

FREQUENCY SYNTHESIZERS TO 34 GHz

Model SLSM5

- Great performance to 34 GHz
- 1 kHz steps size
- Good spectral quality
- Reliable field proven design
- Affordable and a great value



Description

The SLSM5 frequency synthesizer is a high performance very reliable frequency source that operates in bands (as large as 2:1) to 34 GHz. With 1 kHz (and smaller) steps, and with good phase noise and low spurious the SLSM5 is ideal for many applications in communications and instrumentation.

This synthesizer is easily controllable through a standard multi-drop RS-485 bus, operates on a single 5V supply and comes in a small rugged package. The reference frequency is either an external 10 MHz or a high performance internal TCXO or OCXO.

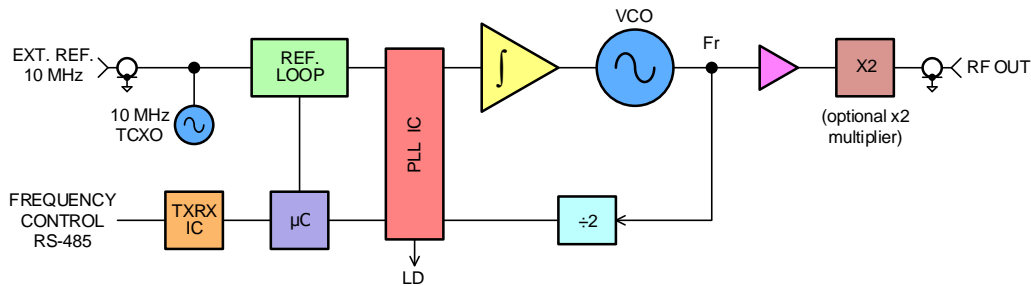
In short we build so much performance into the SLSM5 that the only surprise is its price and affordability!

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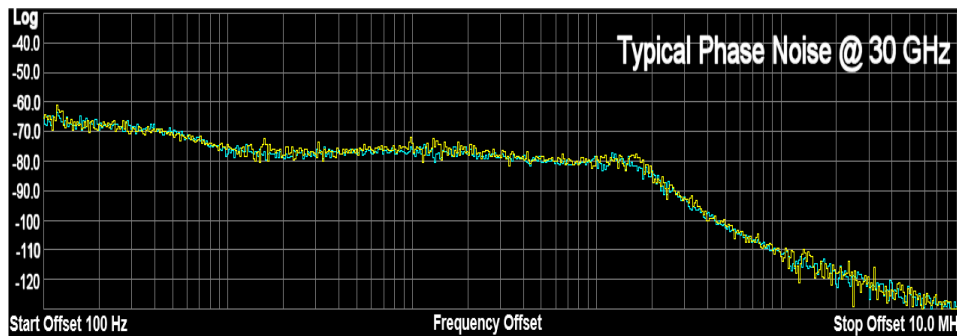
NOW TO 34 GHz

Block Diagram



Outstanding Features

- Frequency bands to 34 GHz (bands as large as 2 octaves)
- Frequency steps 1 kHz (smaller steps available)
- External reference frequency (10 MHz standard)
- Internal reference frequency
 - TCXO (± 0.5 PPM -5°C to $+65^{\circ}\text{C}$)
 - OEXO (± 50 PPB -5°C to $+65^{\circ}\text{C}$)
- Low phase noise and spurious



- Single 5V operation
- Frequency control
 - RS-485 multi-drop
 - Non-Volatile memory
 - USB operation with optional adapter
 - Supplied evaluation software with sweep function
 - Mute function (RF on/off)
- Small rugged package 2.5" x 2.5" x 0.63" (side mountable)
- Many standard models available from stock, shortly
- Low cost unit and a great value

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Standard specifications

Model No.	(SLSM5-12)	(SLSM5-14)	(SLSM5-48)	(SLSM5-612)	(SLSM5-1225)	(SLSM5-2434)
Frequency Range:	1 - 2 GHz	1 - 4 GHz	4 - 8 GHz	6 - 12 GHz	12 - 25 GHz	24 - 34 GHz
Multiplication:	Fundamental	Fundamental	Fundamental	Fundamental	x2 Multiplier	x2 Multiplier
Step Size:	1 kHz	1 kHz	1 kHz	1 kHz	1 kHz	1 kHz
Stability and Accuracy ^(note 1)						
External Reference: (Standard 10 MHz @ 0 dBm ±3 dB)	Same as input	Same as input	Same as input	Same as input	Same as input	Same as input
Internal TCXO Reference: ^(note 2)	±0.5 PPM	±0.5 PPM	±0.5 PPM	±0.5 PPM	±0.5 PPM	±0.5 PPM
Phase Noise in dBc/Hz (typ.): L(10 Hz)						
L(100 Hz)	-83	-79	-75	-71	-64	-65
L(1 kHz)	-99	-93	-87	-83	-74	-75
L(10 kHz)	-106	-98	-90	-87	-75	-75
L(100 kHz)	-103	-99	-92	-90	-83	-75
L(1 MHz)	-132	-125	-121	-117	-113	-110
L(10 MHz)	-148	-145	-140	-138	-133	-130
Spurious (typ.): ^(note 3)	-60 dBc	-60 dBc	-60 dBc	-60 dBc	-60 dBc	-60 dBc
Harmonics / Sub-Harmonics (typ.):	-17 dBc	-17 dBc	-17 dBc	-17 dBc	-17 / -17 dBc	-17 / -17 dBc
Power Out (typ. / min.) @ 25°C:	+15 / +13 dBm	+15 / +13 dBm	+15 / +13 dBm	+15 / +13 dBm	+15 / +13 dBm	+15 / +13 dBm
Power variation [freq. & temp] (max.):	±2 dB	±2 dB	±2 dB	±2 dB	±2 dB	±2 dB
Load VSWR (max.):	2:1	2:1	2:1	2:1	2:1	2:1
Frequency control: ^(note 4)	RS-485	RS-485	RS-485	RS-485	RS-485	RS-485
Acquisition time (typ.):	<5 msec.	<5 msec.	<5 msec.	<5 msec.	<5 msec.	<5 msec.
Phase-lock indicator (LD): ^(note 5)	Open Collector	Open Collector	Open Collector	Open Collector	Open Collector	Open Collector
Supply Voltage (Vcc):	+5.5 Vdc ±0.5 V	+5.5 Vdc ±0.5 V	+5.5 Vdc ±0.5 V	+5.5 Vdc ±0.5 V	+5.5 Vdc ±0.5 V	+5.5 Vdc ±0.5 V
Supply Current (Icc):	500 mA	500 mA	600 mA	650 mA	1 A	1 A
RF Output Connector:	SMA	SMA	SMA	SMA	2.92mm	2.92mm

Above are some standard units – many additional units are also available

Part Number Construction: SLSM5-xxxx-y-z

xx = start frequency in GHz

xx = stop frequency in GHz

y = internal reference option (-X or -O)

z = TTL LD option (-T)

Examples: **SLSM5-48**

4 - 8 GHz synthesizer, external 10 MHz reference, LD open collector

SLSM5-612-X-T

6 - 12 GHz synthesizer, internal TCXO reference, LD TTL

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Notes:

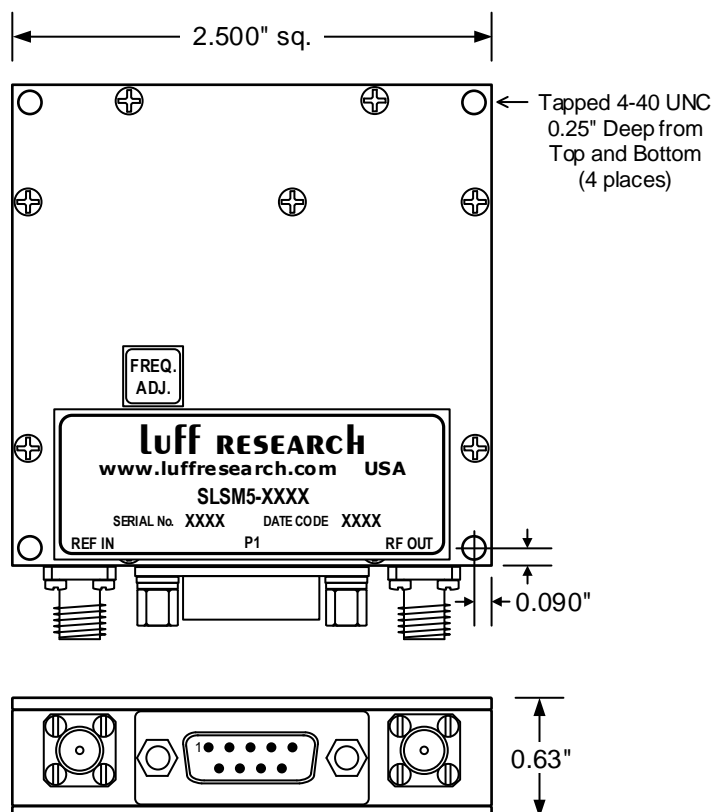
1. These synthesizers use a fractional $\pm N$ architecture. With an external reference, the output frequency has the same stability as the input reference frequency and is typically accurate to within 2 Hz (depending on the band).
2. The reference input is either external or internal but not both. The units are designed for only one reference.

Internal reference options are:
TCXO – (± 0.5 PPM) add suffix -X
OCXO – (± 0.05 PPM) add suffix -O
3. There is a very small set of frequencies at which a spectral anomaly occurs where the close in spurious are > -60 dBc. These can often be eliminated by shifting F_0 by 1 or 2 kHz.
4. Frequency tuning is via RS-485 (4 wire), multi-drop with 9600 or 115200 bps baud rates and can be controlled via the supplied SLSM5 GUI evaluation software.
5. Lock detector (LD) output: high = lock, open collector standard. TTL suffix -T.
6. Environmental Specifications:

Operating temperature (surface)*:	-5°C to +65°C
Storage temperature:	-40°C to 85°C
Relative humidity (non-condensing):	90%RH @ 40°
Shock:	30G / 10msec
Vibration:	4G / 20Hz-20kHz
Specifications @:	90%RH @ 40°

*Proper heatsinking is required to keep surface temperature less than +65°C.
7. Export orders require end use / end user information.
8. Purchase directly from Luff Research or through one of our factory representatives.

Outline Drawing



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