Test **&** Measurement Instruments
Portable and laboratory measuring instruments

GX1030 30MHZ Arbitrary Signal Generator

Measure up

Contents

1. Positioning of the GX1030 in the FK class family of METRIX generators
2. The product and technology used
3. The market and competition
4. Ergonomics and advantages
5. Various arbitrary waveforms and various modes
6. Specification, sales tools for ordering, communication

Measure up

Gx305　　　　　**GX310 and GX320E**　　　　　**GX1030**

Generators communicating via USB and Ethernet according to model

NI Drivers

CVI and LV

SX GENE or EASYWAVE

software

Measure up

■Communicating multifunction generator

- Dual-channel, with bandwidth up to 30 MHz, and amplitude up to 20 Vpp, 150 MS/s sampling rate,
- 14-bit vertical resolution, and 16-kpt waveform length
- Innovative EasyPulse technology, capable of generating lower jitter
- Pulse waveforms, brings a wide range and extremely high precision in pulse width and rise/fall times, innovative adjustment
- TrueArb technology based on a point-by-point architecture,
- Supports any 2 pt ~ 16 kpt Arb waveform with a sampling rate of 1 µS/s ~ 30 MS/s
- Special circuit for Square wave function, can generate Square waves up to 30 MHz with jitter less than 300 ps+0.05 ppm of period
- Multiple analog and digital modulation types: AM, DSB-AM, FM, PM, FSK, ASK, PSK and PWM
- Sweep and Burst functions
- Harmonics Generator with Waveform function
- Possibility of combining the two channels
- Frequency meter up to 200 MHz
- Standard interfaces: USB Host, USB Device (USBTMC), LAN (
- 4.3" TFT-LCD display

- **INTEGRATION of SERVICES** in the laboratory
  - •User interface and help integrated into the generator in English,
  - •USB and Ethernet interface for PC and USB
  - •HOST on front panel for storage of data on USB drive,
  - •Instructions for programming and controlling the instrument via SX-GENE software to reconstruct arbitrary signals from. trc files acquired from our Metrix oscilloscopes
  - •or EASYWAVE X software from DOX files

Measure up

EASY PULSE

EasyPulse technology provides a solution to many of the problems often enmetered when DDS generators are required to produce square signals. When the frequency of the square signal is not a direct multiple of the generator clock frequency, a "jitter" occurs, which influences the signal. EasyPulse avoids this effect. In addition to sine signals, the generator can also produce square signals up to the maximum frequency.
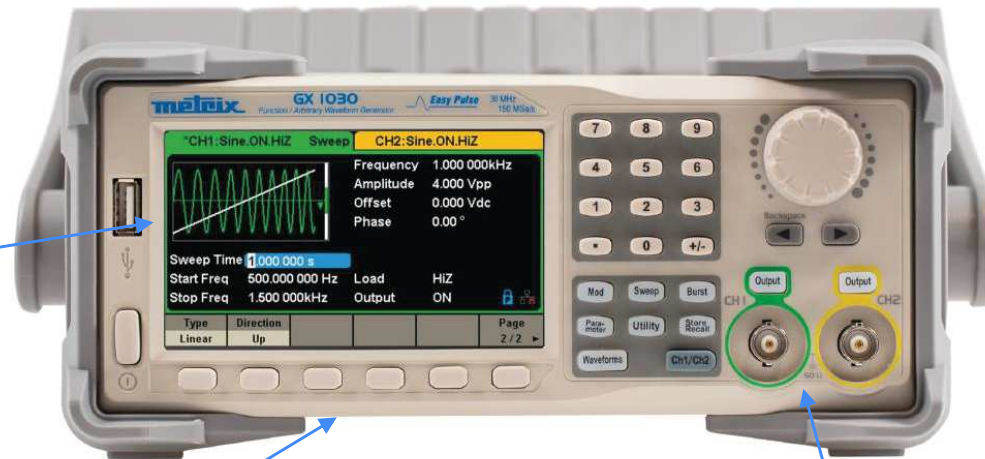
TrueArb

With TrueArb, the function generator generates a point-by-point signal. This allows each data point to be processed individually, reducing the jitter and error rate. This gives a very good representation of the stored waveform.

Measure up

CHAUVIN ARNOUX
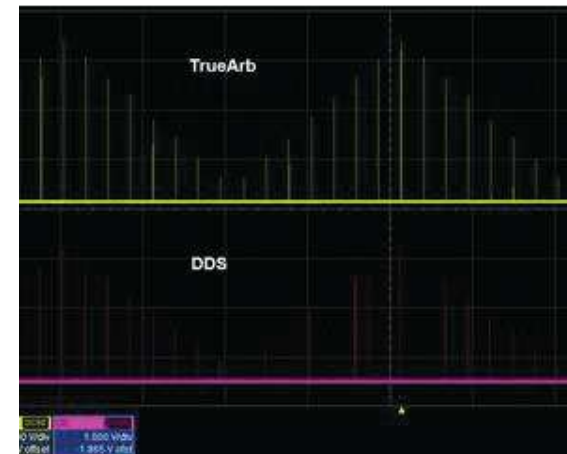
Simple and intuitive English-language interface

●BRIGHT SCREEN
●GRAPHIC COLOUR
●480x272 px

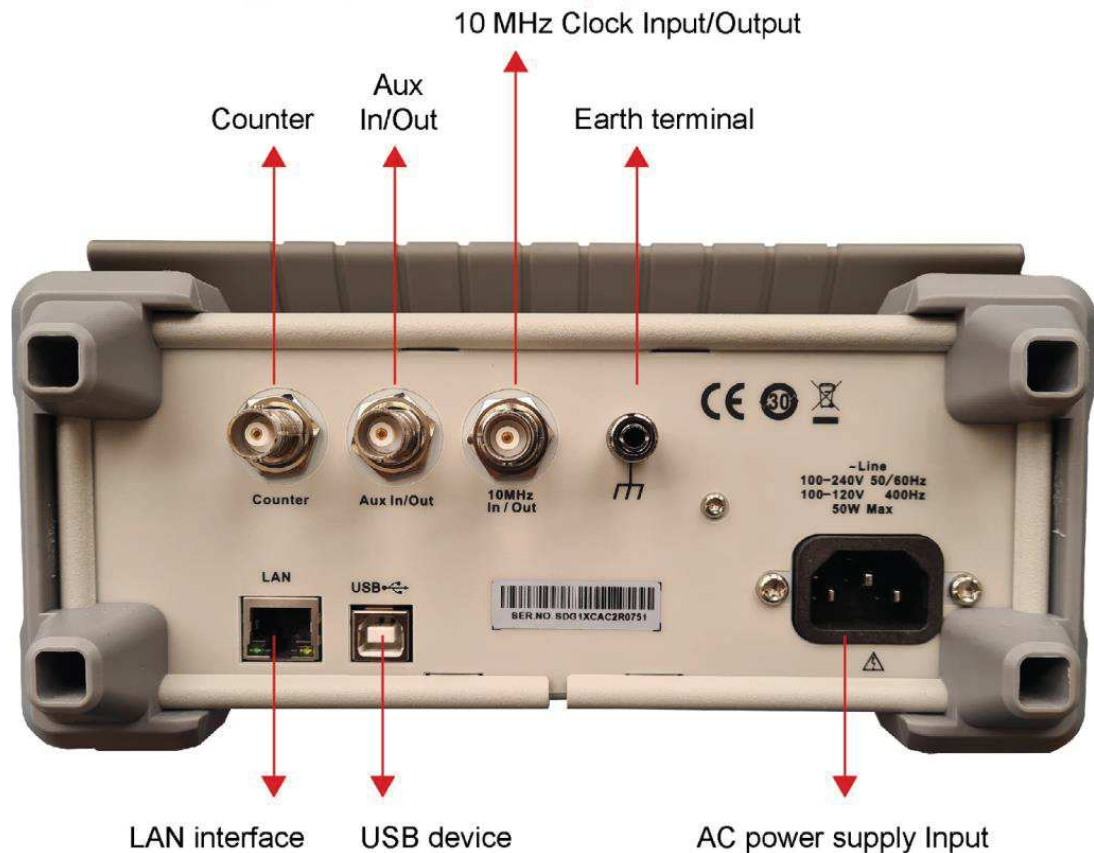● EASY-TO-USE
INSTRUMENT CONTROL
PANEL

●2 OUTPUTS (CH1 and CH2)
for coupling and duplication

Measure up

Multiple synchronization possibilities

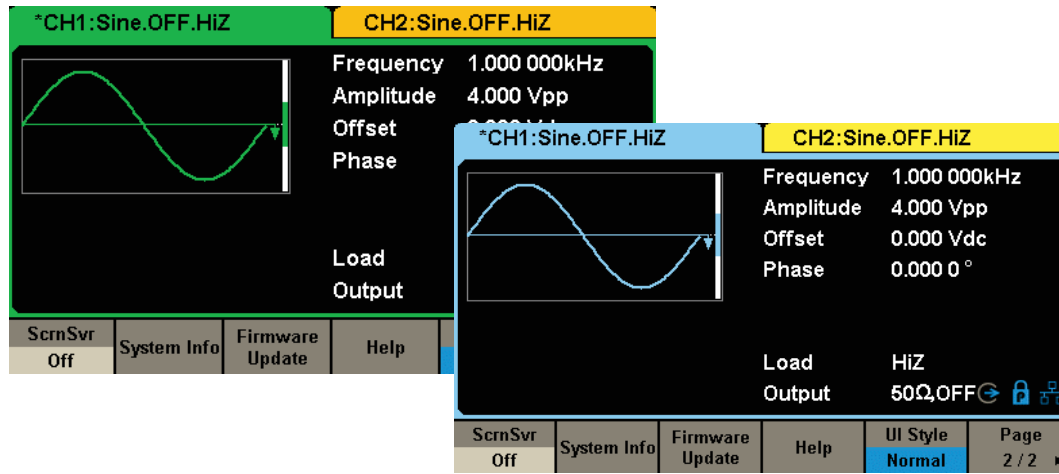**Frequency meter**   **10 MHz output/input clock**

Gated BURST

SWEEP external source

ASK/FSK

For external AM/FM modulation

TTL signal

Communication interface

LAN RJ45 Ethernet and USB DEVICE with PC

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4- Advantages of the design

- Extra-bright SCREEN
- Graphic COLOUR 4,3"
- 2-channel colour display styles

Classic UI: CH1 green/ CH2 amber
Normal UI: CH1 Blue / CH2 Yellow

Ergonomics
Developed as a laboratory measurement tool
The elastomer housing protects against impacts on the front and rear corners;

Large screen
2 coloured channels (CH1 and CH2) with illuminated "output" key to identify the channel
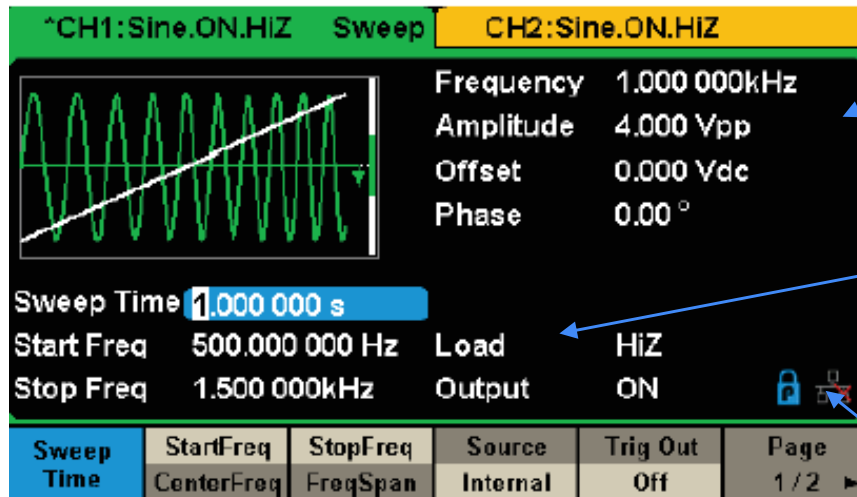Coloured key areas for function and keypad identification
Adjustable stand for benchtop use

Measure up
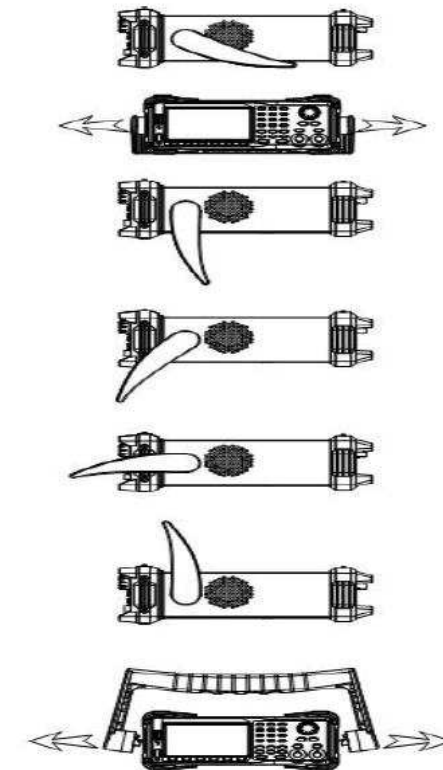
Display of waveform

Parameters of waveform

Parameter of CH1 channel

Communication parameters

USB or LAN

MENU and sub-MENU of selected function
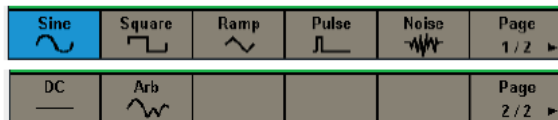
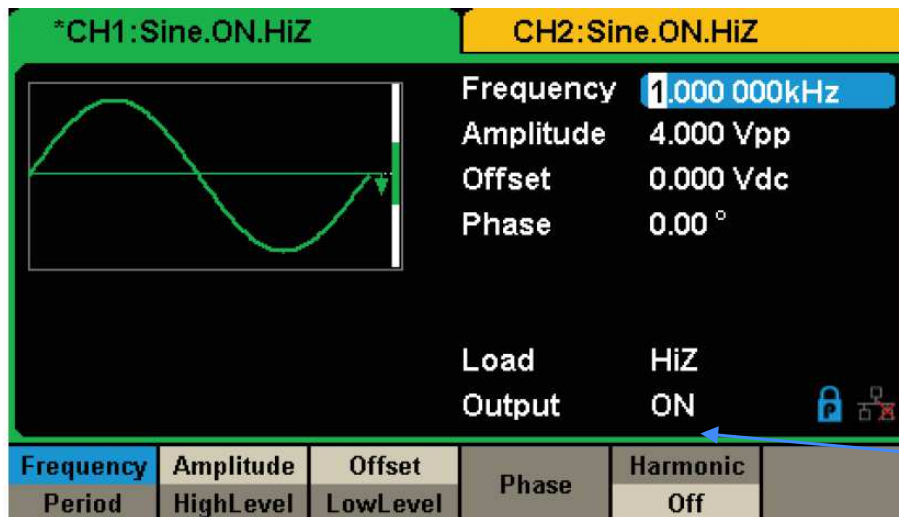Highlighted: parameters to be programmed

Measure up

Waveforms : sine, square, triangle, pulse, noise, DC, ramp
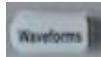

SINE signal parameters

Frequency parameter area to be programmed using numeric keypad or dial

High-impedance load or 50 Ohm
Status of output channel

MENU and sub-MENU of function: period, amplitude, high level, offset, phase, harmonic

The function generator output circuits operate as a voltage source with an impedance of 50 ohms. At higher frequencies, an incorrectly loaded output may cause errors without the output waveform. In addition, loads with an impedance less than 50 ohms will reduce the amplitude of the waveform while loads with an impedance greater than 50 ohms will increase the amplitude of the waveform.
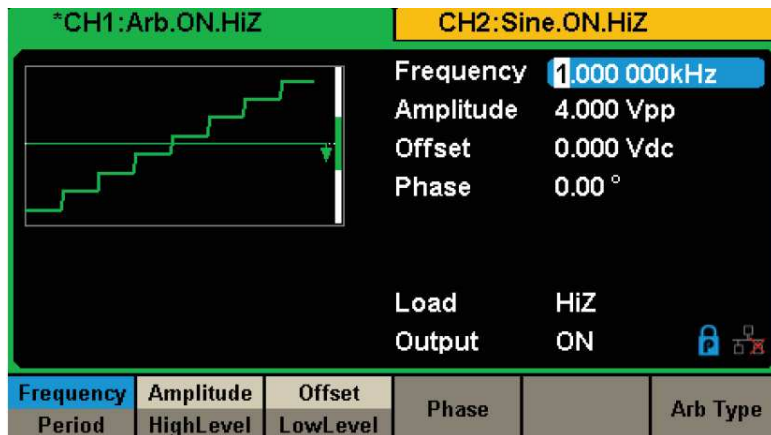
Measure up

Waveforms

The generator can generate repeatable 16-kpt arbitrary waveforms and frequencies up to 6 MHz.
Possible settings: Frequency/Period, Amplitude/High level, Offset/Low level and Phase
An arbitrary waveform with different parameters can be generated.

SINE signal parameter area

Frequency parameter area to be programmed using numeric keypad or dial

High-impedance load or 50 Ohm
Status of output channel

Max amplitude 5 Vpp

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Selection of waveforms: arbitrary
there are many arbitrary waveforms embedded in the generator memory by category :
Press **Common**, **Math**, **Engine**, **Window**, **Trigo** or other menus to switch to the desired category (the selected category in the menu bar is highlighted), then rotate the knob to choose the desired waveform (the selected waveform is highlighted).

196 preset signals, select 1 waveform then Recall

ARB common signal parameters

Measure up

File stored in an oscilloscope in . csv file and then on USB key

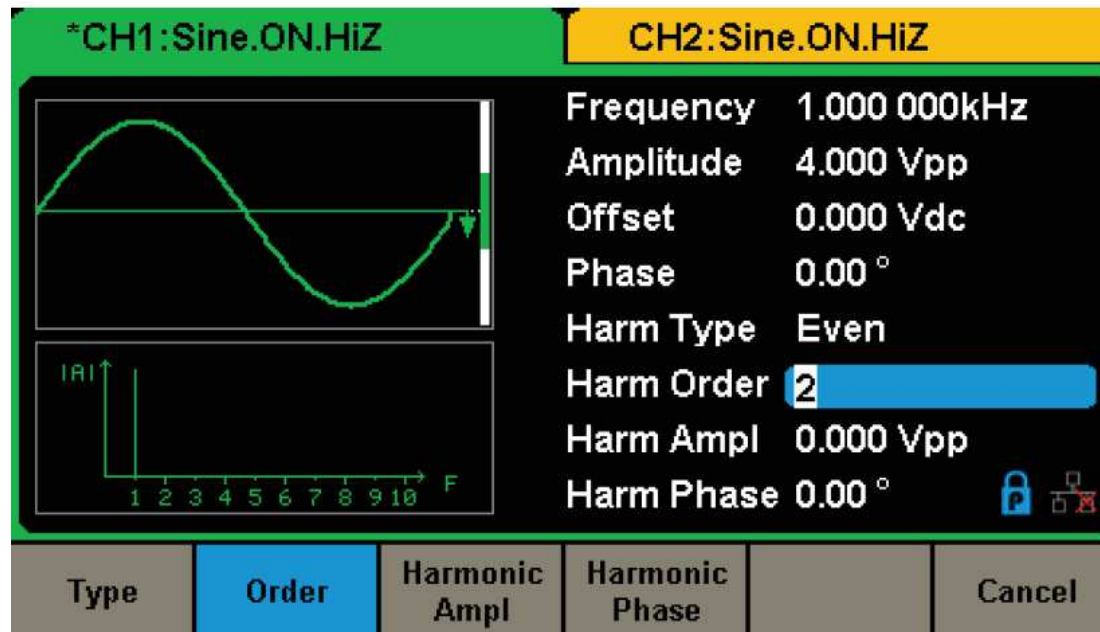1-Reminder of file on PC, replay in EASYWAVE software or SX-GENE
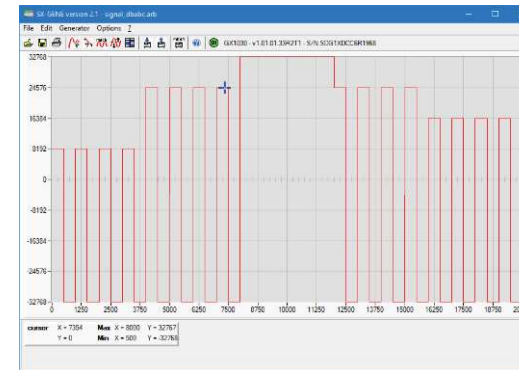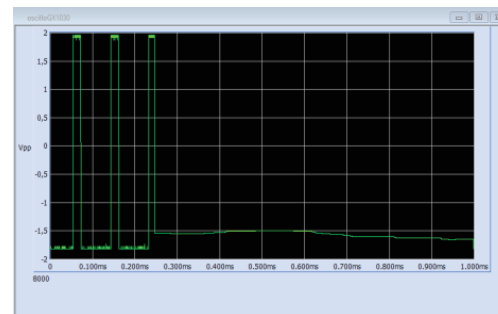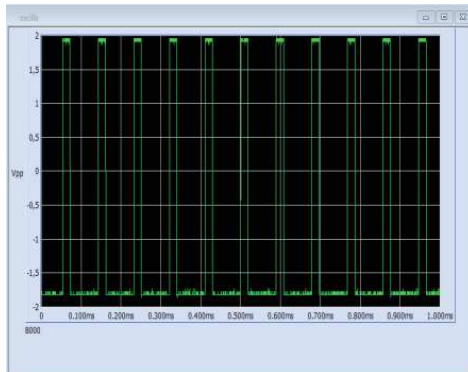
2- File on PC changed

3- Transfer of the modified file to the generator: display of the waveform and parameters

Measure up

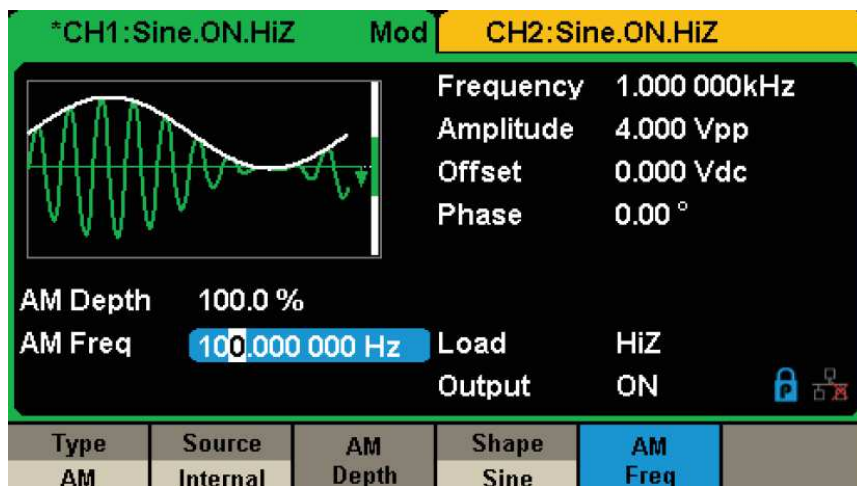GX1030 10th-order Harmonics Generator,
Amplitude and Phase Adjustment:
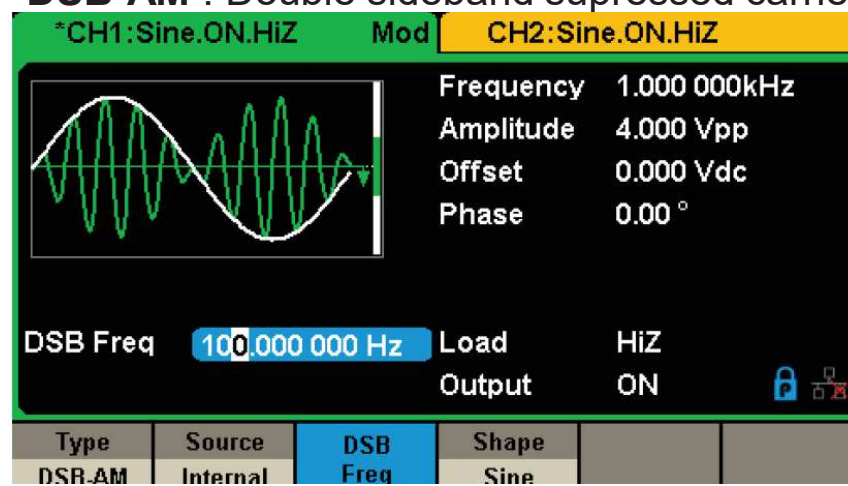 f1: fundamental + 10 orders
Other harmonics: even or odd

GX1030 modulated wave generator

AM: the carrier amplitude varies with the instantaneous voltage of the modulating waveform

DSB-AM : Double sideband supressed carrier

	CH1:Sine.ON.HiZ	Mod	CH2:Sine.ON.HiZ
		Frequency	1.000 000kHz
		Amplitude	4.000 Vpp
		Offset	0.000 Vdc
		Phase	0.00 °
AM Depth	100.0 %		
AM Freq	100.000 000 Hz	Load	HiZ
		Output	ON

Type	Source	AM	Shape	AM
AM	Internal	Depth	Sine	Freq

	CH1:Sine.ON.HiZ	Mod	CH2:Sine.ON.HiZ
		Frequency	1.000 000kHz
		Amplitude	4.000 Vpp
		Offset	0.000 Vdc
		Phase	0.00 °
DSB Freq	100.000 000 Hz	Load	HiZ
		Output	ON

Type	Source	DSB	Shape	
DSB-AM	Internal	Freq	Sine	

Source internal or external (connexion Aux IN/OUT)
AM Depth : depth of modulation
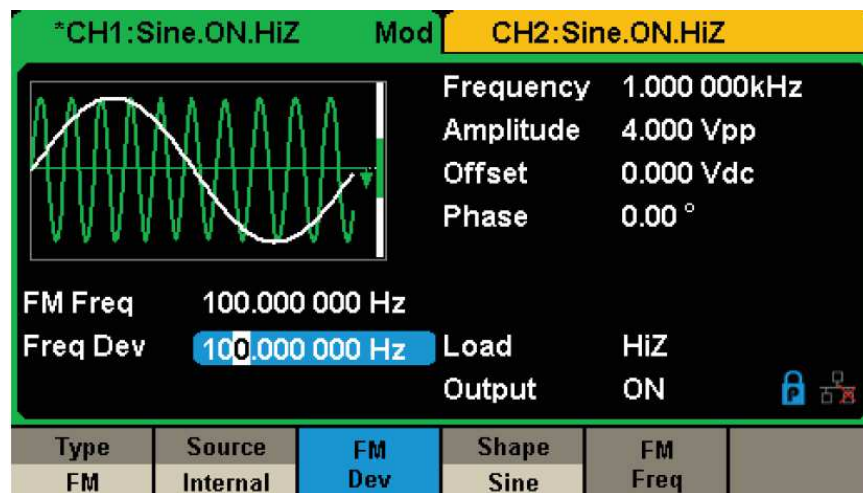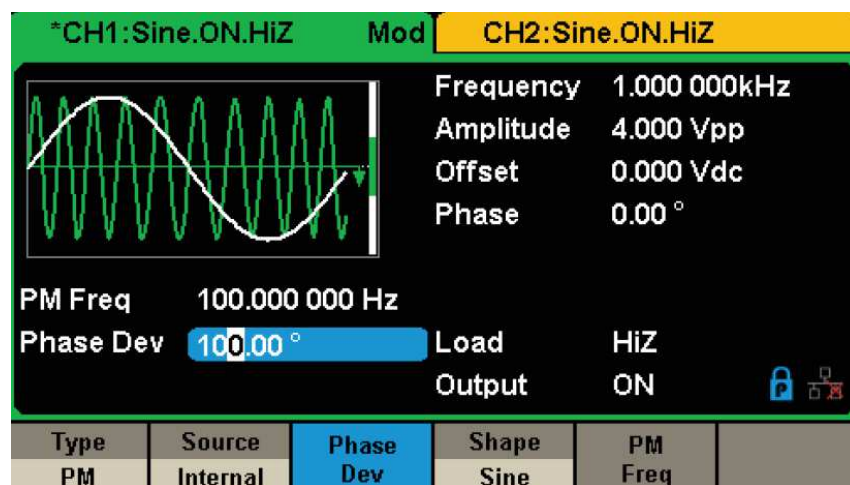**Shape** : choice of modulating waveform
AM Freq : Modulating waveform adjustment, 1mHz to 20KHz

- Square: 50 % duty cycle
- Triangle: 50 % symmetry
- UpRamp: 100 % symmetry
- DnRamp: 0 % symmetry
- Arb: the arbitrary waveform slected of the current channel.

Measure up

GX1030 modulated wave generator

FM: the amplitude of the carrier varies with the instantaneous voltage of the modulating waveform

Source internal or external (connection Aux IN/OUT)
FM Dev : frequency deviation
Shape : choice of modulating waveform
FM Freq : Modulating waveform adjustment, 1mHz to 20KHz

- Square: 50 % duty cycle
- Triangle: 50 % symmetry
- UpRamp: 100 % symmetry
- DnRamp: 0 % symmetry
- Arb: the arbitrary waveform slected of the current channel.

Measure up

GX1030 modulated wave generator

PM: the amplitude of the carrier varies with the instantaneous voltage of the modulating waveform

- Square: 50 % duty cycle
- Triangle: 50 % symmetry
- UpRamp: 100 % symmetry
- DnRamp: 0 % symmetry
- Arb: the arbitrary waveform slected of the current channel.

Source internal or external (connection Aux IN/OUT)
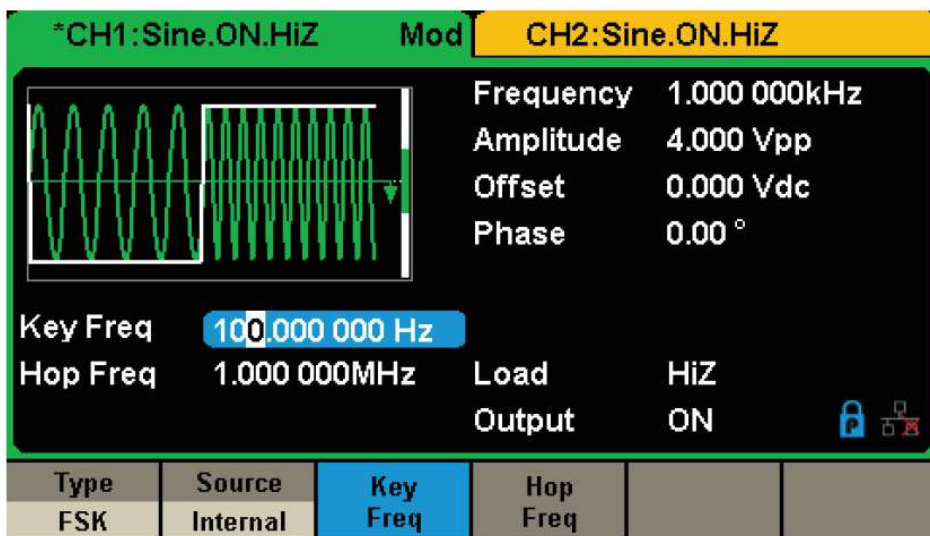**Phase Dev** : Phase deviation ranges from 0° to 360° (default 100°)
Shape : choice of modulating waveform
PM Freq : Modulating waveform adjustment, 1mHz to 20KHz

Measure up

GX1030 FSK modulated wave generator frequency shift modulation

FSK : Frequency Shift Keying : the frequency toggles between 2: the KEY carrier and the HOP jump frequency

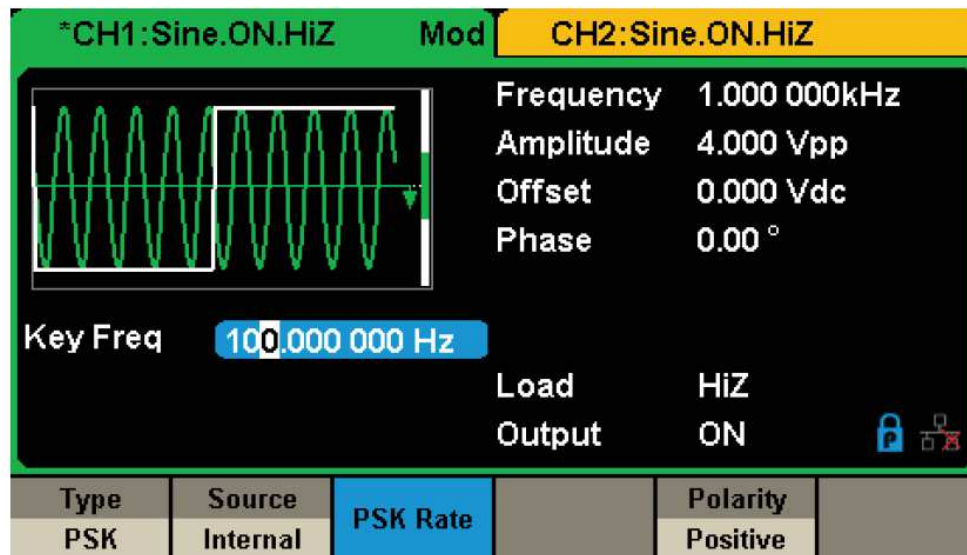

Source internal or external (connection Aux IN/OUT)
Key freq : frequency at which f output moves between carrier and f jump (internal modulation 1mHz to 50KHz)
Hop Freq : jump frequency

- Square: 50 % duty cycle
- Triangle: 50 % symmetry
- UpRamp: 100 % symmetry
- DnRamp: 0 % symmetry
- Arb: the arbitrary waveform slected of the current channel.

Measure up

GX1030 PSK modulated wave generator: PSK amplitude shift modulation

PSK : Phase Shift Keying : shifts the output phase between 2 carrier phase values and the modulating phase; default modulation phase 180°

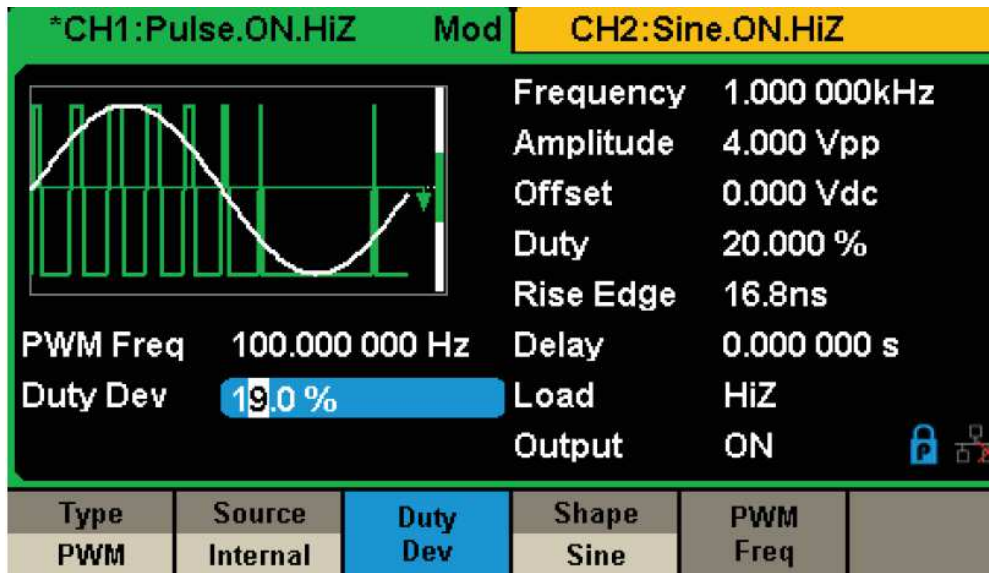**Source** internal or external (connection Aux IN/OUT)

Key freq : frequency at which the output phase shifts between carrier phase and 180° (internal modulation 1mHz to 20KHz)

Polarity : positive or negative modulation polarity

- Square: 50 % duty cycle
- Triangle: 50 % symmetry
- UpRamp: 100 % symmetry
- DnRamp: 0 % symmetry
- Arb: the arbitrary waveform slected of the current channel.

Measure up

GX1030 PWM modulated wave generator pulse width modulation

PWM : Pulse Width Modulation : pulse width varies with the instantaneous voltage of the modulating waveform: pulse only


- Square: 50% duty cycle
- Triangle: 50% symmetry
- UpRamp: 100% symmetry
- DnRamp: 0% symmetry

Source internal or external (connection Aux IN/OUT)
Width dev: width deviation
Duty Dev : duty deviation,
Shape : choice of modulating waveform
PWM : Modulating waveform adjustment 1mHz to 20KHz

In the sweep mode, the generator steps from the start frequency to the stop frequency in the sweep time specified by the user.
The waveforms that support sweep include sine, square, ramp and arbitrary
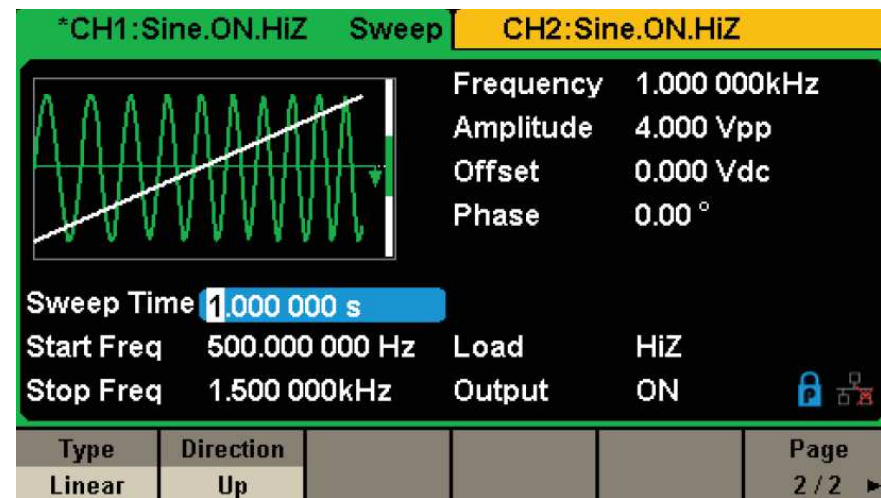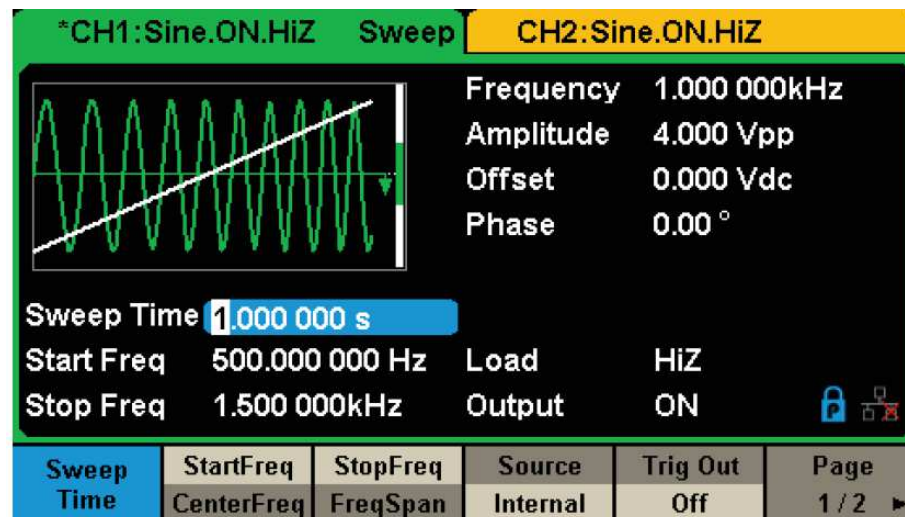
Sweep time Set the time span of the sweep in which the frequency changes from the start frequency to stop frequency.
Start freq/ stop freq : Set the start frequency of the sweep
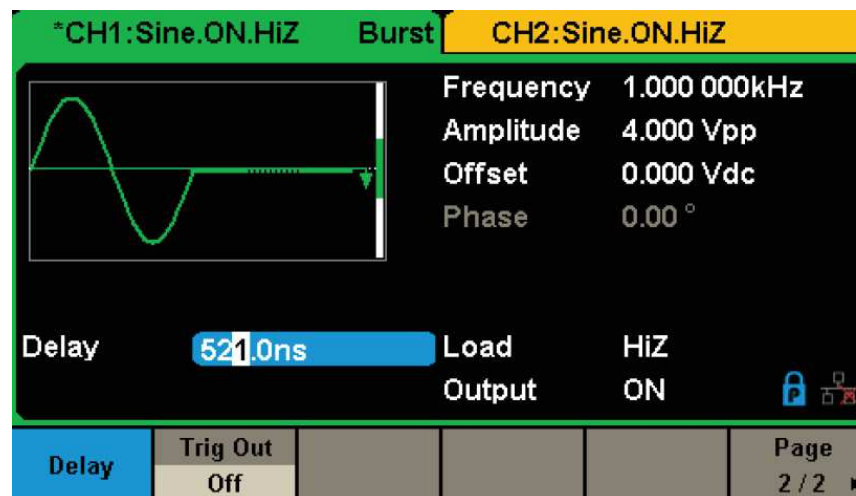**Source** internal or external
**Trig Out :** Disable/enable trigger out.

Type Linear linear or
       Log logarithmic profile
Direction upward/downward

Measure up

The Burst function can generate versatile waveforms in this mode. Burst times can last a specific number of waveform cycles (N-Cycle mode), or when an external gated signal (Gated mode) is applied. Any waveform (except DC) may be used as the carrier, but noise can only be used in Gated mode..

3 types of BURST

Burst Type	Trigger Source	Carrier
N-Cycle	Internal/External/Manual	Sine, Square, Ramp, Pulse, Arbitrary.
Infinite	External/Manual	Sine, Square, Ramp, Pulse, Arbitrary.
Gated	Internal/External	Sine, Square, Ramp, Pulse, Noise, Arbitrary.
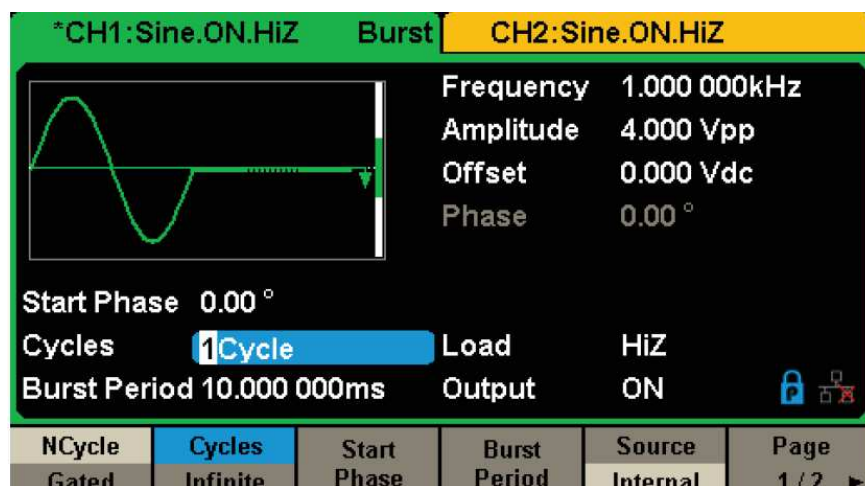
Ncycle Use the N-Cycle mode
Start phase start phase
Burst period period of burst
Source internal or external or manual or Infinite:

Delay Set the delay time before the burst starts
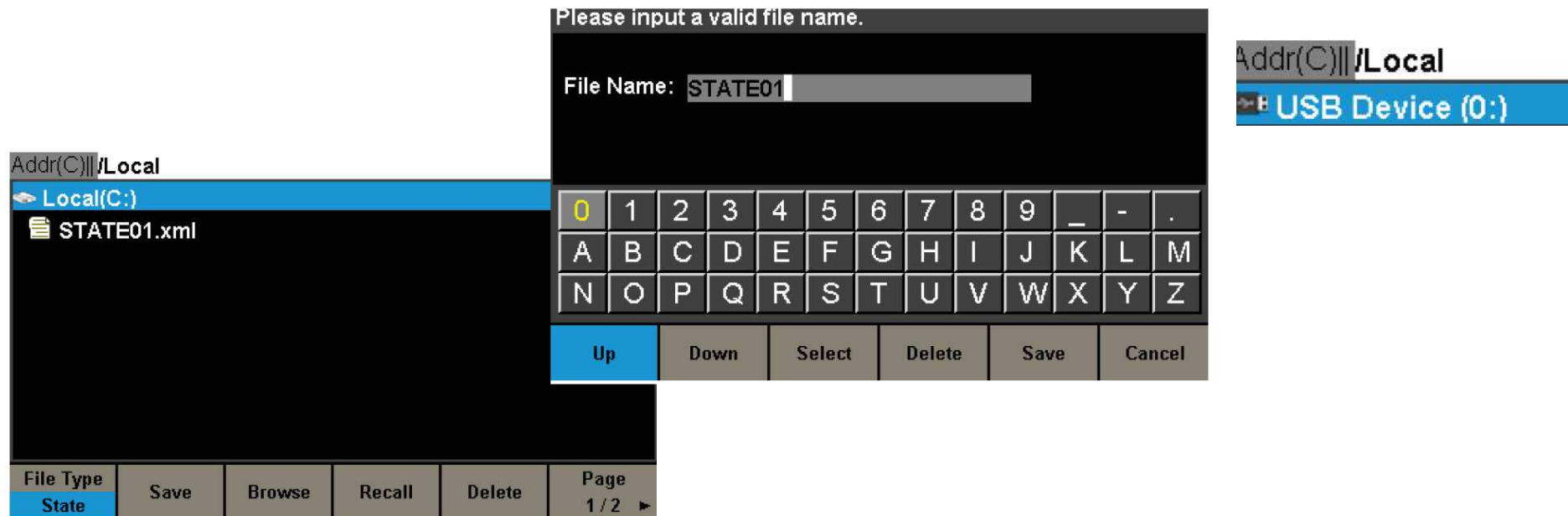**Trig** trigger on/off

Measure up

GX1030 can store the current instrument state and user-defined arbitrary waveform data in internal or external memory and recall them when needed

SAVE/RECALL to choose Local (C:) or USB Device (0:).

State File Store the instrument state in internal or external memory in *.xml format. Or

 Data : The **GX1030** can recall the data files in *.csv or *.dat format from external memory and transfer them in *.bin format

In addition, users can edit arbitrary waveforms with PC software **EasyWave or SX GENE**, download them to the internal memory through a remote interface and store them (in *.bin format) in the internal memory.

Measure up

With the Utility function, the user can set the parameters of the generator such as Sync, Interface, System Setting, Self Test and Frequency Meter, etc.

| System | Test/Cal | Counter | Output Setup | CH Copy Coupling | Page 1/2 ► |

Programming of CH outputs
of the external clock
of the frequency meter,
of the voltage level

| Interface | Sync | CLKSource Internal | Mode | OverVoltage Protection | Page 2/2 ► |

| Number Format | Language English | PowerOn Default | Set To Default | Beeper On | Page 1/2 ► |

| ScrnSvr Off | System Info | Firmware Update | Help | Accept | Page 2/2 ► |

| Point • | Separator Space | | | Accept |

Startup Times: 1
Software Version: 1.01.01.33R2T1
Hardware Version: 03-00-00-24-00
Product Type: GX1030
Serial No: SDG1XDCC6R1968

Please press any soft key to exit !

Measure up

The **GX1030** provides a frequency meter which can measure frequencies between 100 MHz to 200 MHz.
The dual channels can still output normally when the meter is enabled

The frequency meter on the **GX1030** can measure parameters including frequency, period, duty, positive pulse width and negative pulse width.

System will calculate the deviation between the measured frequency and the reference frequency automatically
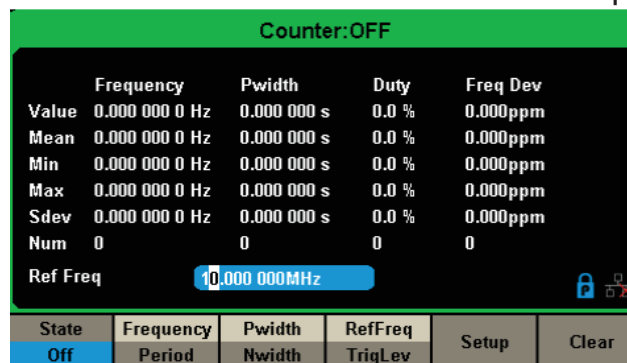
The CH1 output port of the **GX1030** outputs the waveform of CH1 in the general mode, while the waveform of CH1+CH2 can be output in the combined mode. Similarly, the CH2 output port of the **GX1030** outputs the waveform of CH2 in the general mode while the waveform of CH1+CH2 can be output in the combined mode
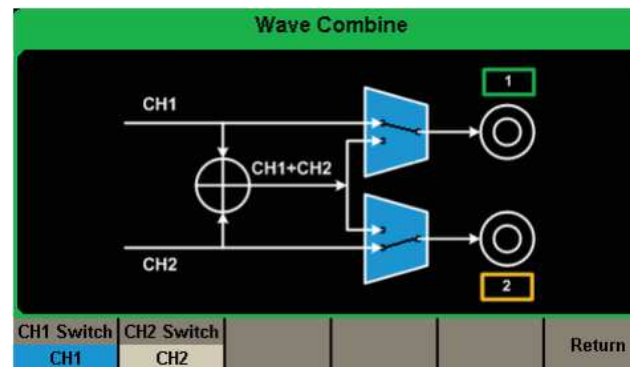
CH1 Switch	CH1	Output the waveform of CH1.
	CH1+CH2	Output the waveform of CH1+CH2.
CH2 Switch	CH2	Output the waveform of CH2
	CH1+CH2	Output the waveform of CH1+CH2.

The **GX1030** supports state and waveform copy functions between its two channels. That is to say, it copies all parameters and states (including the channel output state) and arbitrary waveform data from one channel to the other.

Deviation: the amplitude deviation between CH1 and CH2. The resulting signal is represented by: AmplCH2-AmplCH1=AmplDev.
„**Ratio:** the amplitude ratio of CH1 and CH2. The resulting signal is represented by: AmplCH2/AmplCH1=AmplRatio.
Deviation: the frequency deviation between CH1 and CH2. The resulting signal is represented by: FreqCH2-FreqCH1=FreqDev.
„**Ratio:** the frequency ratio of CH1 and CH2. The resulting signal is represented by: FreqCH2/FreqCH1=FreqRatio.

Programming of CH outputs of the frequency meter's external clock

Measure up

■ **Storage of state in GX as .dat or .csv file**

■ **Communication & PC software**

EASYWAVE   **SX-GENE**

Measure up
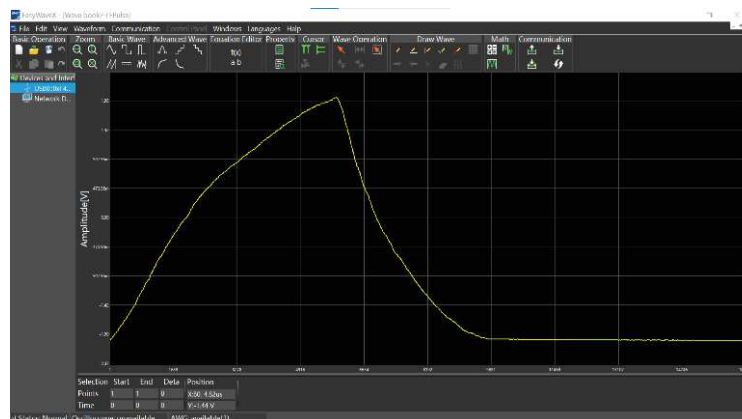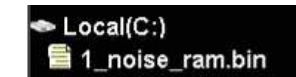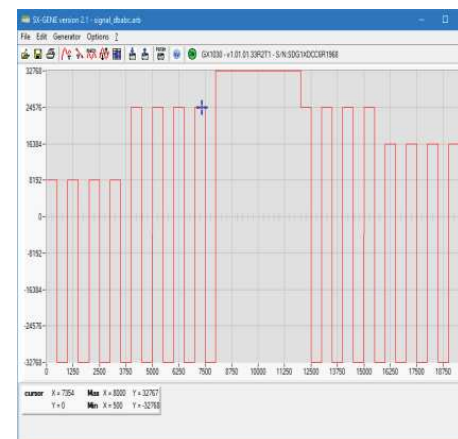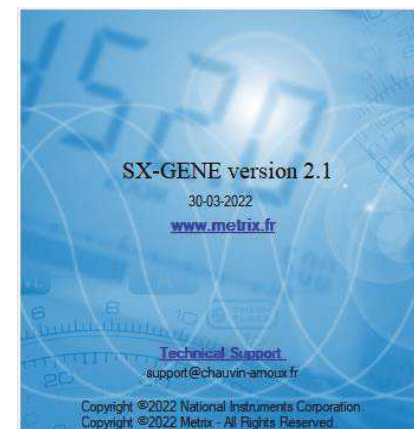
A single reference: GX1030

N°Article   GX1030   GENE ARB 30MHZ USB LAN   EN ACTIVITE

<u>State at delivery</u>

Referencfe to order
GX 1030
30 MHz arbitrary function generator

State at delivery
1 generator with 2P+E mains power cable, one USB cable and Quick Start Guide
on paper in 5 languages, User's Manual and software available for download