

Pattern Generator—VGA

Tests TVs, VGA monitors, and other image transmission devices for proper operation.

Provides 38 timings and 34 patterns.

Operates continuously for 6–8 hours when battery is fully charged.



Customer Support Information

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This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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Normas Oficiales Mexicanas (NOM)Electrical Safety Statement

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.

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2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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1. Specifications

1.1 General

Cable Distance (Maximum): 16 ft. (5 m)

Display: LCD module: 16x2 characters

Housing: Plastic

Pixel Frequency (Maximum): 162 MHz

Resolution (Maximum): 1600 x 1200 @ 60 Hz

User Controls: (7) Select switches

Video Connectors: Video output: (1) HD15 female

Power: Adapter: 12 VDC, 1.25 amps

Size: 1.4"H x 3.8"W x 7.5"D (3.5 x 9.5 x 19 cm)

Weight: 0.85 lb. (0.39 kg)

1.2 HD15 Connector Pin Descriptions

Pin	Signal
1	Red video
2	Green video
3	Blue video
4	NC
5	Ground
6	Analog ground
7	Analog ground
8	Analog ground
9	Not connected
10	Ground
11	Not connected
12	Not connected
13	Horizontal sync
14	Vertical sync
15	Not connected

Pattern Generator—VGA

2. Overview

2.1 Introduction

The Portable VGA Pattern Generator (PG-VGA) tests TVs, VGA monitors, and other image transmission devices for proper operation. It provides 38 timings and 34 patterns, and operates continuously for 6–8 hours after the battery is fully charged. Or, you can operate it by connecting an external AC adapter.

2.2 What's Included

Your package should include the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500.

- Pattern Generator
- 12-VDC, 1.25 A power adapter
- 3.9 ft. (1.2-m) HD15 male-to-male VGA cable
- This user's manual

2.3 Hardware Description

Figure 2-1 shows the pattern generator's front panel and lists its components.

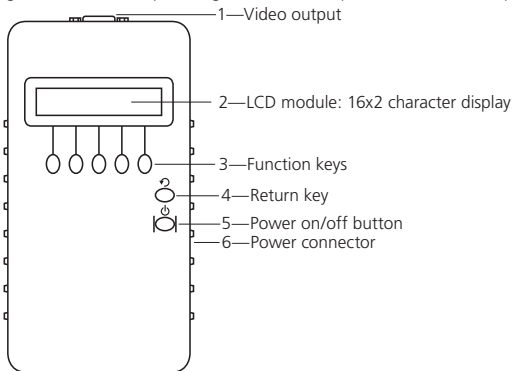


Figure 2-1. Front panel.

2.4 Features

- Operates at 162-MHz pixel frequency
- Supports 38 local timings (up to UXGA)
- Easy-to-use interface
- Portable
- Rechargeable battery provides up to 8 hours of use
- Auto power off in battery mode
- Provides 34 patterns, including color bar, gray, grid, and block
- Easy to control via 16 x 2 character LCD display

2.5 Typical Application

Figure 2-2 shows a typical installation.

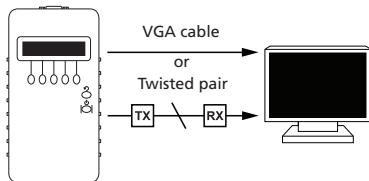


Figure 2-2. Typical PG-VGA application.

3. Installation

3.1 Read These Notes First

NOTES:

1. Before using the Pattern Generator—VGA (PG-VGA) for the first time, charge it for more than 16 continuous hours.
2. If there is no image while using the PG-VGA, make sure that:
 - a. The battery is charged. If the battery is dead or faulty, the PG-VGA will not switch on.
 - b. The resolution is bright enough. If the PG-VGA switches on but there is no image, lower the resolution or change the resolution and vertical frequency. Make sure the Sync mode is set to H/V or SOG and supports the monitor.
3. Charge the battery when the battery power indicator is low.
4. The PG-VGA will save the most recent setting automatically.

3.2 Using the Pattern Generator

Follow these steps to use the Pattern Generator:

1. Insert the external AC adapter into an AC outlet and connect the power cord to the power jack on the PG-VGA unit.
2. Switch off the video display.
3. Connect the HD15 extension cord between the PG-VGA and the video display.
4. Switch on the video display.
5. Press the PG-VGA's power key for more than three seconds to switch the unit on/off.

4. Operation

4.1 Starting Status (Power Switch On Mode)



Figure 4-1. Starting status screen.

1. To start the pattern generator, press the power on/off key for 2-3 seconds. It will sound a long beep. The part number and the firmware version will display.
2. Press a function key (found below the LCD display). The PG-VGA will sound a short beep confirming your selection.

3. The factory-preset starting value is P01 640x480 @60, where:

P01=Pattern 01

640x480=Resolution 640x480

@60=Refresh rate 60 Hz

4.2 Operating Guide

4.2.1 Menu Operation

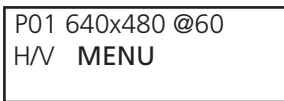


Figure 4-2. Menu.

To start operation, press the function key (located below "menu" on the LCD display) to activate the menu.

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After you press the MENU key, a screen showing the current pattern, resolution, and refresh rate appears (see Figure 4-3).

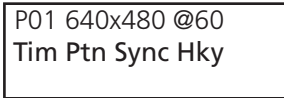


Figure 4-3. Pattern, resolution, and refresh rate screen.

Press the function key below “Tim” (see Figure 4-3) to make changes to the resolution and refresh rate. Using the ◀ and ▶ function keys, select the resolution or refresh rate. See Figure 4-4.

▲ increasing

▼ decreasing

↵ Enter

Press the ↵ key to return to the previous screen.



Figure 4-4. Timing selector.

4.2.2 Pattern Selector

Using the ▲, ▼, ◀, and ▶ keys, select the pattern. See Figure 4-5.

▲ increasing

▼ decreasing

↵ Enter



Figure 4-5. Pattern selector.

Using the ▲ and ▼ keys, select the blinking frequency. See Figure 4-6.

▲ increasing

▼ decreasing

↵ Enter

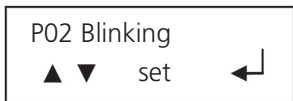


Figure 4-6. Blinking frequency.

Set: Setting black and white blinking frequency (frames/number)

Using the ▲, ▼, ◀, and ▶ keys, set the black and white blinking. See Figure 4-7.

▲ increasing

▼ decreasing

◀ or ▶ choosing black or white

↵ Enter



Figure 4-7. Black and white.

NOTE: The option you choose will blink.

BLK: Black

WHT: White

4.2.3 P02 Blinking Setup

Press the function key below “set” to make changes to the “black and white blinking frequency (frame/number).” Using the ▲ and ▼ function keys, select the blinking frequency. See Figure 4-8.

▲ increasing

▼ decreasing

← Enter

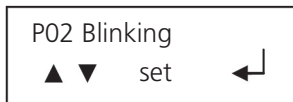


Figure 4-8. P02 blinking screen.

Using the ▲,▼, ◀, and ▶ function keys, set the black and white blinking frequency. See Figure 4-9.

▲ increasing

▼ decreasing

◀ or ▶ choosing black or white

← Enter



Figure 4-9. Choose black or white option.

NOTE: The option you choose will blink.

BLK: Black

WHT: White

4.2.4 Sync Selector

Press the function key below "Sync" (see Figure 4-3) to make changes to the sync setting.

Select the sync setting: INFO or MODE using the ◀ and ▶ function keys. See Figure 4-10.



Figure 4-10. Sync screen.

INFO: Current output timing information. See Figure 4-11.

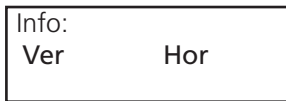


Figure 4-11. Info screen.

Ver: Vertical frequency option

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While you're in the Info screen, use the ▲ and ▼ function keys to select the vertical frequency. See Figure 4-12.

- ▲ increasing
- ▼ decreasing
- ↵ Enter

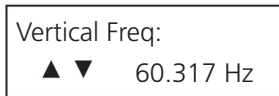


Figure 4-12. Vertical frequency screen.

Hor: Horizontal frequency option

While you're in the Info screen, use the ▲ and ▼ function keys to select the horizontal frequency. See Figure 4-13.

- ▲ increasing
- ▼ decreasing



Figure 4-13. Horizontal frequency screen.

While you're in the Sync Mode screen, select the Sync mode (H/V or SOG). See Figures 4-3 and 4-14.

H/V (TTL): Horizontal/vertical

SOG: Sync on green

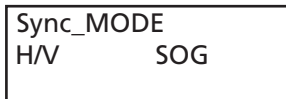



Figure 4-14. Sync mode screen.

NOTE: The option you choose will blink. Next, press the  key to return to the upper-level screen. The lower corner of the LCD will display H/V or SOG.

Example:

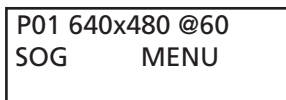


Figure 4-15. Menu screen.

4.2.5 Hotkey selector

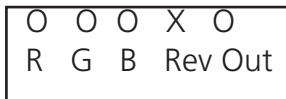


Figure 4-16. Hotkey selector.

O: Enable

X: Disable

R: Red component output

G: Green component output

B: Blue component output

Rev: Pattern reverse

Out: Video output on/off

4.3 VGA Output Signals

Table 4-1. VGA output signal specifications.

No.	Resolution	Refresh Rate (Hz)	Pixel Freq. (MHz)	Sync Polarity	
				Hor.	Ver.
1	640x350	85	31.5	P	N
2	640x400	85	31.5	N	P
3	640x480	60	25.175	N	N
4	640x480	72	31.5	N	N
5	640x480	75	31.5	N	N
6	640x480	85	36	N	N
7	720x400	85	35.5	N	P
8	800x600	56	36	P	P
9	800x600	60	40	P	P
10	800x600	72	50	P	P
11	800x600	75	49.5	P	P
12	800x600	85	56.25	P	P
13	848x480	60	33.75	P	P
14	1024x768	60	65	N	N
15	1024x768	70	75	N	N
16	1024x768	75	78.75	P	P
17	1024x768	85	94.5	P	P
18	1152x864	75	108	P	P
19	1280x768	60 RB	68.25	P	N
20	1280x768	60	79.5	N	P
21	1280x768	75	102.25	N	P
22	1280x768	85	117.5	N	P

Table 4-1 (continued). VGA output signal specifications.

No.	Resolution	Refresh Rate (Hz)	Pixel Freq. (MHz)	Sync Polarity	
				Hor.	Ver.
23	1280x960	60	108	P	P
24	1280x960	85	148.5	P	P
25	1280x1024	60	108	P	P
26	1280x1024	75	135	P	P
27	1280x1024	85	157.5	P	P
28	1360x768	60	85.5	P	P
29	1400x1050	60 RB	101	P	N
30	1400x1050	60	121.75	N	P
31	1400x1050	75	156	N	P
32	1600x1200	60	162	P	P
33	1920x1200	60 RB	154	P	P
34	1280x800	60	83.5	N	P
35	1366x768	60	80	N	N
36	1440x900	60	106.5	N	P
37	1440x1050	60	125.25	N	N
38	1680x1050	60	146.25	N	P

RB: Reduced Blanking

P: Positive

N: Negative

4.4 Pattern Chart

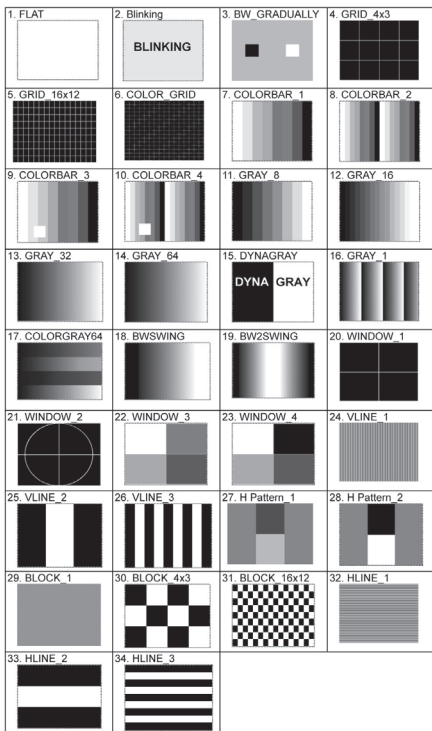


Figure 4-15. Pattern Chart.

Appendix. Troubleshooting

A.1 Calling Black Box

If you determine that your Pattern Generator is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support at 724-746-5500.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

A.2 Shipping and Packaging

If you need to transport or ship your Pattern Generator:

- Package it carefully. We recommend that you use the original container.
- If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Authorization (RA) number.

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