



## Laboratory generator – measurement instrument: multi-function, innovative, stand-alone tools!

- Frequency range from **0.001Hz** to **20MHz** (GX320)
- DDS technology and frequency accuracy of  $\pm 20\text{ppm}$
- 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 10ms to 100s
- Internal and external AM & FM modulation, GATE, BURST, FSK and PSK functions
- Adjustable phase synchronization of several generators in a cascade arrangement
- 100MHz frequencymeter, 300V CAT I
- Storage of 15 complete instrument configurations
- Versions programmable via USB link

# GX 320 DDS function generator

## Versatile instrument offering high performance

The GX 320 is a versatile, high-performance instrument ideal for applications in education and scientific research, as well as for electronic product designers (medical, automotive, consumer electronics, etc.). It can be used to generate a variety of precise signals: waveforms, sine, triangle, square & LOGIC, TTL output.

One of the major advantages of the generator is its DDS (Direct Digital Synthesis) technology. This feature means much greater frequency accuracy and stability than on a traditional generator.



## Ergonomics

### Unrivalled Legibility!

The GX 320 has a large LCD screen (5"x 1 3/4") which is exceptionally easy to read thanks to a main display with 5 digits 3/4" high. The backlighting is adjustable and the contrast can be increased if necessary.

In addition, the GX 320 generator will allow all the parameter settings ( $V_{DC}$ ,  $V_{rms}$  or  $V_{PP}$ , waveform, etc.) to be displayed simultaneously.

### An Interface Designed to Serve the User

The control keyboard on the instrument's front panel is backlit. The 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 a cubic design, multiple units can be stacked very easily, which is particularly practical since the GX 320 can be set up in cascade. Articulated feet make it possible to tilt the generators.



# High-performance functions

The **GX 320** is ideal for education and technical training, as well as for R&D, test and production technicians. In addition to generating up to a 20MHz signal, it 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.

## 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 60V<sub>DC</sub> / 40V<sub>AC</sub> protected outputs
- Slaving and display of the frequency
- Control and display of the AMPLITUDE with a choice of V<sub>PP</sub> (peak/peak) or V<sub>RMS</sub> (root mean square) and the V<sub>DC</sub> OFFSET
- Control and display of the duty cycle (DUTY)
- 100MHz frequencymeter, CAT I - 300V

## Modulation, Shift K & BURST functions

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.

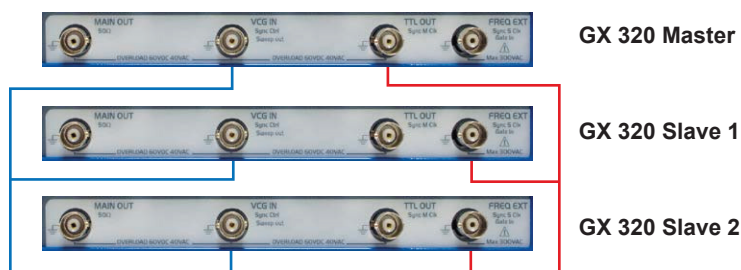
It is also possible to set up several GX 320 generators in a cascade arrangement.



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

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

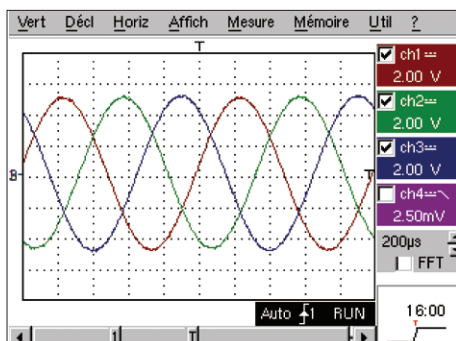
Frequency Ranges



## 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.

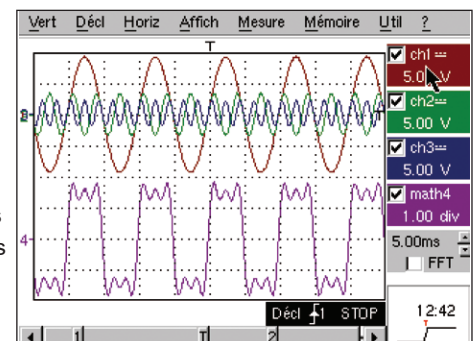


**Example 1: simulation of a three-phase signal**

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.



## GX 320 SPECIFICATIONS

<b>Interface</b>	
Display	LCD (125 x 45mm) – Adjustable brightness – Display of frequency on 5 digits 20mm 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, Clock and Synch outputs
BNC input terminals on front panel	VCG, Gate, Clock and Synch inputs
<b>Continuous Signal Generation</b>	
Frequency	0.001Hz to 20.000MHz (11 ranges)
Resolution / Accuracy	5-digit display – resolution from 1mHz to 1kHz according to frequency range ± 20ppm for F > 10kHz, ± 30ppm for F < 10kHz
Amplitude	1mV to 20.0V <sub>PP</sub> with open circuit in 3 automatic ranges – 3-digit V <sub>PP</sub> or V <sub>RMS</sub> display
Flatness	< 5% for 1mHz < F < 10MHz and ± 1dB up to 20MHz (GX320) (specs. for level from 0.1 V <sub>PP</sub> to 20 V <sub>PP</sub> )
V <sub>DC</sub> offset	± 10V <sub>DC</sub> with open circuit – accuracy ± 5% ± 5mV
Waveforms	Sine / Triangle (max frequency 2MHz) / Square & "LOGIC" / TTL output
<b>Frequency Sweep</b>	
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 < 15kHz, amplitude ± 10V – VCF IN input impedance 10kΩ approx.
<b>Modulations (GX 320)</b>	
Internal AM modulation	Modulation by a sine signal with a frequency of 1kHz Modulation rate 20% or 80%
External AM modulation	Modulation by a signal with a frequency < 15kHz
Internal FM modulation	Modulation by a sine signal with a frequency of 1kHz
External FM modulation	Modulation by a signal with a frequency < 15kHz
SHIFT K Function (GX 320)	FSK (Internal/External) = switching between Fstart & Fstop PSK (Internal/External) = phase switching ± 180°
<b>BURST Function</b>	
Internal BURST	1 to 65,535 impulsions Pulse train period from 10ms to 100s
External BURST	1 to 65,535 impulsions – Synch/Period by a TTL signal with a frequency < 200kHz (VCG IN input)
Gate Function	Validation of the AC component of "Main Out" by a TTL signal with a frequency < 2MHz (GATE IN input)
<b>Synch Function (GX 320)</b>	
Several GX320s in cascade arrangement	Maximum frequency of signals generated 100kHz Adjustment of phase shift across ± 180° (resolution 1°)
<b>External Frequency Meter</b>	
Measurement Range	5Hz to 100MHz
Accuracy	± 0.05% + 1 digit
Safety / Max. Acceptable Voltage	300V CAT I / 300V <sub>RMS</sub>
<b>General Specifications</b>	
Configuration Memories	Storage/Recall of 15 complete instrument configurations
Communication Interface	"USB A/B" link
Power Adapter	115V ± 10% (Available in 230V ± 10%) – 50/60Hz – 20VA 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 2.8kg
Warranty	3 years

### Shipping Contents

- 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

### Accessories

- 2136.00: 10ft USB cable  
- 2118.46: Banana Adapter (Female BNC (Male) 600V CAT IIII

### Ordering Information

- GX320: 20MHz function generator

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950.BR-MTX-GX320\_1222 • Printed in the USA

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