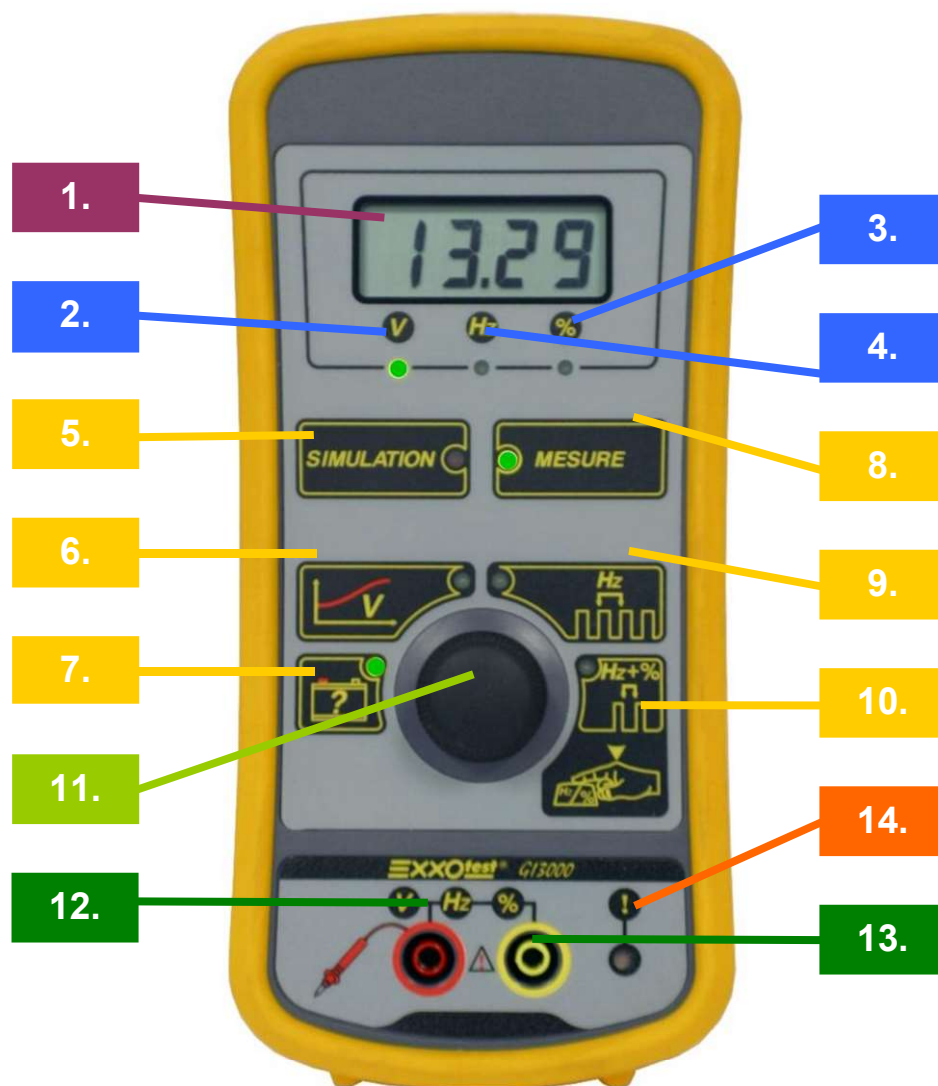




VOLTAGE, FREQUENCY AND DUTY CYCLE GENERATOR

For testing most sensors or actuators in a vehicle



User's guide for G13000





**WARNING AND GENERAL PRECAUTIONS
READ BEFORE USING THE GI3000**

To ensure that the GI3000 is used in safe conditions and to avoid damaging the device:

- Only use the GI3000 in compliance with the provisions of this manual to avoid hampering its built-in protection devices.
- Do not use the GI3000 if the device or its measuring leads are damaged, or if the device does not appear to be operating correctly.
- Check the operation of the GI3000 by measuring a direct voltage. If in doubt, ensure the device is checked.
- Never apply voltage in excess of 30V.
- Do not use the device near to explosive gases, vapour or dust.
- Comply with all safety instructions for the equipment being tested.

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1. PRESENTATION OF THE GI3000

- ✓ Repairs, checks and maintenance for the vehicle.
- ✓ Measuring and generating signals using one compact, robust and reliable tool.

Functions:

- Simulate voltage between 0 and 5 V.
- Measure voltage between 0 and 16.3 V.
- Simulate frequency between 10 and 500 Hz.
- Measure frequency between 4 and 500 Hz.
- Simulate a duty cycle of 5% - 95%, with a frequency which can be adjusted from 10 to 500 Hz.
- Simulate two signals with opposing phases with a Frequency and duty cycle which can be varied separately.
- Measure the duty cycle for a frequency.
- Measure the Battery voltage.



Note:

At power-up, the **GI3000** displays the Battery voltage:

The indicators are lit (see photo)

2. OPERATION

2.1. USE IN SIMULATION MODE

- ✓ Press the SIMULATION button:



2.1.1. Simulating a frequency

- ✓ Press the Hz button:



The **Hz** indicator under the display will light up. The display will indicate the initial value of 10 Hz, the frequency can be adjusted up to 500 Hz. This setting can be established using the knob (turn left to reduce the value, turn right to increase).

2.1.2. Simulating a duty cycle

- ✓ Press the Hz+% button:



The **%** indicator under the display will light up. The display will indicate the initial value of 5%, the duty cycle can be adjusted up to 95%. This setting can be established using the knob (turn left to reduce the value, turn right to increase). The value in **%** indicates the low state control time (earth control).

The frequency is pre-set to 100 Hz by default. The frequency of the duty cycle can be set from 10 to 500 Hz. Simply press the knob, the **%** indicator under the display will light off and the **Hz** indicator under the display will light up: adjust the required frequency. Press the knob again, and the **GI3000** will return to **simulating a duty cycle mode**.

2.1.3. Simulating a voltage

- ✓ Press the V button:



The **V** indicator under the display will light up. The display will indicate the initial value of 0.00V; the voltage can be adjusted up to 5.00 V. This setting can be established using the knob (turn left to reduce the value, turn right to increase).

Output voltage can be incremented at intervals of 10 mV.

Note:

- *In all three simulation cases, the value is saved.*

2.2. USE IN MEASURING MODE

- ✓ Press the MEASURING button:



2.2.1. Measuring a frequency

- ✓ Press the Hz button:



The **GI3000** measures a frequency between 4 & 500 Hz. When the upper limit is exceeded, the display flashes at the value 500 Hz. When the lower limit is exceeded, the display indicates 4 bars: ---.

The switchover threshold is 2 V.

2.2.2. Measuring a duty cycle

- ✓ Press the Hz+% button.



The **GI3000** measures a duty cycle between 1 and 99%. If the measurement is outside of these limits, the display flashes with the most recent value.

The switchover threshold is equal to 2 V and the cycle is measured for frequencies varying from 4 to 500 Hz. Outside of these limits, the display indicates 4 bars: ----.

2.2.3. Measuring a voltage

- ✓ Press the V button:



The **GI3000** measures a voltage from 0 to 16.38 V. For higher voltages, the display flashes at 16.38 V.

2.2.4. Measuring the battery voltage

- ✓ Press the BATTERY button:



The **GI3000** measures the battery voltage from 7 to 16.38 V. For higher voltages, the display flashes at 16.38 V.

Notes:

- *In simulation mode, press the BATTERY button to automatically switch the device to BATTERY MEASUREMENT mode.*
- *When you press the MEASURING button, the device indicates battery voltage.*

2.3. **GI3000 SAFETY**

The **GI3000** is protected against short circuits in all simulation modes.

An electronic protection system is fitted. When this system is activated, the LED located to the right of the connection sockets lights up:



⇒ The device is in **safety** mode for the **red socket**.

The LED lights up in the colour of the socket with a problem.

*The **GI3000** automatically returns to normal operation when the connection problem is solved.*

3. CHARACTERISTICS

MEASURING FUNCTION			
Span (full range)	Resolution of output	Precision % Measuring span +/-1 digit	Comments Input impedance: 1 MΩ
<u>Battery voltage</u> 7 to 16.38 V	0.01 V	+/- 0.2 %	3 readings / sec, measured vs. the black power clamp
<u>Socket voltage</u> 0 to 16 V DC	0.01 V	+/- 0.2 %	3 readings / sec, measured vs. the black power clamp
<u>Frequency</u> 4 to 500 Hz	1 Hz	+/- 0.2 %	zero offset: 2 V max. 1 reading per second
<u>Duty Cycle</u> 1% to 99%	1%	+/- 0.5 %	zero offset: 2 V max. 1 reading per second

SIMULATION FUNCTION			
Span (full range)	Resolution of output	Precision % Measuring span +/- 1 digit	Comments Specifications load 100 mA
<u>Voltage</u> 0 to 5 V	0.01 V	+/- 0.2 %	
<u>Frequency</u> 10 to 500 Hz	1 Hz	+/- 0.2%	Push pull output Square signal
<u>Duty cycle</u> 5% to 95% (Frequency of 10 - 500 Hz)	1%	+/-0.5 %	Push pull output Square signal

MAXIMUM ELECTRICAL SPECIFICATIONS	
Power supply	36 Volt DC, clamps
Max. voltage allowable for connection sockets	30 Volt DC
Max. charge current	2.5A, protected with a thermal breaker
Environment	The specifications of the GI-3000 apply from 0°C and up to +35 °C
Operating T°	from -10°C to +50°C
Storage T°	from -20°C to +60°C

PROTECTION FUNCTION			
Function	Colour LED	Problems	Comments
Frequency simulation	Red	SC at the + or - at the LED colour socket	MAX. 2.5A protected with a thermal breaker
	Yellow		
Simulating a duty cycle	Red	SC at the + or - at the LED colour socket	
	Yellow		
Voltage simulation	Red	Voltage higher or lower by 2 Volts / voltage displayed	protected with a resistor

DECLARATION OF CONFORMITY

By means of this declaration of conformity, as defined by the European Directive on Electromagnetic Conformity 2004/108/EC, the company:

ANNECY ELECTRONIQUE S.A.S

Parc Altaïs

1, rue Callisto

74650 CHAVANOD



Declares that the following product:

Brand	Model	Description
EXXOTEST	GI3000	Duty cycle, Frequency and Voltage generator

I. has been manufactured in accordance with the requirements of the European directive:

- EMC Directive 2004/108/EC - 15/12/2004

and satisfies the requirements of the following standard:

- NF EN 61326-1 dated 07/1997 +A1 of 10/1998 +A2 of 09/2001
Electrical measurement, control and laboratory equipment, EMC-related requirements.

II. has been manufactured in accordance with the requirements of the European Directives relating to EEE design and WEEE management for the EU. :

- Directive 2002/96/EC dated 27 January 2003 on Waste Electronic and Electrical Equipment (WEEE)
- Directive 2002/95/EC dated 27 January 2003 on the limitations for the use of certain hazardous substances in the construction of Electronic and Electrical Equipment (EEE).

Drawn up in Saint-Jorioz on 20 July 2007.

CEO, Stéphane SORLIN

A handwritten signature in blue ink, consisting of a stylized 'S' followed by a horizontal line.

		ID	FUNCTION	SIMULATION	MEASUREMENT
INDICATORS		1	Display screen	✓	✓
		2	Voltage function	✓	✓
		3	Duty cycle function	✓	✓
		4	Frequency function	✓	✓
BUTTON AND INDICATORS		5	Simulation mode	✓	-
		6	Variable tension mode	✓	✓
		7	Battery voltage measurement	-	✓
		8	Measuring mode	-	✓
		9	Variable frequency mode	✓	✓
		10	Variable duty cycle mode	✓	✓
		11	Settings knob and button	✓	-
		12	Measuring lead connection socket	✓	✓
		13	Reverse of the signal simulated for the socket 12 (for frequency and duty cycle simulations only)	✓	-
		14	Safety mode: Warning indicator	✓	-

