Signal Source

ELE-SRC-FS-0.01-20

FEATURES

- **Precise and agile signals to 20 GHz**
- **Satisfies a wide range of RF test requirements**
- **40 µs frequency switching**
- **Remote programming with SCPI-based control**
- **Compatible with most RF instrumentation**
- **Extremely low harmonics and phase noise**

DESCRIPTION

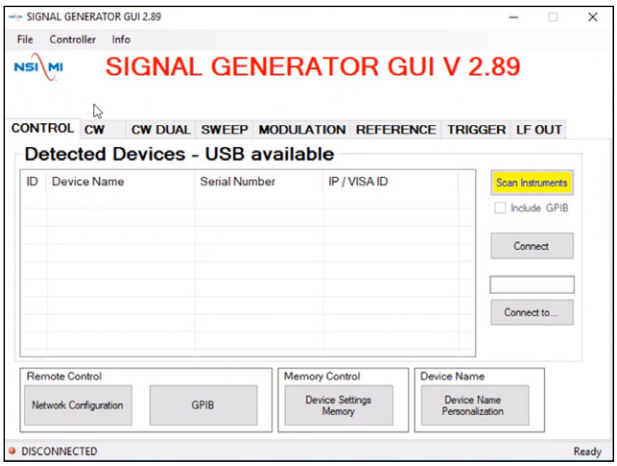
The ELE-SRC-FS-0.01-20 Signal Source generates fast, precise, and agile signals for testing, characterizing, and verifying RF performance over a wide range of applications. Signals are always accurate and pure, providing the highest-quality measurements possible. With broad 0.01 to 20 GHz frequency coverage and fast 40-microsecond frequency switching, you can reduce test time and maximize productivity.

TECHNICAL SPECIFICATIONS

Function / Parameter	ELE-SRC-FS-0.01-20
Frequency Range	0.01–20 GHz
Frequency resolution	0.001 Hz
Frequency switching	40 µs max
Phase resolution	0.1 deg
Phase noise	-100 dBc/Hz at 1 kHz offset at 10 GHz
Harmonics	≤ -25 dBc (at 5 dBm)
Sub-harmonics	≤ -60 dBc (at 5 dBm)
Spurious	≤ -50 dBc (CW +10 dBm, > 3 kHz offset)
Output Power	-20 dBm to + 15 dBm
Power resolution	0.01 dB
Power uncertainty, ALC on	1.0 dB max (-15 to + 15 dBm)
Output connector	3.5 mm female
Output VSWR	1.5
Internal Frequency Reference	100 MHz
Initial accuracy	±40 ppb max (calibrated at 23 ± 3 °C at time of calibration, user adjustable)
Aging, first year	0.5 ppm
Aging, per day after 30 days	5 ppb max
Warm-up time	5 minutes
Reference output	10/100 MHz, 50 Ω BNC connector
Reference power out	0 dBm (10 MHz)
External Frequency Reference	10 MHz to 250 MHz (user programmable), 50 Ω BNC connector
Input level	0 dBm ± 3 dB (10 MHz)
Lock range	±1.5 ppm
Pulse Modulation, Rate (PRF)	1 Hz–10 MHz
On/off ratio	0.01–0.1 GHz: 35 dB @ +10 dBm/0.1–20 GHz: 50 dB @ +10 dBm
Polarity	Selectable
Frequency Modulation, Rate	10 Hz–800 kHz
Internal modulation waveforms	Sine, Square, Triangle, Ramp up, Ramp down
Phase Modulation, Rate	10 Hz–800 kHz
Internal modulation waveforms	Sine, Square, Triangle, Ramp up, Ramp down
Amplitude Modulation Rate	10 Hz–50 kHz
Internal modulation waveforms	Sine, Square
Modulation depth	0% to 90% (settable)

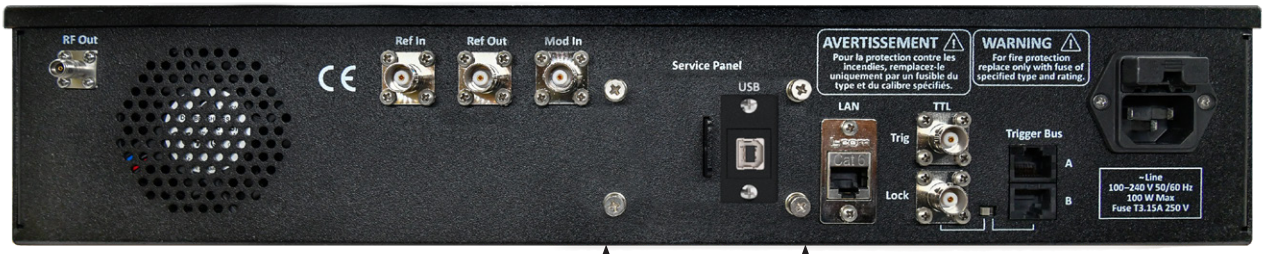
GENERAL SPECIFICATIONS

Function / Parameter	ELE-SRC-FS-0.01-20
Hardware Interfaces	Ethernet, USB, Trigger bus
Ethernet interface	100BaseT
USB interface	1, USB 2.0 host and device
Trigger bus interface	2 x RJ45, RS-422, Trigger input/lock output
Controls and indicators	RF On, Pulse, Trigger, Lock
Software Interface	Virtual front panel, SCPI
Virtual control panel	Windows compatible; USB/Ethernet
Control language	SCPI Version 1999.0, USB / Ethernet
Documentation	SCPI programming guide
Frequency list mode	SW/HW triggerable, up to 65,000 points
Safety	
Complies with:	EU: 2014/35/EU; IEC/EN 61010-1 Canada: CSA C22.2 No. 61010-1 USA: UL-61010-1
EMC	
Complies with:	EU: EMC Directive 2004/108/EC; EN 61326-1; IEC 61326-1; CISPR 11/EN55011 (Group 1 Class A) Canada: ICES-003 USA: FCC 47 CFR Part 15, Subpart B (“Class A”); ANSI C63.4
Memory	
Internal memory shared by instrument states, sweep list files, calibration coefficients, operating firmware, and other information	RAM (128MB); NAND flash (46.5 MB user settings); NAND flash (82.5 MB firmware) RAM clears on power-off; user settings memory may be cleared by command
Security	
Unit may be fully cleared of memory contents with the following steps:	Issue/verify “Memory Clear,” Issue/verify “Free Memory,” turn off power for 10 minutes
Calibration Cycle	24 months recommended
Environment	Indoor use
Operating temperature/humidity	0° to 40° C
Altitude	Up to 2,000 m
Pollution degree	2; IEC61010-1:2001
Size (H x W X D)	2U Rack-mountable: 88.9 x 482.6 x 635 mm (3.5 x 19 x 25 in.)
Shipped dimensions	797.5 x 304.8 x 637.5 mm (31.4 x 12 x 25.1 in.)
Power Requirements	
Supply voltage	100–240 V AC, 50/60 Hz, 100 W max
Standard Components	
The ELE-SRC-FS-0.01-20 is shipped ready for use with:	Power cord User manual Trim kit for desktop and rack-mount configurations



SIGNAL GENERATOR GRAPHIC USER INTERFACE (GUI)

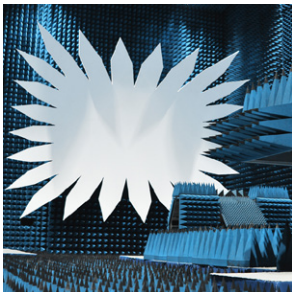
Control every available source function with the integrated Ethernet/SCPI remote programming interface. The convenient virtual control software application allows you to program up to 65,000 frequencies for the most comprehensive and complex measurements.

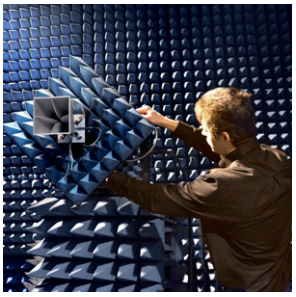


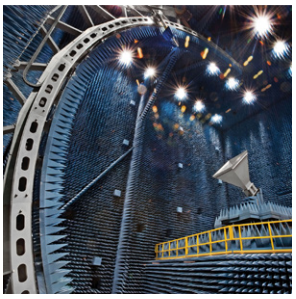
(Shown without service panel cover)

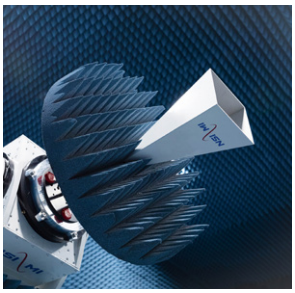
ELE-SRC REAR PANEL

Name		Description	Function	Connector
RF Out		RF signal output	50 Ohms	3.5 mm female
Ref In		External reference input	Select 1–250 MHz	BNC female
RF Out		Internal reference output	Select 10 or 100 MHz	BNC female
Mod In		Modulation signal input	Pulse: 10 Hz–10 MHz, AM: 10 Hz–50 kHz, FM/PM: 10 Hz–800 kHz	BNC female
Service Panel		USB Port	Service/setup	USB-B, lockable
LAN		Ethernet interface	Remote source control	RJ-45 female
TTL	Trig	Trigger input	Frequency changes	BNC female
	Lock	Lock output	Frequency lock indicator	BNC female
Trigger Bus	A	Trigger bus connections	"Downstream" (receiver)	RJ-45 female
	B	Trigger bus connections	"Upstream" (positioner)	RJ-45 female
Line		AC power input	100–240 V AC, 50/60 Hz, 250 W max	C14 (IEC 60320-1)









Test with Confidence

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Our full range of standard products and custom-designed systems are backed by our longstanding commitment to precision-engineered accuracy, reliability, and lasting performance. We provide the right solution for every RF measurement need and our worldwide network of service professionals are always available to offer support.

For more information on ordering NSI-MI Technologies' products, applications or services please contact your nearest NSI-MI office. Our complete sales team information is available at: www.nsi-mi.com/contact-us

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