Internal PSK modulation *(int psk)*
After selection, *"HOP 180°"* is displayed, and the cursor positions itself under *180°*.
Set the phase shift between 0 and 360° using the thumbwheel switch [17], then press *Valid* [15].
A star is displayed between the frequency and function. From this time on, the output signal is shifted in phase by the set value at the modulation frequency (internal 800Hz).
To quit the modulation function, press *Modul. (Stop Mod.)* button [14].

External PSK modulation *(ext psk)*
After selection, *"HOP 180°"* is displayed, and the cursor positions itself under *180°*.
Set the phase shift between 0 and 360° using the thumbwheel switch [17], then press *Valid* [15].
A star is displayed between the frequency and function. From this time on, the output signal is shifted in phase by the set value at the frequency of the VCF input signal [20] (TTL level).
To quit the modulation function, press *Modul. (Stop Mod.)* button [14].

The *IN/OUT VCF* BNC plug [20] is an input. **The maximum allowable voltage before degradation is ± 60 V.**
⚠ ***Electrical overload: Never apply a category II, III or IV measuring voltage to the inputs.***

EXTERNAL FREQUENCY MEASUREMENT *(counter)*
When the generator is switched on, the cursor positions itself below the function.
Pressing the *Function Counter* button [9] selects the frequency counter.
If the cursor is not below the function, pressing the *Function Counter* button [9] twice selects the frequency counter.
After function selection, *"Fext 0-25 MHz"* is displayed, and the cursor positions itself below *F*.
Select your range using the thumbwheel switch [17]: 0 - 25 MHz or 25 - 100MHz, then press *Valid* [15].
"Fext Wait ...", then *"Fext No Signal"* are displayed.
When a signal is present on the *INPUT COUNTER* BNC socket [19], the frequency counter shows its frequency.
The maximum allowable voltage at this input is **± 60 V**.
The 0 - 25 MHz range is divided into 5 sub-ranges. The display is controlled automatically.

STORING A SETUP *(Store)*
Press *% Duty / Store* [13] twice. *"Store (xx)"* is displayed, and the cursor positions itself below *(xx)*.
Select a memory location between 2 and15 using the thumbwheel switch [17], then press *Valid* [15].
The setup (latest modification of all parameters) will be stored in the selected memory location.

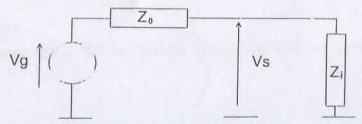
RECALLING A SETUP *(Recall)*
Press *Offset / Recall* [12] twice. *"Recall (xx)"* is displayed, and the cursor positions itself below *(xx)*.
Select the memory location to recall (1 to15) using the thumbwheel switch [17], then press *Valid* [15].
The generator will use the setup stored in the selected memory location.
Note: Memory location *(1)* is programmed at the factory and cannot be modified.
Setup: sine,1 kHz, 2 Vcc, calibrated offset and duty cycle.

PROTECTION AGAINST REVERSE POWER SURGES
The generator is protected against reverse power surges that may damage the output stages (*50Ω OUTPUT and TTL OUTPUT*).
When the current at one of outputs [21] or [22] exceeds the operating limit of the stage, the protection instantaneously disconnects these outputs.
"WARNING OUTPUTS - Press VALID key" is displayed. After the fault has disappeared, pressing *Valid* [15] reconnects outputs [21] and [22].
If the fault has not disappeared, the protection will trip immediately.
At outputs [21] and [22], the maximum allowable voltage is ±60 V peak.

[22] 50W OUTPUT (*Output 50W*)
The generator output signal is available on the female BNC socket [21].
This output can be subjected to a permanent short-circuit without damage to the unit.
The Zo internal impedance is equal to 50Ω *(Fig . 10)*.
Zo and the Zi impedance of the connected stage form an attenuator with a ratio **Zi / (Zo + Zi)**

Example: Vout measured at no load = Vg = 10 V peak to peak
with Zi = 50Ω, we have:
Vout = 10x (50 / (50 + 50) = 5 V peak to peak

Fig . 10



4000-4318_EN - 04/04

[22] TTL OUTPUT (*Output TTL*)
The TTL output signal from the generator is available on the BNC socket [21].
It is a square signal compatible with TTL logic gates. Its amplitude is fixed (5V), and its duty cycle is adjustable using the *%Duty* button [13]. Its frequency is identical to that of the output signal.
This output can be subjected to a permanent short-circuit without damage to the unit.

[23] RS-232 INTERFACE
You can control your generator via the RS-232 link (see 6-3 and table of codes).
Use a shielded NULL-MODEM cable 3 metres long maximum.

[25] MAINS SOCKET WITH FUSE-HOLDER
This socket receives the mains cable. The fuse-holder is fitted with a T200mA 5x20 fuse.

[24] O - I SWITCH
Switch depressed to O: the generator is off.
Switch depressed to I: the generator is on.

6 - INSTALLATION AND OPERATION

6-1 INSTALLATION
The generator must rest on its 2 rear rubber stops and on its 2 front feet (folded or fully unfolded).
Connect the mains cable to the socket [25] at the back of the unit.
Connect the other end of the cable to a 230V AC mains socket. Your generator is ready to operate.

6-2 OPERATION
Depress the on/off switch [24] to **I**. The display lights up.
The generator uses the last setup used before switching off.
The signal is then available on the 50Ω BNC [22] and in a logic form on [21].
A 30-minute warm-up time is necessary to reach the specifications.

PRECAUTION: Set the signal amplitude so as to remain below the maximum allowable voltage.

6-3 RS-232 INTERFACE
Your GF 265 generator has an RS-232 interface, which is simple, user-friendly and comprehensive.
All functions are accessible via the RS-232 interface.
This interface enables you to control and monitor the GF 265 from a PC, as if you were next to the unit.

6-3-1 PREPARING FOR COMMUNICATION:
- Connect the generator to the serial port of the PC using a "*null modem*" RS-232 cable (cross-over).
  Note: It is recommended to use a **shielded** cable in order to minimize the interference caused by the data conveyed between the unit and the PC. The cable length must not exceed 3 metres.

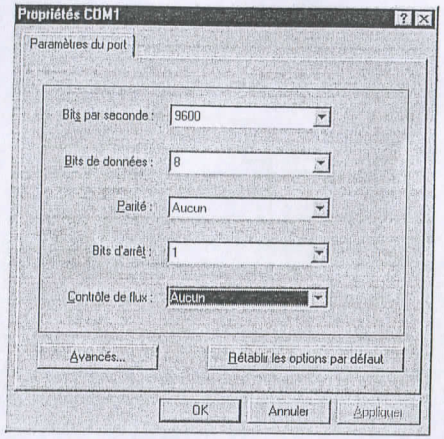


fig. 11

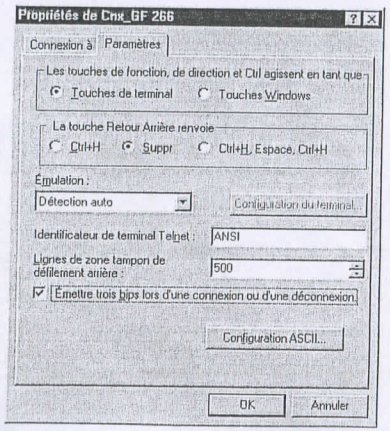


fig. 12

ENGLISH

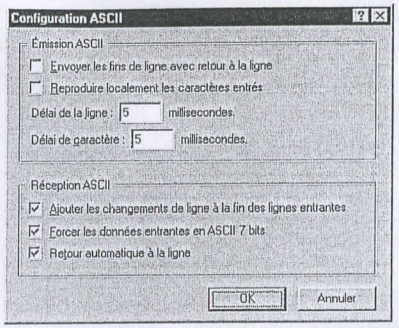


fig. 13

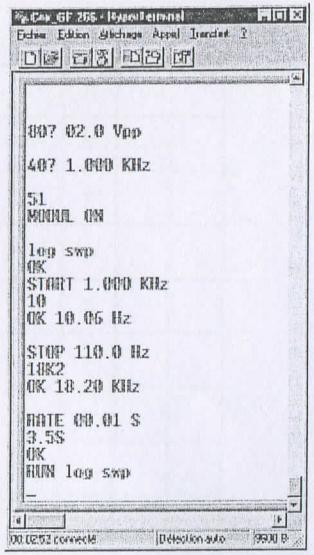


fig. 14

- Use *"Hyper Terminal®"*, a simple utility for communicating via the serial port, which is available on all PCs running *Windows 95® or 98®* or XP ®: *"Start\Programs\Accessories\Communications HyperTerminal"*.
- Set up the port as follows *(Fig. 11)*:
  Bits per Second: **9600**, *Data bits:* **8**, *Parity:* **None**, *Stop bits:* **1**, *Flow control:* **None**
- Select *File/Properties/Settings (Fig. 12)*
  Check *The backspace key returns:* Del, then click *ASCII Setup (Fig. 13)*:
  In the *ASCII Sending area*, leave the check boxes unchecked, set *5* in *Line Delay* and in *Character Delay*.
  In the *ASCII Receiving area*, check the 3 boxes, then click *OK*.
- Save your setup.

You can now communicate remotely with your GF 265 generator *(Fig. 14)*.

6-3-2 COMMUNICATION PROTOCOL

The various functions are called by entering a 2-digit number *(see table at the end of the manual)*.
The tens digit replaces a button press and determines the selected menu.
The units digit replaces a thumbwheel switch action for selecting a parameter.
To validate and send digital data or parameters, press ***"Enter"****(Return)*.
Example: To select the triangle function, type: ***"0" "2" "Enter"***.
Explanation: As indicated in the table, *"0"* selects the *Function* and *"2"* select the *Triangle* parameter.

To know the value of a parameter, use the ***"?"*** key.
Example: If you type ***"8" "0" "?"***, you will be returned the current value of "Level", for example: *2.5 Vcc*.
Note: For parameter interrogation, the unit is not significant.
Example: If you type ***"8" "2" "?"***, you will also be returned to "Level"; for example: *2.5 Vcc*

To enter the numeric data of the parameter to be modified, use the ***"space"*** key.
Example: To change the level to 3.8 V, type: ***"8" "0" "space" "3" "." "8" "Enter"***
Note: You can use either a decimal point or a decimal comma.

To navigate through the *Frequency counter, modulation, Store* and *Recall* menus, use ***"Enter"***, ***"O"*** and ***"K"*** (OK) in combination.
Example:To store the current setup in memory location 3: ***"7" "3" "Enter"***
"O" "K"

Explanation: 7 represents the *Store* menu, *3* represents the third memory location, pressing *Enter* accesses this memory location, as confirmed by the generator display, which displays *Store 3* on the lower line.
Press ***"O"*** and ***"K"*** to validate.

Other example: Measuring a frequency between 0.8 Hz and 25 MHz: ***"1" "0" "Enter"***
"O" "K"

Explanation: *"1"* selects the frequency counter, *"0"* selects the 0 -25 MHz range.
Pressing *"Enter"* changes the lower line of the display as follows: F_ext 0-25 MHz.
Pressing *"O"* and *"K"* validates the selection: Frequency counter, 0 -25 MHz range, and starts the measurement.
The measured frequency is then displayed *(Fig. 15)*.

To quit the frequency counter, simply enter another parameter, for example : ***"0" "0" "Enter"*** (return to sine function).

4000 4318_EN - 04/04

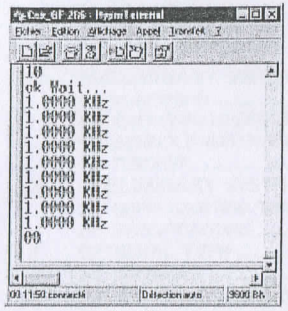


fig. 15

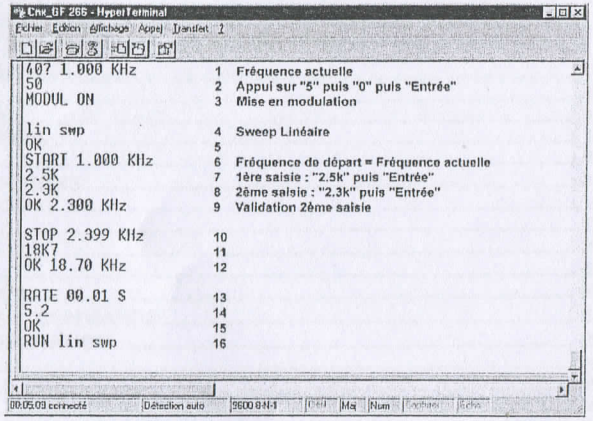


fig. 16

Note:
In all menus (Frequency counter, Modulation, Store & Recall), typing "O" and "K" validates the choice made and takes you to the next step. Therefore, as long as you have not validated with "O" and "K", you can always come back to an entered numeric value.

Example for the Modulation function *(Fig. 16)*:

Note: Only the left column is shown during RS-232 communication; the comments in the right column have been added to detail the various steps.

Explanation:
Typing ***"4" "0" "?"*** returns the generator output frequency, here 1kHz.
Typing ***"5" "0" "Enter"*** gives access to the Lin sweep menu (see table).
Typing ***"O" "K"*** (line 5) validates the selected modulation.
The first entry of ***"2" "." "5" "K"*** for the F Start frequency (line 7) is received by the unit and displayed.
At this time, it is still possible to change the entry (line 8) by setting 2.3 kHz. Typing ***"O" "K"*** (line 9) validates this choice and the unit displays *2.300 kHz* on the same line.
Then enter FStop and Rate (the same way as FStart).
The unit returns "*RUN lin sweep*" to indicate that the modulation is active.

RS-232 transmission protocol reminder:
- Data rate: 9600 bauds (bits per second)
- No parity.
- 1 stop bit.
- 7-bit ASCII alphanumeric data transmission.

RS-232 connection between GF 265 and a PC *(Fig. 17)*

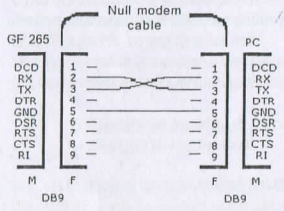
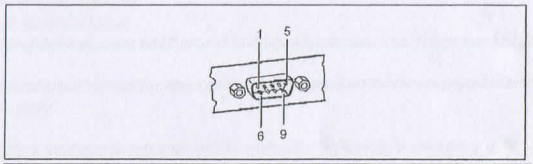


fig. 17



Pos.	Signal Name	
1	DCD (Data Carrier Detect)	
2	RxD (Receive Data)	
3	TxD (Transmit Data)	
4	DTR (Data Terminal Ready)	
5	Signal Ground	
6	DSR (Data Set Ready)	
7	RTS (to Send)	
8	CTS (Clear to Send)	
9	RI (Ring Indicator)	

4000 4318_ EN - 04/04

ACCES AUX MENUS ET PARAMETRES VIA RS 232

Dizaines			Unités															
		COMMANDE	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
0_	Function	Directe	Sinus	Square	Triangle	Ramp UP	Ramp DOWN	DC										
1_	Counter	Menu	0 à 25 MHz	25 à 100 MHz														
2_	Offset	Saisie	Saisir la valeur numérique															
3_	Recall	Menu		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
4_	Frequency	Directe + Saisie	Normal (4 digit) Saisir la valeur numérique	Etendu (10 digit) Saisir la valeur numérique														
5_	Modul	Menu + Saisie	LIN SWP	LOG SWP	int AM	ext AM	int FM	ext FM	int FSK	ext FSK	int PSK	ext PSK						
6_	Symétrie / Duty	Saisie	Saisir la valeur numérique															
7_	Store	Menu			2	3	4	5	6	7	8	8	10	11	12	13	14	15
8_	Level	Saisie	Saisir la valeur numérique															
9_	Atténuation	Directe	0 dB	- 20 dB	- 40 dB													

4000 4 318 - 04/04

TABLE OF CONTENTS

1 - PRELIMINARY INFORMATION

1-1 FOREWORD

Thank you and congratulations on your choice of the GF 265 **CENTRAD*** FUNCTION GENERATOR. **elc's** offering also includes a wide variety of other electronic devices: POWER SUPPLIES, FREQUENCY COUNTER, PANEL INDICATORS, DECADE BOXES...

*CENTRAD is a registered trademark of **elc**.

Manufacturer : **elc** 59, avenue des Romains 74000 ANNECY - FRANCE
Phone : +33 (0)4 50 57 30 46 Fax: +33 (0)4 50 57 45 19

Instrument : **FUNCTION GENERATOR**
Trademark : **CENTRAD**
Type : GF 265
Power requirements : 230V AC 50/60 Hz

1-2 SAFETY INSTRUCTIONS

Do not carry repair or maintenance work within the unit.

Operate the unit in accordance with these instructions.

As the mains plug is used as a disconnecting device, connect the unit to an easily accessible mains socket (230V 50/60Hz) with an earth contact.

When the unit is to be supplied through an autotransformer for voltage reduction, ensure that the common terminal is connected to the earthed pole of the supply.

Electrical overload: Never apply a voltage in excess of the specified limits and category II, III or IV signals to the inputs.

1-3 SYMBOLS AND DEFINITIONS

You will find the following symbols on the unit:

WARNING ! RISK OF ELECTRIC SHOCK

CHASSIS GROUND TERMINAL

CAUTION ! REFER TO THE MANUAL