGURE 3. OSC-15802 MECHANICAL OUTLINE

ORDERING INFORMATION

OSC-15802- X X X X

Supplemental Process Requirements:
- S = Pre-Cap Source Inspection
- L = Pull Test
- Q = Pull Test and Pre-Cap Inspection
- K = One Lot Date Code
- W = One Lot Date Code and Pre-Cap Source
- Y = One Lot Date Code and 100% Pull Test
- Z = One Lot Date Code, Pre-Cap Source, and 100% Pull Test
- Blank = None of the Above

Additional Process Requirements:
- 0 = None
- 1 = X-ray

Process Requirements:
- 0 = Standard DDC Processing, no Burn-In
- 1 = MIL-PRF-38534 Compliant[3]
- 2 = B[1]
- 3 = MIL-PRF-38534 Compliant with PIND Testing[3]
- 4 = MIL-PRF-38534 Compliant with Solder Dip[2,3]
- 5 = MIL-PRF-38534 Compliant with PIND Testing and Solder Dip[2,3]
- 6 = B[1] with PIND Testing
- 7 = B[1] with Solder Dip[2]
- 8 = B[1] with PIND Testing and Solder Dip[2]
- 9 = Standard DDC Processing with Solder Dip, no Burn-In

Temperature Grade/Data Requirements:
- 1 = -55°C to +125°C
- 2 = -40°C to +85°C
- 3 = 0°C to +70°C
- 4 = -55°C to +125°C with Variables Test Data
- 5 = -40°C to +85°C with Variables Test Data
- 8 = 0°C to +70°C with Variables Test Data

Notes:
1. Standard DDC processing with burn-in and full temperature test. See table below.
2. These products contain tin-lead solder finish as applicable to solder dip requirements.
   Lead finish = The standard part, not solder dipped, lead finish is 50 micro inches of Gold (minimum) over 50-350 micro inches of Nickel. The solder dip option lead finish is, Tin (63%)/Lead (37%)
3. MIL-PRF-38534 product grading is designated with the following dash numbers:
   Class H is a -11X, 13X, 14X, 15X, 41X, 43X, 44X, 45X
   Class G is a -21X, 23X, 24X, 25X, 51X, 53X, 54X, 55X
   Class D is a -31X, 33X, 34X, 35X, 81X, 83X, 84X, 85X

STANDARD DDC PROCESSING FOR HYBRID AND MONOLITHIC HERMETIC PRODUCTS

TEST	MIL-STD-883	
	METHOD(S)	CONDITION(S)
INSPECTION	2009, 2010, 2017, and 2032	—
SEAL	1014	A and C
TEMPERATURE CYCLE	1010	C
CONSTANT ACCELERATION	2001	3000g
BURN-IN	1015[(Note 1)] 1030[(Note 2)]	TABLE 1

Notes:
1. For Process Requirement "B"* (refer to ordering information), devices may be non-compliant with MIL-STD-883, Test Method 1015, Paragraph 3.2. Contact factory for details.
2. When applicable.

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