UXG Agile Signal Generator
N5193A and N5191A

Configure Your New UXG

This step-by-step process will help you configure your N5193A or N5191A UXG agile signal generator. Tailor the performance to meet your requirements.

Included in Base Product N5193A UXG X-Series Agile Signal Generator

Standard options and accessories come with the UXG base model at no additional charge and do not need to be ordered. They include:

- 10 kHz frequency resolution
- 100 µs switching speed (N5193A)
- Amplitude range of +10 to -10 dBm
- Phase noise of -117 dBc/Hz (typ) at 20 kHz offset for a 10 GHz carrier frequency
- One day of on-site startup assistance

Important note

When the N5194A UXG vector adapter is used with the N5193A UXG agile signal generator, the N5193A must have options CC1 and SS4 installed.

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Step 1. Select frequency range (required option; frequency range not upgradeable)		
Description	**Option number**	**Additional information**
Frequency range from 10 MHz to 20 GHz	N5193A-520	Not compatible with Option 540 Includes standard adapter 3.5mm(f) to 3.5 mm(f)
Frequency range from 10 MHz to 40 GHz	N5193A-540	Not compatible with Option 520 Includes standard adapters 2.4mm(f) to 2.4 mm(f) and 2.4mm(f) to 2.9 mm(f)

Step 2. Choose frequency resolution		
Description	**Option number**	**Additional information**
Frequency resolution 10 kHz	Standard	
Frequency resolution 0.001 Hz	N5193A-FR1	The FR1 option is not required for fine frequency resolution if the N5193A is being used as a local oscillator for an N5194A.

Step 3. Choose switching speed options		
Description	**Option number**	**Additional information**
Switching speed 100 µs	Standard	N5193A: List update rate 100 µs
Switching speed 1 µs	N5193A-SS1	Update rate 1 µs; not compatible with Option SS4
Switching speed 180 ns	N5193A-SS4	Update rate 180 ns, not compatible with Option SS1

Step 4. Choose amplitude range		
Description	**Option number**	**Additional information**
Amplitude range +10 to -10 dBm	Standard	
Mechanical and solid-state attenuator	N5193A-AT2	80 dB agile range and 120 dB overall range

Step 5. Choose phase noise performance		
Description	**Option number**	**Additional information**
Standard phase noise	Standard	-117 dBc/Hz (typ) at 20 kHz offset for a 10 GHz carrier frequency
Enhanced phase noise	N5193A-EP1	-126 dBc/Hz (typ) at 10 kHz offset for a 10 GHz carrier frequency

Step 6. Choose modulation options		
Description	**Option number**	**Additional information**
AM, FM, phase modulation, narrowband chirp, and LF output	N5193A-UNT	Chirped pulse is settable in List mode or through SCPI commands only. FMCW chirp is settable through fast control port (FCP) in Normal mode only.
Wideband chirp (min 10%)	N5193A-WC1	Wideband chirp is settable in List and Streaming modes, via the FCP connector, or through SCPI commands. N5193A requires UNT and PM1.
Pulse modulation	N5193A-PM1	

Step 7. Choose connector configuration		
Description	**Option number**	**Additional information**
Move all connectors to rear panel	N5193A-1EM	Not upgradable
Type-N (f) RF output connector	N5193A-1ED	Only available on 520/52E units Both options include standard adapter Type-N male to 3.5 mm female
100-pin LVDS I/O interface	N5193A-CC1	Must select CC1, CC2 or CC4
50-pin BCD I/O interface	N5193A-CC2	Must select CC1, CC2 or CC4
10 GB Ethernet I/O interface	N5193A-CC4	Must select CC1, CC2 or CC4

Step 8. Choose signal creation software		
Description	**Option number**	**Additional information**
Signal Studio for multi-emitter scenario generation (MESG)	N7660C	See 5992-0405EN Technical Overview for configuration guidance
Keysight EW Threat Simulation View	Z9500A	See 5992-4339EN Technical Overview for configuration guidance.
Signal Studio for Multi-Source Calibration	N7665C	See 5992-2944EN Technical Overview for configuration guidance.

Step 9. Choose accessories	
Description	**Option number**
Additional LVDS I/O interface	N5193AU-CC1
Additional BCD I/O interface	N5193AU-CC2
Additional 10 GB Ethernet I/O interface	N5193AU-CC4
Additional removable 512 GByte solid-state drive (SSD) and drive tray	1CC150A
Empty SSD drive tray	1CC145A
Front handle kit	1CN107A
Rack mount flange kit	1CM104A
Rack mount flange kit with front handles	1CP108A
Hard transit case	N5193A-AXT

Step 10. Choose accessories	
Description	**Option/model number**
Microwave coaxial cables	
Coax cable assembly, 3.5 mm(m) to 3.5 mm(f), 16 inch (406 mm) length	1CC102A
Coax cable assembly, 3.5 mm(m) to 3.5 mm(m), 18 inch (457 mm) length	1CC103A
Coax cable assembly, 3.5 mm(m) to 3.5 mm(f), 48 inch (1219 mm) length	1CC105A
Triggering cables and adapters	
Coax cable assembly, BNC(f) to SMB(f), 3 inch (76 mm) length	1CC110A
Coax cable assembly, SMA(m) to SMB(f), 18 inch (457 mm) length	1CC111A
Coax cable assembly, SMA(m) to SMB(f), 48 inch (1219 mm) length	1CC113A
Coax cable assembly, BNC(m) to BNC(m), 12 inch (305 mm) length	1CC114A
Coax cable assembly, BNC(m) to BNC(m), 24 inch (610 mm) length	1CC115A

Step 10. Choose accessories	
Coax cable assembly, BNC(m) to BNC(m), 48 inch (1219 mm) length	1CC116A
SMB(f)-SMA(f) coax adapter	1CC118A
BNC(m) to SMA(f) coax adapter	1CC119A
RF coaxial cables	
Coax cable assembly, SMA(m) to SMA(m), 12 inch (305 mm) length	1CC120A
Coax cable assembly, SMA(m) to SMA(m), 18 inch (457 mm) length	1CC121A
Coax cable assembly, SMA(m) to SMA(m), 36 inch (914 mm) length	1CC122A
Coax cable assembly, SMA(m) to SMA(m), 48 inch (1219 mm) length	1CC123A
Digital data cables	
USB cable (Type A-B), 6 foot (1.8 m) length	1CC130A
LVDS cable, 1.5 m length	1CC131A
BCD cable, 1.5 m length	1CC132A
10 Gigabit fiber optic cable, 2 m length, and two SFP+ transceivers	1CC133A
Power splitters and accessories	
Four-way power splitter, 5.4 GHz to 6.8 GHz, SMA(f) connectors	1CC140A
50 Ω coax termination, SMA(m) connector	1CC149A
Hybrid power divider, 0.5 GHz to 26.5 GHz, 3.5 mm(f) connectors	87302C

Step 11. Choose Calibration Options	
Description	**Option number**
Commercial calibration certificate with test data	N5193A-UK6
UXG Keysight calibration + uncertainties + guardbanding (compliant calibration)	N5193A-1A7
UXG ANSI Z540-1-1994 calibration	N5193-A6J

Step 12. Choose startup assistance service options	
Description	**Option number**
Remote scheduled assistance 1- 999 hours	PS-S10
Startup assistance (one-day included standard)	PS-S20-UXG
Signal generator and source basics; half-day, maximum of eight students on site	PS-T10-ASG
Custom services to be qualified by Keysight	PS-X10

Upgrade Your Existing UXG

Fast license-key upgrades for options that do not require additional hardware:

1. Place an order for the upgrade with Keysight and request to receive the software entitlement certificate through email

2. Redeem the certificate through the Web by following the instructions on the certificate

3. Install the license file using Keysight License Manager

4. Begin using the new capability

Installation, calibration, and verification information is available at:

www.keysight.com/find/N5193A-upgrades

Description	Upgrade number	Requirements	Additional information
Upgrade from standard speed to SS1 switching speed (N5193A)	N5193AU-SS1	None	Customer installable – software, license key
Upgrade from standard speed to SS4 switching speed (N5193A)	N5193AU-SS4	Opt 520: all S/N's Opt 540: S/N ≥ 5646xxxx	Customer installable – software, license key
Upgrade from standard speed to SS4 switching speed (N5193A)	N5193AU-1S4	Opt 540: S/N < 5646xxxx	Return to service center, hardware, license key
Upgrade from SS1 speed to SS4 switching speed (N5193A)	N5193AU-2S4	SS1, 520: all S/N's 540: S/N ≥ 5646xxxx	Customer installable - software, license key
Upgrade from SS1 speed to SS4 switching speed (N5193A)	N5193AU-3S4	SS1, 540: S/N < 5646xxxx	Return to service center, hardware, license key
Upgrade from SS2 speed to SS4 switching speed (N5193A)	N5193AU-4S4	SS2, 540: S/N < 5646xxxx	Return to service center, hardware, license key
Frequency resolution 0.001 Hz	N5193AU-FR1[1]	None	Customer installable – software, license key
Commercial calibration certificate with test data	N5193AU-UK6	None	
AM, FM, phase modulation, narrowband chirp, and LF output	N5193AU-UNT	None	Customer installable – software, license key
Add wideband chirp	N5193AU-WC1	UNT	Customer-installable - software, license key
Pulse modulation	N5193AU-PM1	None	Customer installable – software, license key
Add mechanical and solid-state attenuator	N5193AU-AT2	None	Return to service center, hardware, license key
Add enhanced phase noise	N5193AU-EP1	None	Customer installable – software, license key
Add core instrument firmware enhancements	N5193AU-R2C	None	Customer installable – software, license key

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1. The FR1 option is not required for fine frequency resolution if the N5193A is being used as a local oscillator for an N5194A.

Included in Base Product N5191A UXG X-Series Agile Signal Generator, Modified Version

Standard options and accessories come with the UXG base model at no additional charge and do not need to be ordered. They include:

- 10 kHz frequency resolution
- 100 µs switching speed up to 31.6 GHz, 500 µs to 40 GHz (N5191A)
- Amplitude range of +10 to -10 dBm
- Phase noise of -117 dBc/Hz (typ) at 20 kHz offset for a 10 GHz carrier frequency
- One day of on-site startup assistance

Important note

When the N5192A UXG vector adapter is used with the N5191A UXG agile signal generator, the N5191A must have options CC1 and SS3 installed.

Step 1. Select frequency range (required option; frequency range not upgradeable)		
Description	Option number	Additional information
Frequency range from 10 MHz to 20 GHz	N5191A-52E	Not compatible with Option 54E Includes standard adapter 3.5mm(f) to 3.5 mm(f)
Frequency range from 10 MHz to 40 GHz	N5191A-54E	Not compatible with Option 52E Includes standard adapters 2.4mm(f) to 2.4 mm(f) and 2.4mm(f) to 2.9 mm(f)

Step 2. Choose frequency resolution		
Description	Option number	Additional information
Frequency resolution 10 kHz	Standard	
Frequency resolution 0.001 Hz	N5191A-FR1	The FR1 option is not required for fine frequency resolution if the N5191A is being used as a local oscillator for an N5192A.

Step 3. Choose switching speed options		
Description	Option number	Additional information
Switching speed 100 µs	Standard	N5191A: List update rate 100 µs up to 31.6 GHz, 500 µs to 40 GHz
Switching speed 180 ns	N5191A-SS3	Update rate 180 ns up to 6.89 GHz, 100 µs up to 31.6 GHz, 500 us up to 40 GHz

Step 4. Choose amplitude range		
Description	**Option number**	**Additional information**
Amplitude range +10 to -10 dBm	Standard	
Mechanical and solid-state attenuator	N5191A-AT2	80 dB agile range and 120 dB overall range

Step 5. Choose modulation options		
Description	**Option number**	**Additional information**
Standard phase noise	**Standard**	-117 dBc/Hz (typ) at 20 kHz offset for a 10 GHz carrier frequency

Step 6. Choose modulation options		
Description	**Option number**	**Additional information**
AM, FM, phase modulation, narrowband chirp, and LF output	N5191A- UT1	Chirped pulse is settable in List mode or through SCPI commands only. FMCW chirp is settable through fast control port (FCP) in Normal mode only.
Wideband chirp (min 10%)	N5191A-WC2	Wideband chirp is settable in List and Streaming modes, via the FCP connector, or through SCPI commands. N5191A requires UT1 and PM2.
Pulse modulation	N5191A-PM2	

Step 7. Choose connector configuration		
Description	**Option number**	**Additional information**
Move all connectors to rear panel	N5191A-1EM	Not upgradable
Type-N (f) RF output connector	N5191A-1ED	Only available on 52E units Both options include standard adapter Type-N male to 3.5 mm female
100-pin LVDS I/O interface	N5191A-CC1	Must select CC1, CC2 or CC4
50-pin BCD I/O interface	N5191A-CC2	Must select CC1, CC2 or CC4
10 GB Ethernet I/O interface	N5191A-CC4	Must select CC1, CC2 or CC4

Step 8. Choose signal creation software		
Description	**Option number**	**Additional information**
Signal Studio for Multi-Source Calibration	N7665C	See 5992-2944EN Technical Overview for configuration guidance.

Step 9. Choose accessories	
Description	**Option number**
Additional LVDS I/O interface	N5191AU-CC1
Additional BCD I/O interface	N5191AU-CC2
Additional 10 GB Ethernet I/O interface	N5191AU-CC4
Additional Removable 512 GByte solid-state drive (SSD) and drive tray	1CC150A
Empty SSD drive tray	1CC145A
Front handle kit	1CN107A
Rack mount flange kit[1]	1CM104A
Rack mount flange kit with front handles[1]	1CN108A
Hard transit case	N5191A-AXT

Step 10. Choose accessories	
Description	**Option/Model number**
Microwave coaxial cables	
Coax cable assembly, 3.5 mm(m) to 3.5 mm(f), 16 inch (406 mm) length	1CC102A
Coax cable assembly, 3.5 mm(m) to 3.5 mm(m), 18 inch (457 mm) length	1CC103A
Coax cable assembly, 3.5 mm(m) to 3.5 mm(f), 48 inch (1219 mm) length	1CC105A

1.   If rack mounting the N5193A UXG signal source, it is important to not block the right- or left-hand side air flow of the N5193A UXG. The E3662B standard Keysight 2.0 m (41 EIA U) rack cabinet with the E3663A Standard System II Rail Kit is not compatible with the N5193A UXG for rack mounting due to air flow restriction. Utilizing one of Keysight's fully engineered threat simulation racks, as described in Keysight's UXG Signal Generators: Scale for Threat Simulation technical overview, streamlines the process of finding a rack and rail configuration that does not block the air flow of the N5193A UXG. For more information, please contact your local Keysight support team.

Step 10. Choose accessories	
Triggering cables and adapters	
Coax cable assembly, BNC(f) to SMB(f), 3 inch (76 mm) length	1CC110A
Coax cable assembly, SMA(m) to SMB(f), 18 inch (457 mm) length	1CC111A
Coax cable assembly, SMA(m) to SMB(f), 48 inch (1219 mm) length	1CC113A
Coax cable assembly, BNC(m) to BNC(m), 12 inch (305 mm) length	1CC114A
Coax cable assembly, BNC(m) to BNC(m), 24 inch (610 mm) length	1CC115A
Coax cable assembly, BNC(m) to BNC(m), 48 inch (1219 mm) length	1CC116A
SMB(f)-SMA(f) coax adapter	1CC118A
BNC(m) to SMA(f) coax adapter	1CC119A
RF coaxial cables	
Coax cable assembly, SMA(m) to SMA(m), 12 inch (305 mm) length	1CC120A
Coax cable assembly, SMA(m) to SMA(m), 18 inch (457 mm) length	1CC121A
Coax cable assembly, SMA(m) to SMA(m), 36 inch (914 mm) length	1CC122A
Coax cable assembly, SMA(m) to SMA(m), 48 inch (1219 mm) length	1CC123A
Digital data cables	
USB cable (Type A-B), 6 foot (1.8 m) length	1CC130A
LVDS cable, 1.5 m length	1CC131A
BCD cable, 1.5 m length	1CC132A
10 Gigabit fiber optic cable, 2 m length, and two SFP+ transceivers	1CC133A
Power splitters and accessories	
Four-way power splitter, 5.4 GHz to 6.8 GHz, SMA(f) connectors	1CC140A
50 Ω coax termination, SMA(m) connector	1CC149A
Hybrid power divider, 0.5 GHz to 26.5 GHz, 3.5 mm(f) connectors	87302C

Step 11. Choose Calibration Options	
Description	**Option number**
Commercial calibration certificate with test data	N5191A-UK6
UXG Keysight calibration + uncertainties + guardbanding (compliant calibration)	N5191A-1A7
UXG ANSI Z540-1-1994 calibration	N5191-A6J

Step 12. Choose startup assistance service options	
Description	**Option number**
Remote scheduled assistance 1- 999 hours	PS-S10
Startup assistance (one-day included standard)	PS-S20-UXG
Signal generator and source basics; half-day, maximum of eight students on site	PS-T10-ASG
Custom services to be qualified by Keysight	PS-X10

Upgrade Your Existing UXG

Fast license-key upgrades for options that do not require additional hardware:

1. Place an order for the upgrade with Keysight and request to receive the software entitlement certificate through email

2. Redeem the certificate through the Web by following the instructions on the certificate

3. Install the license file using Keysight License Manager

4. Begin using the new capability

Installation, calibration, and verification information is available at:

www.keysight.com/find/N5191A-upgrades

Description	Upgrade number	Requirements	Additional information
Upgrade from standard speed to SS3 switching speed (N5191A)	N5191AU-SS3	None	Customer installable – software, license key
Frequency resolution 0.001 Hz	N5191AU-FR1[1]	None	Customer installable – software, license key
Commercial calibration certificate with test data	N5191AU-UK6	None	
AM, FM, phase modulation, narrowband chirp, and LF output	N5191AU-UNT	None	Customer installable – software, license key
Add wideband chirp	N5191AU-WC2	UT1	Customer-installable - software, license key
Pulse modulation	N5191AU-PM2	None	Customer installable – software, license key
Add mechanical and solid-state attenuator	N5191AU-AT2	None	Return to service center, hardware, license key
Add core instrument firmware enhancements	N5191AU-R2C	None	Customer installable – software, license key

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1. The FR1 option is not required for fine frequency resolution if the N5191A is being used as a local oscillator for an N5192A.

Additional Information

www.keysight.com/find/ew

www.keysight.com/find/N5191A

www.keysight.com/find/N5193A

www.keysight.com/find/N5194A

www.keysight.com/find/N5192A

Signal Studio for Multi-emitter Scenario Generation, 5992-0405EN

Z9500A Keysight EW Threat Simulation View software, 5992-4339EN

Signal Studio for Multi-Source Calibration, 5992-2944EN

UXG Signal Generators: Scale for Threat Simulation, 3120-1422EN

Learn more at: www.keysight.com

For more information on Keysight Technologies' products, applications, or services, please contact your local Keysight office. The complete list is available at: www.keysight.com/find/contactus

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