



FEATURES

- Converts Generators and Receivers to Digitally Synthesized Operation
- Internal Micro-Processor
- 100 Hz Frequency Resolution Available
- IEEE-488 Bus Control
- RF Unit Remotable to 200 Feet
- Directly Compatible with:
 - MSR-904 .03-40 GHz Surveillance Receiver
 - SG-811 .01-40 GHz Signal Generator
 - 1295 .01-40 GHz Attenuation Measurement Receiver

DESCRIPTION

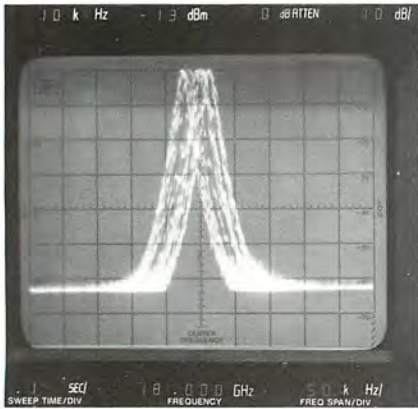
The FS-1000 Frequency Synthesizer is an accessory instrument to the Micro-Tel MSR-904 Surveillance Receiver, SG-811 Swept Signal Generator and 1295 Precision Attenuation Measurement Receiver. The FS-1000 enables either of the previously mentioned instruments to be programmed with crystal oscillator accuracy to any frequency within their operating range.

The FS-1000 consists of a 200 MHz Comb Generator, Low Frequency Synthesizer to interpolate between comb lines, and an internal microprocessor which provides band information, IF offsets for receivers, and various front panel or Bus controlled tuning routines.

The internal frequency reference is a 5 MHz oven controlled crystal. A switch selected input/output connector is provided if a more accurate reference is required, or if it is desirable to lock two instruments to

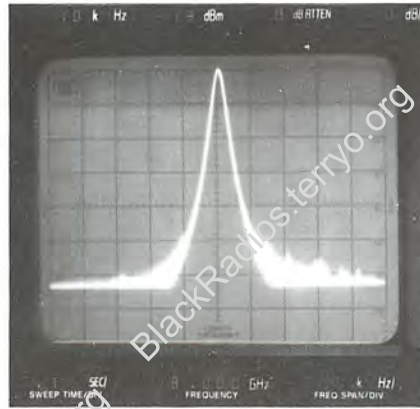
the same reference. All band and IF offset information is stored in the microprocessor for each of the instruments. A hard-wired code in the SG-811, MSR-904, and Model 1295 automatically presets IF offset and bands. The user can manually preset the microprocessor parameters for F₁-F₂, frequency increment, and dwell time. Alternately, an external computer can program the information.

The SG-811 and MSR-904 each have companion Frequency Extenders, the ME-811 and FE-904 respectively, which provide operation from 18-40 GHz in two bands. The FS-1000 internal microprocessor contains the necessary algorithms to phase lock the various instruments to the programmed frequency.



UNSYNTHESIZED

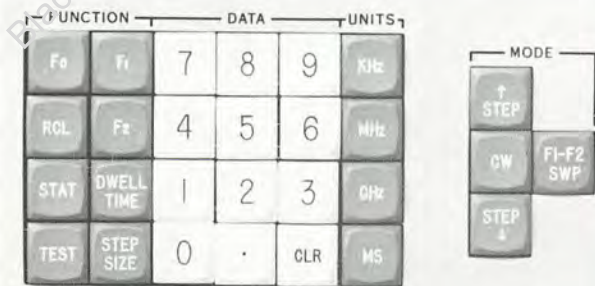
Signal from a standard commercial YIG tuned sweep oscillator at 18 GHz over a 15 second period.



SYNTHESIZED

Same oscillator synthesized by the FS-1000 over a 15 second period.

In addition to vastly improving the frequency stability of a microwave oscillator, the FS-1000 provides a convenient means for very accurate frequency tuning, either manually or automatically, with digital control.



FRONT PANEL KEYBOARD

This feature provides digital programming under local control. Frequency, F₁-F₂ sweep parameters, an internal test routine and operating modes are all programmed via the front panel keyboard. An interactive display assists the user through each programming sequence.



REMOVABLE-REMOVABLE RF ASSEMBLY

One of the unique features of the FS-1000 is the Removable-Removable RF Assembly, matching a similar feature of the SG-811 Swept Signal Generator and MSR-904 Microwave Surveillance Receiver. The Remote Assembly may be located up to 200 feet from the mainframe with the RCC-1000 Remote Control Cable.

OPTIONS

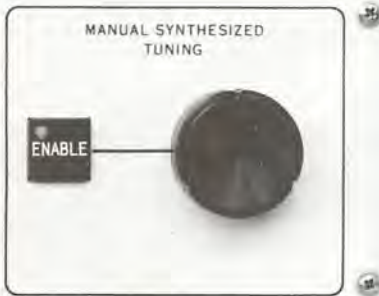
100 Hz RESOLUTION (Option 1)

A third loop is added to the Low Frequency Synthesizer Module to increase resolution from 10 kHz to 100 Hz. This option is required to synthesize companion instruments above 18 GHz.

PARALLEL BCD CONTROL

(Option 2)

If digital control is to be accomplished by any format other than GPIB this option provides a parallel BCD register (TTL) for the control commands.



MANUAL TUNING WITH OPTICAL ENCODER (Option 3)

This option provides a manual tuning control with 250 steps per revolution. Step size is inserted via the front panel keyboard. This option is particularly useful with surveillance receiver applications.

REMOTE TUNER OPERATION

(Option 4)

All connectors, heatsinks, cables and miscellaneous components necessary for remote operation are included in this option. Cable is purchased on a per foot basis for the desired length.



SPECIFICATIONS

Frequency Range	30 MHz-40GHz with the MSR-904 10-MHz-40 GHz with the SG-811 and 1295
Phase Noise	-70 dBc at 10 KHz removed in a 1 Hz Bandwidth (Typical)
Frequency Resolution	10 kHz; 100 Hz to 18 GHz and 10 kHz to 40 GHz with Option 1
Frequency Stability	3×10^{-9} per 24 hrs 1×10^{-10} per sec.
Incidental FM	100-Hz RMS Max
Switching Time	\approx 50 ms. maximum \approx 5 ms. for monotonically increasing frequency between comb lines
Display	16 character flourescent alpha-numeric
Tuning	Front Panel Keyboard GPIB Parallel BCD (Option 2) Optical Encoder (Option 3)
Temperature ($^{\circ}$ C)	0-50 Operating
Cooling	Forced Air
Size (Inches)	3½ x 17 x 19
Weight(Pounds)	32
Power Requirements	115/230V \pm 10%; 50-60 Hz; 100 watts

INTERFACE REQUIREMENTS

The options or features listed below are required when the FS-1000 is employed to control the following instruments.

MSR-904 Microwave Surveillance Receiver	Option 2 LO Sample
SG-811 Swept Signal Generator	Option 4 RF Sample
1295 Attenuation Measurement Receiver	None Required
Other: Sweep Oscillators Access to Main and FM Tuning Coil Drivers and -10 dBm RF Sample	Contact a Sales Engineer for this Application



ORDERING INFORMATION (Please see latest price list.)

FS-1000 Frequency Synthesizer

- Option 1 100 Hz Resolution
- Option 2 Parallel BCD Control
(Replaces GPIB)
- Option 3 Manual Tuning with
Optical Encoder
- Option 4 Remote Tuner Operation
- Option R Rack Mount
- RCC-1000 Cable for Remote
RF Assembly
- C-1000 Fitted Fiberglass
Carrying Case

WARRANTY

All Micro-Tel products are unconditionally warranted for a period of one year except for physical damage, provided the equipment is returned to the plant in Hunt Valley.