

# N5186A MXG

## Vector Signal Generator

### Introduction

This configuration guide contains information to help you configure your N5186A MXG vector signal generator to meet your requirements. Ordering optional capabilities at the time of purchase provides the lowest overall cost of ownership.



# Configure Hardware

## Select number of channels

Configuration	Required options	Descriptions	Additional information
One channel	N5186A-001	Add channel one	Required for all configurations
Two channels	N5186A-001 N5186A-002	Add channel one Add channel two	
Four channels	N5186A-001 N5186A-002 N5186A-003 N5186A-004	Add channel one Add channel two Add channel three Add channel four	

## Select connector configuration

Option	Description	Additional information
N5186A-1EM	Move all connectors to rear panel	

## Select system features (ordered once per instrument)

Option	Description	Additional information
N5186A-PCH	Phase coherence for N channels	

## Select channel features (ordered once per channel)

Option	Description	Additional information
<b>Frequency options (must select one; option will be duplicated on all channels)</b>		
N5186A-503	CW frequency range, 9 kHz to 3 GHz	
N5186A-506	CW frequency range, 9 kHz to 6 GHz	
N5186A-508	CW frequency range, 9 kHz to 8.5 GHz	
<b>Bandwidth options (must select one; option may be different on each channel)</b>		
N5186A-B2X	RF bandwidth, 250 MHz with 256 MSa	
N5186A-B5X	RF bandwidth, 500 MHz with 256 MSa	
N5186A-R10	RF bandwidth, 1 GHz with 256 MSa	
<b>Memory options (optionally select one; option may be different on each channel)</b>		
N5186A-M05	Baseband generator memory upgrade to 512 MSa	
N5186A-M10	Baseband generator memory upgrade to 1 GSa	
N5186A-M20	Baseband generator memory upgrade to 2 GSa	
<b>Phase noise options (optionally select one; option will be duplicated on all channels)</b>		
N5186A-EP3	Low phase noise	Not compatible with EP4
N5186A-EP4	Enhanced low phase noise	Not compatible with EP3
<b>High output power options (optionally select; option will be duplicated on all channels)</b>		
N5186A-1EA	High output power from 9 kHz to 3, 6, or 8 GHz	
<b>Vector system feature options (optionally select; option may be different on each channel)</b>		
N5186A-403	AWGN and CW interferer	
<b>General performance feature options (optionally select; options will be duplicated on all channels)</b>		
N5186A-099	Expanded license key upgradability	Option 099 is required for anyone considering future upgrades. Option 099 simplifies the upgrade process by enabling upgrades via a license key for options 1EA, 1EQ, EP3, EP4, and UNV.
N5186A-1EQ	Low specified power (< -110 dBm)	
N5186A-UNV	Enhanced dynamic range	
N5186A-PMR	Pulse modulation	
N5186A-303	Multifunction generator	
N5186A-UNT	AM, FM, phase modulation	
N5186A-CW1	Secondary DDS tone generator	
<b>Switching speed (optionally select; options will be duplicated on all channels)</b>		
N5186A-UNZ	Fast switching	
<b>Embedded reflectometer options (optionally select; option will be duplicated on all channels)</b>		
N5186A-V08	Embedded reflectometer from 9 kHz to 3, 6, or 8.5 GHz	E7653APPC is recommended with option V08.

# Configure Software

## Included software

The N5186A MXG base configuration includes the following software tools.

### Description

Sample waveforms
PathWave General Purpose Signal Generation

## Embedded PathWave software tools

Embedded PathWave software tools can be used to create and playback waveforms through the MXG touch-optimized graphical user interface. Optionally select any models. One software license per instrument is required.

Model	Description
E7608APPC	PathWave Signal Generation for custom IQ modulation
E7621APPC	PathWave Signal Generation for multitone and NPR
E7631APPC	PathWave Signal Generation for 5G NR
E7641APPC	PathWave Signal Generation for avionics
E7642APPC	PathWave Signal Generation for IQ based AM, FM, phase modulation
E7653APPC	PathWave automatic channel response correction and S-parameter de-embedding

## Additional PathWave software tools and MATLAB

These PathWave software tools can be used to create and playback waveforms through file-export based waveform playback. Real-time signal creation is not supported. Only node-locked licenses are available. Optionally select any models. One software license per instrument is required. For additional information, see the [PathWave Signal Generation Brochure](#).

Model	Description
<b>Cellular communications</b>	
N7600EMBC	PathWave Signal Generation for W-CDMA/HSPA+
N7601EMBC	PathWave Signal Generation for cdma2000/1xEV-DO
N7602EMBC	PathWave Signal Generation for GSM/EDGE/Evo
N7612EMBC	PathWave Signal Generation for TD-SCDMA/HSPA
N7624EMBC	PathWave Signal Generation for LTE/LTE-Advanced/LTE-A Pro FDD
N7625EMBC	PathWave Signal Generation for LTE/LTE-Advanced TDD
N7626EMBC	PathWave Signal Generation for LTE V2X
N7631EMBC	PathWave Signal Generation for 5G NR
N7632EMBC	PathWave Signal Generation for NR-V2X
<b>Wireless connectivity</b>	
N7606EMBC	PathWave Signal Generation for Bluetooth
N7610EMBC	PathWave Signal Generation for IoT
N7615EMBC	PathWave Signal Generation for Mobile WiMAX
N7617EMBC	PathWave Signal Generation for WLAN 802.11
<b>Audio/video broadcasting</b>	
N7611EMBC	PathWave Signal Generation for broadcast radio
N7623EMBC	PathWave Signal Generation for digital video
N7640EMBC	PathWave Signal Generation for LMR
<b>General RF and microwave</b>	
N7607EMBC	PathWave Signal Generation for DFS and DAA profiles
N7608EMBC	PathWave Signal Generation for custom modulation
N7620EMBC	PathWave Signal Generation for pulse building
N6171A	MATLAB software (for standalone PC use)
N7650B	Waveform license packs (Option 221-229 for 5-pack; Option 250-259 for 50-pack)

# Post Purchase Upgrades

Your product can be upgraded after the initial purchase. Some N5186A MXG vector signal generator options are controlled by a licensing key and can be quickly installed by the user. To upgrade these options:

1. Contact your Keysight representative to place an order for an option upgrade.
2. You will receive your entitlement certificate via email.
3. Redeem the certificate online by following the instructions provided in the email to receive a license key file.
4. Begin using the new capability.

Return to Keysight for calibration is recommended for upgrades associated with specifications. See the [data sheet](#) for details.

Some N5186A MXG vector signal generator options require additional hardware. Contact your Keysight representative for assistance with hardware upgrades.09

Upgrades are applied per channel, unless otherwise noted. For example, to upgrade both channels of a 2-channel N5186A MXG, upgrades for each of the respective channels should be ordered.

Ordering number	Description	Requirements	Additional information
<b>System feature upgrades (ordered once per instrument)</b>			
N5186AU-PCH	Add phase coherence for N channels (PCH)	Requires N5186A-002 or N5186A-SNC.	Customer installable, license key
<b>Frequency upgrades (duplicated on all channels)</b>			
N5186AU-7AB	Upgrade maximum frequency from 3 GHz to 6 GHz, 1 channel instrument (506)	Requires N5186A-503. Incompatible with N5186A-002.	Customer installable, license key
N5186AU-7CS	Upgrade maximum frequency from 3 GHz to 6 GHz, 2 channel instrument (506)	Requires N5186A-503 and 002. Incompatible with N5186A-004.	Customer installable, license key
N5186AU-7HY	Upgrade maximum frequency from 3 GHz to 6 GHz, 4 channel instrument (506)	Requires N5186A-503 and 004.	Customer installable, license key
N5186AU-7AC	Upgrade maximum frequency from 6 GHz to 8.5 GHz, 1 channel instrument (508)	Requires N5186A-506 or N5186AU-7AB. Incompatible with N5186A-002.	Customer installable, license key
N5186AU-7CT	Upgrade maximum frequency from 6 GHz to 8.5 GHz, 2 channel instrument (508)	Requires N5186A-002, and N5186A-506 or N5186AU-7CS. Incompatible with N5186A-004.	Customer installable, license key
N5186AU-7HZ	Upgrade maximum frequency from 6 GHz to 8.5 GHz, 4 channel instrument (508)	Requires N5186A-004, and N5186A-506 or N5186AU-7HY.	Customer installable, license key

Ordering number	Description	Requirements	Additional information
<b>Bandwidth upgrades (may be different on each channel)</b>			
N5186AU-7CL	Upgrade channel 1 RF bandwidth from 250 MHz to 500 MHz (B5X)	Requires N5186A-B2X.	Customer installable, license key
N5186AU-7EZ	Upgrade channel 2 RF bandwidth from 250 MHz to 500 MHz (B5X)	Requires N5186A-B2X.	Customer installable, license key
N5186AU-7GW	Upgrade channel 3 RF bandwidth from 250 MHz to 500 MHz (B5X)	Requires N5186A-B2X.	Customer installable, license key
N5186AU-7MF	Upgrade channel 4 RF bandwidth from 250 MHz to 500 MHz (B5X)	Requires N5186A-B2X.	Customer installable, license key
N5186AU-7CK	Upgrade channel 1 RF bandwidth from 500 MHz to 1 GHz (R10)	Requires N5186A-B5X or N5186AU-7CL.	Customer installable, license key
N5186AU-7FA	Upgrade channel 2 RF bandwidth from 500 MHz to 1 GHz (R10)	Requires N5186A-B5X or N5186AU-7EZ.	Customer installable, license key
N5186AU-7HR	Upgrade channel 3 RF bandwidth from 500 MHz to 1 GHz (R10)	Requires N5186A-B5X or N5186AU-7GW.	Customer installable, license key
N5186AU-7MG	Upgrade channel 4 RF bandwidth from 500 MHz to 1 GHz (R10)	Requires N5186A-B5X or N5186AU-7MF.	Customer installable, license key
<b>Baseband generator memory upgrades (may be different on each channel)</b>			
N5186AU-7CM	Upgrade channel 1 baseband generator memory from 256 MSa to 512 MSa (M05)		Customer installable, license key
N5186AU-7FC	Upgrade channel 2 baseband generator memory from 256 MSa to 512 MSa (M05)		Customer installable, license key
N5186AU-7HT	Upgrade channel 3 baseband generator memory from 256 MSa to 512 MSa (M05)		Customer installable, license key
N5186AU-7MJ	Upgrade channel 4 baseband generator memory from 256 MSa to 512 MSa (M05)		Customer installable, license key
N5186AU-7CN	Upgrade channel 1 baseband generator memory from 512 MSa to 1024 MSa (M10)	Requires N5186A-M05 or N5186AU-7CM.	Customer installable, license key
N5186AU-7FD	Upgrade channel 2 baseband generator memory from 512 MSa to 1024 MSa (M10)	Requires N5186A-M05 or N5186AU-7FC.	Customer installable, license key
N5186AU-7HU	Upgrade channel 3 baseband generator memory from 512 MSa to 1024 MSa (M10)	Requires N5186A-M05 or N5186AU-7HT.	Customer installable, license key
N5186AU-7MK	Upgrade channel 4 baseband generator memory from 512 MSa to 1024 MSa (M10)	Requires N5186A-M05 or N5186AU-7MJ.	Customer installable, license key
N5186AU-7CP	Upgrade channel 1 baseband generator memory from 1024 MSa to 2048 MSa (M20)	Requires N5186A-M10 or N5186AU-7CN.	Customer installable, license key
N5186AU-7FE	Upgrade channel 2 baseband generator memory from 1024 MSa to 2048 MSa (M20)	Requires N5186A-M10 or N5186AU-7FD.	Customer installable, license key
N5186AU-7HV	Upgrade channel 3 baseband generator memory from 1024 MSa to 2048 MSa (M20)	Requires N5186A-M10 or N5186AU-7HU.	Customer installable, license key
N5186AU-7ML	Upgrade channel 4 baseband generator memory from 1024 MSa to 2048 MSa (M20)	Requires N5186A-M10 or N5186AU-7MK.	Customer installable, license key
<b>Phase noise upgrades (duplicated on all channels)</b>			
N5186AU-7BD	Add low phase noise, 1 channel instrument (EP3)	Requires N5186A-099. Incompatible with N5186A-002 and EP4	Customer installable, license key
N5186AU-7DU	Add low phase noise, 2 channel instrument (EP3)	Requires N5186A-002, and N5186A-099. Incompatible with N5186A-004 and EP4.	Customer installable, license key
N5186AU-7KA	Add low phase noise, 4 channel instrument (EP3)	Requires N5186A-004, and N5186A-099. Incompatible with N5186A-EP4.	Customer installable, license key
N5186AU-7BE	Add enhanced low phase noise, 1 channel instrument (EP4)	Requires N5186A-099. Incompatible with N5186A-002 and EP3.	Customer installable, license key
N5186AU-7DV	Add enhanced low phase noise, 2 channel instrument (EP4)	Requires N5186A-002, and N5186A-099. Incompatible with N5186A-004 and EP3.	Customer installable, license key

Ordering number	Description	Requirements	Additional information
<b>Phase noise upgrades (duplicated on all channels)</b>			
N5186AU-7KB	Add enhanced low phase noise, 4 channel instrument (EP4)	Requires N5186A-004, and N5186A-099. Incompatible with N5186A-EP3.	Customer installable, license key
<b>Output power upgrades (duplicated on all channels)</b>			
N5186AU-7AK	Add high output power from 9 kHz to 3, 6 or 8.5 GHz, 1 channel instrument (1EA)	Requires N5186A-099. Incompatible with N5186A-002.	Customer installable, license key
N5186AU-7DA	Add high output power from 9 kHz to 3, 6 or 8.5 GHz, 2 channel instrument (1EA)	Requires N5186A-002, and N5186A-099. Incompatible with N5186A-004.	Customer installable, license key
N5186AU-7JG	Add high output power from 9 kHz to 3, 6 or 8.5 GHz, 4 channel instrument (1EA)	Requires N5186A-004, and N5186A-099.	Customer installable, license key
<b>Vector system feature upgrades (may be different on each channel)</b>			
N5186AU-7CE	Add AWGN and CW interferer to channel 1 (403)		Customer installable, license key
N5186AU-7EV	Add AWGN and CW interferer to channel 2 (403)		Customer installable, license key
N5186AU-7HL	Add AWGN and CW interferer to channel 3 (403)		Customer installable, license key
N5186AU-7MB	Add AWGN and CW interferer to channel 4 (403)		Customer installable, license key
<b>General performance feature upgrades (duplicated on all channels)</b>			
N5186AU-7BF	Add low specified power (< -110 dBm), 1 channel instrument (1EQ)	Requires N5186A-099. Incompatible with N5186A-002.	Customer installable, license key
N5186AU-7DW	Add low specified power (< -110 dBm), 2 channel instrument (1EQ)	Requires N5186A-002 and 099. Incompatible with N5186A-004.	Customer installable, license key
N5186AU-7KC	Add low specified power (< -110 dBm), 4 channel instrument (1EQ)	Requires N5186A-004 and 099.	Customer installable, license key
N5186AU-7BK	Add AM, FM, phase modulation, 1 channel instrument (UNT)	Requires serial numbers ≥ MY/US6433xxxx. Incompatible with N5186A-002.	Customer installable, license key
N5186AU-7EA	Add AM, FM, phase modulation, 2 channel instrument (UNT)	Requires serial numbers ≥ MY/US6433xxxx. Incompatible with N5186A-004.	Customer installable, license key
N5186AU-7KG	Add AM, FM, phase modulation, 4 channel instrument (UNT)	Requires serial numbers ≥ MY/US6433xxxx.	Customer installable, license key
N5186AU-7BL	Add pulse modulation, 1 channel instrument (PMR)	Incompatible with N5186A-002.	Customer installable, license key
N5186AU-7EB	Add pulse modulation, 2 channel instrument (PMR)	Incompatible with N5186A-004.	Customer installable, license key
N5186AU-7KH	Add pulse modulation, 4 channel instrument (PMR)		Customer installable, license key
N5186AU-7BN	Add multifunction generator, 1 channel instrument (303)	Requires serial numbers ≥ MY/US6433xxxx. Incompatible with N5186A-002.	Customer installable, license key
N5186AU-7ED	Add multifunction generator, 2 channel instrument (303)	Requires serial numbers ≥ MY/US6433xxxx. Incompatible with N5186A-004.	Customer installable, license key
N5186AU-7KK	Add multifunction generator, 4 channel instrument (303)	Requires serial numbers ≥ MY/US6433xxxx.	Customer installable, license key



Ordering number	Description	Requirements	Additional information
<b>General performance feature upgrades (duplicated on all channels)</b>			
N5186AU-7BR	Upgrade with enhanced dynamic range, 1 channel instrument (UNV)	Requires N5186A-099. Incompatible with N5186A-002.	Customer installable, license key
N5186AU-7EG	Upgrade with enhanced dynamic range, 2 channel instrument (UNV)	Requires N5186A-002, and N5186A-099. Incompatible with N5186A-004.	Customer installable, license key
N5186AU-7KN	Upgrade with enhanced dynamic range, 4 channel instrument (UNV)	Requires N5186A-004, and N5186A-099.	Customer installable, license key
N5186AU-7EE	Add secondary DDS tone generator, 1 channel instrument (CW1)	Incompatible with N5186A-002.	Customer installable, license key
N5186AU-7EF	Add secondary DDS tone generator, 2 channel instrument (CW1)	Incompatible with N5186A-004.	Customer installable, license key
N5186AU-7KF	Add secondary DDS tone generator, 4 channel instrument (CW1)		Customer installable, license key
<b>Switching speed upgrades (duplicated on all channels)</b>			
N5186AU-7BS	Add fast switching, 1 channel instrument (UNZ)	Incompatible with N5186A-002.	Customer installable, license key
N5186AU-7EH	Add fast switching, 2 channel instrument (UNZ)	Incompatible with N5186A-004.	Customer installable, license key
N5186AU-7KP	Add fast switching, 4 channel instrument (UNZ)		Customer installable, license key
<b>Embedded reflectometer upgrades (duplicated on all channels)</b>			
N5186AU-7BY	Add embedded reflectometer to 3, 6, or 8.5 GHz, 1 channel instrument (V08)	Incompatible with N5186A-002.	Customer installable, license key
N5186AU-7EP	Add embedded reflectometer to 3, 6, or 8.5 GHz, 2 channel instrument (V08)	Incompatible with N5186A-004.	Customer installable, license key
N5186AU-7KV	Add embedded reflectometer to 3, 6, or 8.5 GHz, 4 channel instrument (V08)		Customer installable, license key

## Select Accessories

Model	Description	Additional information
1CM110A	Rackmount flange kit	
1CN106A	Front handle kit	
1CP104A	Rackmount flange and front handle kit	
1CR015A	Rack Slide Kit, System X, 2U instruments	
Y1311A	Additional removable M.2 drive	
Y1313A	Micro HDMI to Micro HDMI cable	

# KeysightCare Coverage

One year of KeysightCare Assured is included with your new N5186A MXG Vector Signal Generator for priority access to technical experts and optimized uptime to mitigate project risk. Multiyear upgrade options to KeysightCare Enhanced add calibration coverage for full performance verification and accelerated turnaround times.

Obtain multi-year KeysightCare upfront to lock in the service pricing of today and operate with a planned spending profile and eliminate the need for yearly requests for maintenance budget. Plus, you benefit from secured service for 2, 3, or 5 years.

Service	Function
<b>KeysightCare Enhanced <sup>1</sup></b>	<b>Includes tech support, warranty, and calibration</b>
R-55B-001-1	KeysightCare Enhanced – Upgrade 1 year
R-55B-001-2	KeysightCare Enhanced – Extend to 2 years
R-55B-001-3	KeysightCare Enhanced – Extend to 3 years (Recommended)
R-55B-001-5	KeysightCare Enhanced – Extend to 5 years (Recommended)
R-55B-001-3CC	KeysightCare Enhanced – Extend to 3 years (China only) <sup>2</sup>
R-55B-001-5CJ	KeysightCare Enhanced – Extend to 5 years (Japan only)
<b>KeysightCare Assured</b>	<b>Includes tech support and warranty</b>
R-55A-001-2	KeysightCare Assured – Extend to 2 years
R-55A-001-3	KeysightCare Assured – Extend to 3 years
R-55A-001-5	KeysightCare Assured – Extend to 5 years
R-55A-001-3CC	KeysightCare Assured – Extend to 3 years (China only)
R-55A-001-5CC	KeysightCare Assured – Extend to 5 years (China only)
R-55A-001-5CJ	KeysightCare Assured – Extend to 5 years (Japan only)
<b>Start-Up Assistance</b>	
PS-S20	Startup assistance, daily
PS-X10	Custom Services

1. Available in select countries. R-55B-001-2/3/5 must be ordered with R-55B-001-1. For details, please view the KeysightCare [datasheet](#).

2. Contact Keysight for 5 year coverage.

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at [www.keysight.com](http://www.keysight.com).



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