

# MXG X-Series Signal Generators N5181B Analog and N5182B Vector

This configuration guide will help you determine which performance options, software applications, accessories, and services to include with your new MXG or to add as upgrades to an existing MXG.



## Configure Your MXG X-Series Signal Generator

This step-by-step process will help you configure your MXG signal generator. Tailor the performance to meet your requirements. For detailed specifications, refer to the MXG signal generator data sheet (5991-0038EN).

### N5181B MXG X-Series RF Analog Signal Generator

Configure your new MXG analog signal generator

Step 1. Select maximum frequency range (required option; frequency range not upgradeable)		
Description	Option number	Additional information
Frequency range from 9 kHz to 3 GHz	N5181B-503	Not compatible with 506
Frequency range from 9 kHz to 6 GHz	N5181B-506	Not compatible with 503

  

Step 2. Choose connector configuration		
Description	Option number	Additional information
Move all connectors to rear panel	N5181B-1EM	Not upgradeable

  

Step 3. Choose performance enhancement options		
Description	Option number	Additional information
AM, FM, phase modulation	N5181B-UNT	
Low phase noise	N5181B-UNX	Not compatible with UNY, not upgradeable
Enhanced low phase noise	N5181B-UNY	Not compatible with UNX, not upgradeable
Fast switching	N5181B-UNZ	
Narrow pulse modulation	N5181B-UNW	
Multifunction generator	N5181B-303	
Instrument security and removable memory card	N5181B-006	
No internal non-volatile memory	N5181B-SD0	Requires firmware B.01.80 or newer
High output power	N5181B-1EA	
Low specified power (<-110 dBm)	N5181B-1EQ	
Flexible reference input (1 to 50 MHz)	N5181B-1ER	
Expanded license key upgradeability	N5181B-099	Option 099 is recommended for anyone considering future upgrades. Option 099 simplifies the upgrade process by enabling upgrades via a license key for Options 1EA, 1EQ, and UNZ. Without Option 099, upgrades for these options require purchase and installation of hardware in a field retrofit kit. For more information, visit <a href="http://www.keysight.com/find/SSupgrades">www.keysight.com/find/SSupgrades</a> .

#### Step 4. Choose performance enhancement options

Description	Option number
Rack slide kit	1CR112A
Front handle kit	1CN106A
Rack mount flange kit	1CM110A
Rack mount flange kit with front handles	1CP104A
Front panel cover	N5181B-CVR
Hard transit case	N5181B-AXT
CD-ROM containing English documentation set	N5181B-CD1

#### Step 5. Choose embedded software

Note: The following software can be added at purchase or as an upgrade. For more information on licenses, go to [www.keysight.com/find/SS\\_licensing](http://www.keysight.com/find/SS_licensing)

Description	Option number	Hardware requirements
Avionics (VOR/ILS)	N5180302B	
Pulse train generator	N5180320B	UNW

#### Step 6. Choose calibration options

Description	Option number
MXG analog ANSI Z540-1-1994 calibration	N5181B-A6J
MXG analog Keysight Cal + uncertainties + guardbanding (accredited cal)	N5181B-AMG
Commercial calibration certificate with test data	N5181B-UK6
Calibration Assurance Plan, Return-to-Keysight, 5 Years	R-50C-011-5
Calibration Assurance Plan, Return-to-Keysight, 7 Years	R-50C-011-7
Calibration Assurance Plan, Return-to-Keysight, 10 Years	R-50C-011-10

#### Step 7. Choose startup assistance service options

Description	Option number
Remote scheduled assistance 1- 999 hours	PS-S10
Daily productivity assistance	PS-S20
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 MXG Analog Signal Generator

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/mxg\\_upgrades](http://www.keysight.com/find/mxg_upgrades)



You Can Upgrade!



Options can be added after your initial purchase. Most X-Series options are license-key upgradeable.

Description	Upgrade number	Requirements	Additional information
Instrument security and removable memory card	N5181BU-006	None	Hardware and license key upgrade
No internal non-volatile memory	N5181BU-SD0	None	Customer installable - software, license key Requires firmware B.01.80 or newer
Expanded license key upgradability	N5181BU-099	None	Hardware and license key upgrade
High output power	N5181BU-1EA	099	Customer installable - software, license key
Low specified power (<math>\leq -110\text{ dBm}</math>)	N5181BU-1EQ	099	Customer installable - software, license key
Flexible reference input (1 to 50 MHz)	N5181BU-1ER	None	Customer installable - software, license key
Multifunction generator	N5181BU-303	None	Customer installable - software, license key
Avionics (VOR/ILS)	N5180302B	None	Customer installable - software, license key
Pulse train generator	N5180320B	UNW	Customer installable - software, license key
AM, FM, phase modulation	N5181BU-UNT	None	Customer installable - software, license key
Narrow pulse modulation	N5181BU-UNW	None	Customer installable - software, license key
Fast switching	N5181BU-UNZ	099	Customer installable - software, license key
Rack slide kit	1CR112A	None	Hardware
Front handle kit	1CN106A	None	Hardware
Rack mount flange kit	1CM110A	None	Hardware
Rack mount flange kit with front handles	1CP104A	None	Hardware
Front panel cover	N5180-40019	None	Hardware

# N5182B MXG X-Series RF Vector Signal Generator

## Configure your new MXG vector signal generator

### Step 1. Select maximum frequency range (required option; frequency range not upgradeable)

Description	Option number	Additional information
Frequency range from 9 kHz to 3 GHz	N5182B-503	Not compatible with 506
Frequency range from 9 kHz to 6 GHz	N5182B-506	Not compatible with 503
Frequency range from 9 kHz to 7.2 GHz	N5182B-FRQ	Requires 506 and N5182BX07 Frequency Extender <sup>1</sup>

1. The N5182BX07 Frequency Extender is orderable separately. Refer to the N5182BX07 configuration guide for more information.

### Step 2. Choose connector configuration

Description	Option number	Additional information
Move all connectors to rear panel	N5182B-1EM	Not upgradable
Differential I/Q outputs	N5182B-1EL	

### Step 3. Choose performance enhancement options

Description	Option number	Additional information
AM, FM, phase modulation	N5182B-UNT	
Enhanced dynamic range	N5182B-UNV	Requires 656
Narrow pulse modulation	N5182B-UNW	
Low phase noise	N5181B-UNX	Not compatible with UNY, not upgradable
Enhanced low phase noise	N5182B-UNY	Not compatible with UNX, not upgradable
Fast switching	N5182B-UNZ	
Multifunction generator	N5182B-303	
Instrument security and removable memory card	N5182B-006	
Internal solid-state memory	N5182B-009	
No internal non-volatile memory/solid state drive	N5182B-SD0	Not compatible with option 009 and 660 Requires firmware B.01.80 or newer
High output power	N5182B-1EA	
Low specified power (<-110 dBm)	N5182B-1EQ	
Flexible reference input (1 to 50 MHz)	N5182B-1ER	
LO in/out for phase coherency	N5182B-012	
Expanded license key upgradability	N5182B-099	Option 099 is recommended for anyone considering future upgrades. Option 099 simplifies the upgrade process by enabling upgrades via a license key for Options 1EA, 1EQ, UNV, and UNZ. Without Option 099, upgrades for these options require purchase and installation of hardware in a field retrofit kit. For more information, visit <a href="http://www.keysight.com/find/SSupgrades">www.keysight.com/find/SSupgrades</a> .

#### Step 4. Choose baseband generator options

Description	Option number	Additional information
ARB baseband generator (80 MHz RF bandwidth, 32 MSa)	N5182B-656	
Upgrade baseband generator from 80 to 160 MHz RF bandwidth	N5182B-657	Requires 656
Upgrade baseband generator memory from 32 to 512 MSa	N5182B-022	Requires 656
Upgrade baseband generator memory from 32 to 1 GSa	N5182B-023	Requires 656
Upgrade baseband generator with real-time capability	N5182B-660	Requires 656
Digital output connectivity with the N5102A	N5182B-003	Requires 656, not upgradable
Digital input connectivity with the N5102A	N5182B-004	Requires 656, not upgradable

#### Step 5. Choose Signal Studio and embedded software

Note: The following software can be added at purchase or as an upgrade. To configure Signal Studio applications, refer to the configuration assistant at: [www.keysight.com/find/signalstudio](http://www.keysight.com/find/signalstudio). For more information on Signal Studio configuration and licenses, go to [www.keysight.com/find/SS\\_licensing](http://www.keysight.com/find/SS_licensing).

Product number	Description	Hardware requirements	Recommended hardware options
<b>Cellular communications</b>			
N7600C	Signal Studio for W-CDMA/HSPA+ (ARB and real-time)	656 660 for real-time	503, UNV, 403
N7601C	Signal Studio for cdma2000/1xEV-DO (ARB and real-time)	656 660 for real-time	503, 403, UNV
N7602C	Signal Studio for GSM/EDGE/Evo (ARB and real-time)	656 660 for real-time	503, 403, UNV, UNZ
N7612C	Signal Studio for TD-SCDMA/HSDPA	656	503, 403, UNV
N7624C	Signal Studio for LTE/LTE-Advanced FDD (ARB and real-time)	656 660 for real-time	657, 506, 403, UNV
N7625C	Signal Studio for LTE/LTE-Advanced TDD (ARB and real-time)	656 660 for real-time	657, 506, 403, UNV
N7626C	Signal Studio for V2X	656, 506	403, 1EA, 1ER, 009, 655, UNV, UNZ
N7630C	Signal Studio for Pre-5G	656	403, 506, 657, UNV
N7631C	Signal Studio for 5G NR	656	403, 506, 657, UNV
<b>Wireless connectivity</b>			
N7606C	Signal Studio for Bluetooth®	656	506, 403, UNV
N7615C	Signal Studio for Mobile WiMAX	656	506, 403, UNV
N7617C	Signal Studio for WLAN 802.11a/b/g/j/p/n/ac	656	657, 506, 403, UNV
N7607C	Signal Studio for DFS radar profiles	656, 506	657
N7610C	Signal Studio for Internet of Things (IoT)	656	

**Audio/video broadcasting**

N7611C	Signal Studio for broadcast radio	656	506, 403, UNV
N7623C	Signal Studio for digital video (ARB and real-time)	656 660 for real-time	506, 403, 023, UNV
N7640C	Radio Test LMR	656	403, 506, 657, 009

**Detection, positioning, tracking, and navigation**

N7609C	Signal Studio for Global Navigation Satellite Systems (GNSS) (real-time)	656 660 for real-time	503, 023, 403
N7620B	Signal Studio for pulse building	656, UNW	403, 657, UNV, 1EA

**General purpose**

N5180302B	Avionics (VOR/ILS)		
N5180403B	Calibrated AWGN	656	
N5180430B	Multitone and two-tone	656	
N5180431B	Custom digital modulation	656	
N5180432B	Phase noise impairment	656	
N5180UN7B	Internal bit error rate analyzer		
N7605C	Signal Studio for real-time fading (real-time)	656, 403 660 for real-time	506, 657
N7608C	Signal Studio for custom modulation	656, 506	
N7614C	Signal Studio for power amplifier test	656 660 for real-time	657, 1EA
N7621B	Signal Studio for multitone distortion	656, UNV, 1EA	657
N7622C	Signal Studio toolkit – free utility	656	503, UNV
N5182B 221-229	Waveform license 5-pack 1 to 9 (purchase up to 9 packs for 45 Signal Studio waveforms)	656	503, UNV
N5182B 250-259	Waveform license 50-pack 1 to 10 (purchase up to 10 packs for 500 Signal Studio waveforms)	656	503, UNV
N6171A	MATLAB software		656, 503, UNV

**Step 6. Choose accessory and documentation options**

Description	Option number
Rack slide kit	1CR112A
Front handle kit	1CN106A
Rack mount flange kit	1CM110A
Rack mount flange kit with front handles	1CP104A
Front panel cover	N5182B-CVR
Hard transit case	N5182B-AXT
CD-ROM containing English documentation set	N5182B-CD1

### Step 7. Choose calibration options

Description	Option number
Keysight Calibration + Uncertainties + Guardbanding (accredited cal)	N5182B-AMG
Commercial calibration certificate with test data	N5182B-UK6
ANSI Z540-1-1994 Calibration	N5182B-A6J
Calibration Assurance Plan, Return-to-Keysight, 5 years	R-50C-011-5
Calibration Assurance Plan, Return-to-Keysight, 7 years	R-50C-011-7
Calibration Assurance Plan, Return-to-Keysight, 10 years	R-50C-011-10
Keysight Calibration + Uncertainties + Guardbanding (accredited cal)	N5182B-AMG

### Step 8. Choose startup assistance service options

Description	Option number
Remote scheduled assistance 1- 999 hours	PS-S10
Daily productivity assistance	PS-S20
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 MXG Vector Signal Generator

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

5. Place an order for the upgrade with Keysight and request to receive the software entitlement certificate through email
6. Redeem the certificate through the Web by following the instructions on the certificate
7. Install the license file using Keysight License Manager
8. Begin using the new capability

Installation, calibration, and verification information is available at:

[www.keysight.com/find/mxg\\_upgrades](http://www.keysight.com/find/mxg_upgrades)



**You Can Upgrade!**



Options can be added after your initial purchase. Most X-Series options are license-key upgradeable.

Description	Upgrade number	Requirements	Additional information
Instrument security and removable memory card	N5182BU-006	None	Hardware and license key upgrade
Internal solid-state memory	N5182BU-009	None	Customer installable – software, license key
No internal non-volatile memory/solid state drive	N5182BU-SD0	None	Customer installable - software, license key and hardware Requires firmware B.01.80 or newer Not compatible with option 009 and 660
LO in/out for phase coherency	N5182BU-012	None	Hardware and license key upgrade
Upgrade baseband generator memory from 32 to 512 MSa	N5182BU-022	656	Customer installable – software, license key
Upgrade baseband generator memory from 32 MSa to 1 GSa	N5182BU-023	656	Customer installable – software, license key
Upgrade baseband generator memory from 512 MSa to 1 GSa	N5182BU-043	022 and 656	Customer installable – software, license key
Expanded license key upgradability	N5182BU-099	None	Hardware and license key upgrade
High output power	N5182BU-1EA	099	Customer installable – software, license key
Differential I/Q outputs	N5182BU-1EL	None	Customer installable – software, license key
Low specified power (<-110 dBm)	N5182BU-1EQ	099	Customer installable – software, license key
Flexible reference input (1 to 50 MHz)	N5182BU-1ER	None	Customer installable – software, license key
5-pack waveform license	N5182BU-221	656	Customer installable – software, license key
50-pack waveform license	N5182BU-250	656	Customer installable – software, license key
Multifunction generator	N5182BU-303	None	Customer installable – software, license key
Avionics (VOR/ILS)	N5180302B	None	Customer installable – software, license key
Pulse train generator	N5180320B	UNW	Customer installable – software, license key
Calibrated AWGN	N5180403B	656	Customer installable – software, license key

Description	Upgrade number	Requirements	Additional information
Multitone and two-tone	N5180430B	656	Customer installable – software, license key
Custom digital modulation	N5180431B	656	Customer installable – software, license key
Phase noise impairment	N5180432B	656	Customer installable – software, license key
Internal bit error rate analyzer	N5180UN7B	None	Customer installable - software, license key
ARB baseband generator (80 MHz RF bandwidth, 32 MSa)	N5182BU-656	None	Customer installable – software, license key
Upgrade baseband generator from 80 to 160 MHz RF bandwidth	N5182BU-657	656	Customer installable – software, license key
Upgrade baseband generator with real-time capability	N5182BU-660	656	Hardware and license key upgrade
AM, FM, phase modulation	N5182BU-UNT	None	Customer installable – software, license key
Enhanced dynamic range	N5182BU-UNV	099, 656	Customer installable – software, license key
Narrow pulse modulation	N5182BU-UNW	None	Customer installable – software, license key
Fast switching	N5182BU-UNZ	099	Customer installable – software, license key
Rack slide kit	1CR112A	None	Hardware
Front handle kit	1CN106A	None	Hardware
Rack mount flange kit	1CM110A	None	Hardware
Rack mount flange kit with front handles	1CP104A	None	Hardware
Front panel cover	N5180-40019	None	Hardware
Frequency extender connectivity	N5182BU-FRQ	506	Customer installable - software, license key Requires N5182BX07 Frequency Extender

## Related Literature

Description	Additional information
<i>X-Series Signal Generators N5181B/N5171B Analog N5182B/N5172B Vector – Technical Overview</i>	5990-9957EN
<i>MXG X-Series Signal Generators N5181B Analog &amp; N5182B Vector – Data Sheet</i>	5991-0038EN
<i>N5182BX07 Frequency Extender User Guide</i>	N5182-90001

For more information, visit [www.keysight.com/find/MXG](http://www.keysight.com/find/MXG)

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