Generators - Frequencymeters

GX 305
GX 310
GX 320



Laboratory generators – measurement instruments: multi-function, innovative, stand-alone tools!

- Frequency range from **0.001 Hz** to **5 MHz** (GX305), **10 MHz** (GX310) or **20 MHz** (GX320)
- DDS technology and frequency accuracy of ± 20 ppm
- Frequency adjustment stable to the nearest digit
- "LOGIC signal" function for direct adjustment of high and low levels
- LIN or LOG sweep, triangle or sawtooth, with adjustable duration from 10 ms to 100 s
- Internal and external AM & FM modulation, GATE, BURST, FSK and PSK functions (GX320)
- Adjustable phase synchronization of several generators in a cascade arrangement (GX320)
- 100 MHz frequencymeter, 300 V CAT I
- Storage of 15 complete instrument configurations (GX320)
- Versions programmable via USB link and Ethernet with standard SCPI protocol

GX 305, GX 310 & GX 320 DDS function generators

Versatile instruments offering high performance

The GX models are versatile, high-performance instruments ideal for applications in education and scientific research, as well as for electronic product designers (medical, automotive, consumer electronics, etc.). They can be used to generate a variety of precise signals: waveforms, sine, triangle, square & LOGIC, TTL output.
One of the major advantages of these generators is their DDS (Direct Digital Synthesis) technology. This feature means much greater frequency accuracy and stability than on an traditional generator.



Ergonomics

Unrivalled legibility!
The GX generators have a large LCD screen (125 x 45 mm) which is exceptionally easy to read thanks to a main display with 5 digits 20 mm high.
The backlighting is adjustable and the contrast can be increased if necessary.
In addition, the GX generators allow all the parameter settings (V_{DC}, Vrms or V_{PP}, waveform, etc.) to be displayed simultaneously.

A Man-Machine Interface designed to serve the user
The control keyboard on the instrument's front panel is backlit. All the generators' BNC inputs/outputs are on the front of the instrument.
The "LOGIC signal" function allows the high and low levels of this signal to be adjusted.
"Closed casing" calibration is also accessible from the instrument's front panel.

With their cubic design, they can be stacked very easily, which is particularly practical with GX 320s, as they can be set up in cascade.
Articulated feet make it possible to tilt the generators.

High-performance functions

This new range of DDS generators comprises three models, including two **(GX 310-P** and **GX 320-E**) available in a 100%-programmable version with an SCPI standard USB link and Ethernet on the **GX 320-E**.

The **GX 305** and **GX 310** are ideal for education and technical training, as well as for R&D, test and production technicians.

The **GX 320** (20 MHz) offers additional functions for higher education, R&D engineers and scientific research.

The DDS technology represents a major step forward for function generators, with a large number of improvements:

- exceptional accuracy and stability
- spectral purity
- low phase noise

In addition, these generators sweep a wide frequency range while keeping a constant phase when there are frequency jumps.



The "burst" function is widely used in optics, notably for checking the quality of crystals

Performance and flexible use:

- Adjustment of the frequency guaranteed stable to the nearest digit and a smart accelerator with automatic range changes for the frequency
- Automatic range changes optimized for the "LEVEL and OFFSET" amplitude
- Duty cycle adjustable without variation or division of the frequency
- "LOGIC" function for a quick, simple way of generating logical signals with directly adjustable thresholds
- A rugged generator with 60 VDC / 40 VAC protected outputs
- Slaving and display of the frequency
- Control and display of the AMPLITUDE with a choice of VPP (peak/peak) or VRMS (root mean square) and the VDC OFFSET
- Control and display of the duty cycle (DUTY)
- 100 MHz frequencymeter, CAT I - 300 V

Ranges	GX 305	GX 310	GX 320
0.001 Hz to 0.01 Hz	■	■	■
0.01 Hz to 0.1 Hz	■	■	■
0.1 Hz to 1 Hz	■	■	■
1 Hz to 10 Hz	■	■	■
100 Hz to 1 kHz	■	■	■
1 kHz to 10 kHz	■	■	■
10 kHz to 100 kHz	■	■	■
100 kHz to 1 MHz	■	■	■
1 MHz to 5 MHz	■		
1 MHz to 10 MHz		■	■
10 MHz to 20 MHz			■

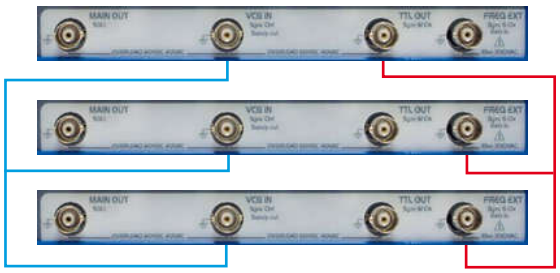
The different frequency ranges per model

Modulation, Shift K & BURST functions (GX 320)

The GX 320 includes internal and external modulation (AM, FM), as well as linear and logarithmic sweeps. The Shift K function can be used for phase or frequency jumps.

With the BURST function, users can choose the number of cycles per time period. This function can be used for even more detailed analysis and detection of very short events.

It is also possible to set up several GX 320 generators in a cascade arrangement.



GX 320 Master

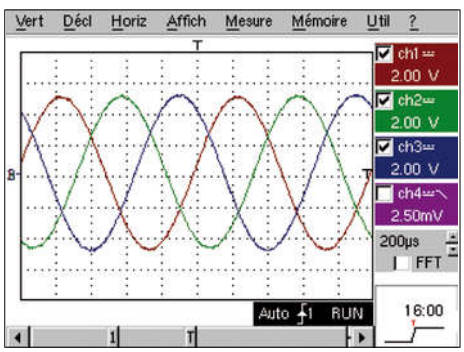
GX 320 Slave 1

GX 320 Slave 2

Synchronization of several generators in a cascade arrangement

The "SYNC" function on the GX 320 allows several generators to be set up in a cascade arrangement to make a variable-phase multiple signal generator.

A first GX 320, used as the "Master", provides the other "Slave" instruments with the clock used to generate the signals. It also supplies the synchronizing pulse to start all the instruments simultaneously. In this way, the phase shift of each signal is controlled.



Example 1: simulation of a three-phase signal

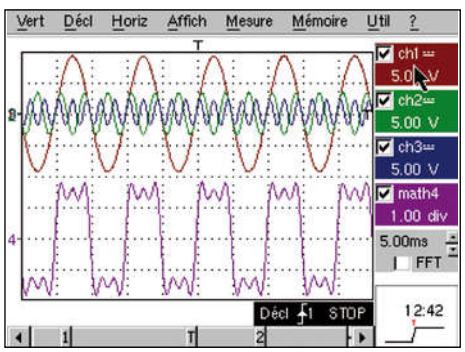
Channel 1: master (0°)

Channel 2: slave1 (120°)

Channel 3: slave2 (-120°)

Example 2: simulated Fourier synthesis

Synchronization of the generators (3 in this example) allows simulated synthesis of a square signal from its primary harmonics.



SPECIFICATIONS		
	GX 305 / GX 310	**GX 320**
Man-machine interface		
Display	LCD (125 x 45 mm) – Adjustable brightness – Display of frequency on 5 digits 20 mm high	
Commands on front panel	19 direct-access commands (9 backlit and adjustable) – 1 Main Out On/Off key – 1 digital encoder wheel	
Adjustment of signal parameters	Continuous by the encoder, automatic Frequency and Level ranges, selection of the increment digit (F,P,N...)	
BNC output terminals on front panel	TTL & Sweep Out outputs	TTL, Sweep, Clock and Synch outputs
BNC input terminals on front panel	VCF In input	VCG, Gate, Clock and Synch inputs
Continuous signal generation		
Frequency	0.001 Hz to 5.000 MHz (10 ranges) (GX305) 0.001 Hz to 10.000 MHz (10 ranges) (GX310)	0.001 Hz to 20.000 MHz (11 ranges)
Resolution / Accuracy	5-digit display – resolution from 1 mHz to 1 kHz according to frequency range ± 20 ppm for F > 10 kHz, ± 30 ppm for F < 10 kHz	
Amplitude	1 mV to 20.0 Vpp with open circuit in 3 automatic ranges – 3-digit Vpp or Vrms display	
Flatness	< 5 % for 1 mHz< F <10 MHz and ± 1dB up to 20 MHz (GX320) (specs. for level from 0.1 Vpp to 20 Vpp)	
Vdc offset	± 10 Vdc with open circuit – accuracy ± 5 % ± 5 mV	
Waveforms	Sine / Triangle (max frequency 2 MHz) / Square & "LOGIC" / TTL output	
Frequency sweep		
Modes	LIN (linear) or LOG (logarithmic)	
"INT" internal sweep	"Sawtooth" or "Triangle" mode – Unlimited excursion between "F Start" & "F Stop" (256 steps) Sweep time adjustable from 10 ms to 100 s	
"EXT" external sweep	Sweep by signal < 15 kHz, amplitude ± 10 V –VCF IN input impedance 10 kΩ approx.	
Modulations (GX 320)		
Internal AM modulation		Modulation by a sine signal with a frequency of 1 kHz Modulation rate 20 % or 80 %
External AM modulation		Modulation by a signal with a frequency < 15 kHz
Internal FM modulation		Modulation by a sine signal with a frequency of 1 kHz
External FM modulation		Modulation by a signal with a frequency < 15 kHz
SHIFT K function (GX 320)		FSK (Internal/External) = switching between Fstart & Fstop PSK (Internal/External) = phase switching ± 180°
BURST function		
Internal BURST		1 to 65,535 impulsions Pulse train period from 10 ms to 100 s
External BURST		1 to 65,535 impulsions – Synch/Period by a TTL signal with a frequency <200 kHz (VCG IN input)
Gate function		Validation of the AC component of "Main Out" by a TTL signal with a frequency <2 MHz (GATE IN input)
Synch function (GX 320)		
Several GX320s in cascade arrangement		Maximum frequency of signals generated 100 kHz Adjustment of phase shift across ± 180° (resolution 1°)
External frequencymeter		
Measurement range	5 Hz to 100 MHz	
Accuracy	± 0.05 % + 1 digit	
Safety / Max. acceptable voltage	300 V CAT I / 300 VRMS	
General specifications		
Configuration memories		Storage/Recall of 15 complete instrument configurations
Communication interface	"USB A/B" link for the programmable versions and Ethernet interface (GX 320-E)	
Mains power supply	230 V ±10 % (or 115 V ±10 %) – 50/60 Hz – 20 VA max. – Removable lead	
Safety / EMC	Safety as per IEC 61010-1 (2001) – EMC as per EN 61326-1 (2004)	
Mechanical specifications	227 (L) x 116 (H) x 180 (P) mm – Weight 2.8 kg	
Warranty / Origin	3 years – France	

State at delivery

Standard versions
- 1 function generator, 1 mains power lead, 1 CD-Rom containing 1 operating manual in 5 languages, 1 programming manual in FR+GB, Labwindows CVI / LabView drivers

Programmable versions
- 1 function generator, 1 mains power lead, 1 CD-Rom containing 1 operating manual in 5 languages, 1 programming manual in FR+GB, Labwindows CVI / LabView drivers, 1 USB A/B cable

Ethernet version
- As above + 1 cordon Ethernet

To order

- GX305: 5 MHz function generator
- GX310: 10 MHz function generator
- GX310-P: 10 MHz programmable function generator
- GX320: 20 MHz function generator
- GX320-E: 20 MHz programmable function generator

Accessories & spare parts

- AG1066-Z: Set of 2 BNC-Banana leads with rear connection
- HX0106: Set of 2 BNC-BNC leads
- HX0107: Set of 2 BNC-Banana adapters
- HA2004-Z: Set of BNC tee adapters

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For assistance and ordering

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