

**Kramer Electronics, Ltd.**



# **USER MANUAL**

**Model:**

**841**

*Pattern Generator*

## Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Getting Started</b>	<b>1</b>
<b>3</b>	<b>Overview</b>	<b>2</b>
<b>4</b>	<b>Your 841 Pattern Generator</b>	<b>3</b>
<b>5</b>	<b>Using Your 841 Pattern Generator</b>	<b>5</b>
5.1	Connecting Your 841 Pattern Generator	5
5.2	Operating Your 841 Pattern Generator	6
5.3	Interpreting Each Pattern Number Definition	7
5.4	Power Considerations	8
<b>6</b>	<b>Technical Specifications</b>	<b>8</b>

## Figures

Figure 1: 841 Pattern Generator	3
Figure 2: Connecting the 841 Pattern Generator	5

## Tables

Table 1: 841 Pattern Generator Features	4
Table 2: Selecting Output Resolutions	4
Table 3: Pattern Number Definitions	7
Table 4: 841 Technical Specifications	8

## 1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups<sup>1</sup> that are clearly defined by function.

Thank you for purchasing the Kramer TOOLS® **841** *Pattern Generator*. It is ideal for testing and adjusting flat panel LCD displays, projectors, plasma screens and cables, as well as for testing the refresh rates of LCD displays by using the motion patterns.

Each package includes the following items:

- The **841** *Pattern Generator*
- Power supply (5V DC)
- This user manual<sup>2</sup>

## 2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high-performance high-resolution cables<sup>3</sup>

---

1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2 Download up-to-date Kramer user manuals from our Web site at <http://www.kramerelectronics.com>

3 The complete list of Kramer cables is on our Web site at <http://www.kramerelectronics.com>

### 3 Overview

The **841** is a high-quality pattern generator with 31 preset patterns that supports the following output resolutions:

SVGA (800x600)	XGA (1024x768)
SXGA (1280x1024)	UXGA (1600x1200)
WXGA (1280x800)	WSXGA (1680x1050)
WUXGA (1920x1200)	WXGA+ (1440x900)
SXGA+ (1400x1050)	1920x1080
1280x720	1152x864
1280x960	1920x1200 reduced blanking

All the resolutions are 60Hz progressive.

The **841** features:

- A 15-pin HD output connector
- Seven control buttons for selecting the resolution and the pattern
- A 7-segment display that indicates the pattern number
- An on board EEPROM that saves the last setting used
- Rechargeable battery for field operation

To achieve the best performance:

- Use only good quality connection cables<sup>1</sup> to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables).
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality and position your Kramer **841** away from moisture, excessive sunlight and dust



**Caution** – No operator-serviceable parts inside unit.

**Note** – Remove the plastic protective ring from the POWER ON/OFF pushbutton switch before use.

**Warning** – Use only the Kramer Electronics input power wall adapter that is provided with this unit<sup>2</sup>.

**Warning** – Disconnect power and unplug unit from wall before installing or removing device or servicing unit.

<sup>1</sup> Available from Kramer Electronics on our Web site at <http://www.kramerelectronics.com>

<sup>2</sup> For example, part number 2535-052002

## 4 Your 841 Pattern Generator

Figure 1 and Table 1 define the **841 Pattern Generator**. Table 2 explains how to select each output resolution:

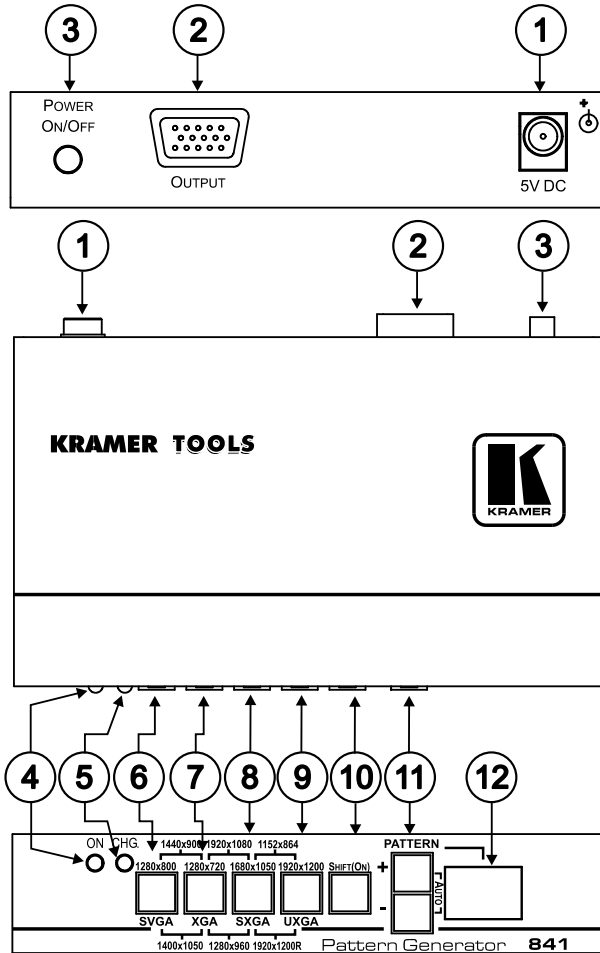


Figure 1: 841 Pattern Generator

## Your 841 Pattern Generator

*Table 1: 841 Pattern Generator Features*

#	Feature	Function
1	5V DC	+5V DC connector for powering the unit
2	OUTPUT 15-pin HD Connector	Connects to the VGA acceptor
3	POWER ON/OFF Pushbutton Switch <sup>1</sup>	Press in switch to turn the unit on, press and release to turn the unit off
4	ON LED	Illuminates green when the unit is powered on
5	CHG LED	Illuminates blue when the unit is charging, turns off when fully charged
6	SVGA Button <sup>2</sup>	Selects SVGA (800x600) when pressed Selects 1280x800 when pressed together with the <i>SHIFT (ON)</i> button Selects 1400x1050 when pressed together with the <i>XGA</i> button Selects 1440x900 when pressed together with the <i>XGA</i> button with the <i>SHIFT (ON)</i> button
7	XGA Button <sup>2</sup>	Selects XGA (1024x768) when pressed Selects 1280x720 when pressed together with the <i>SHIFT (ON)</i> button Selects 1400x1050 when pressed together with the <i>SVGA</i> button Selects 1440x900 when pressed together with the <i>SVGA</i> button with the <i>SHIFT (ON)</i> button Selects 1280x960 when pressed together with the <i>SXGA</i> button Selects 1920x1080 when pressed together with the <i>SXGA</i> button with the <i>SHIFT (ON)</i> button
8	SXGA Button <sup>2</sup>	Selects SXGA (1280x1024) when pressed Selects 1680x1050 when pressed together with the <i>SHIFT (ON)</i> button. Selects 1280x960 when pressed together with the <i>XGA</i> button Selects 1920x1080 when pressed together with the <i>XGA</i> button with the <i>SHIFT (ON)</i> button Selects 1920x1200R when pressed together with the <i>UXGA</i> button Selects 1152x864 when pressed together with the <i>UXGA</i> button with the <i>SHIFT (ON)</i> button
9	UXGA Button <sup>2</sup>	Selects UXGA (1600x1200) when pressed Selects 1920x1200 when pressed together with the <i>SHIFT (ON)</i> button Selects 1920x1200R when pressed together with the <i>SXGA</i> button Selects 1152x864 when pressed together with the <i>SXGA</i> button with the <i>SHIFT (ON)</i> button
10	<i>SHIFT (ON)</i> Button <sup>2</sup>	Illuminates when active and selects the resolutions written above the buttons
11	<i>PATTERN +</i> Button	Press to advance to the next pattern number
	<i>PATTERN -</i> Button	Press to go back to the previous pattern number
12	7-segment Display	Shows the 2-digit pattern number (from 00 to 30) and <i>LO</i> when the battery is low

*Table 2: Selecting Output Resolutions*

To select:	Press:	To select:	Press:
SVGA	<b>SVGA</b>	1400x1050	<b>SVGA</b> + <b>XGA</b>
XGA	<b>XGA</b>	1440x900	<b>SVGA</b> + <b>XGA</b> + <b>SHIFT (ON)</b>
SXGA	<b>SXGA</b>	1280x960	<b>XGA</b> + <b>SXGA</b>
UXGA	<b>UXGA</b>	1920x1080	<b>XGA</b> + <b>SXGA</b> + <b>SHIFT (ON)</b>
1280x800	<b>SVGA</b> + <b>SHIFT (ON)</b>	1920x1200R	<b>SXGA</b> + <b>UXGA</b>
1280x720	<b>XGA</b> + <b>SHIFT (ON)</b>	1152x864	<b>SXGA</b> + <b>UXGA</b> + <b>SHIFT (ON)</b>
1680x1050	<b>SXGA</b> + <b>SHIFT (ON)</b>		
1920x1200 <sup>3</sup>	<b>UXGA</b> + <b>SHIFT (ON)</b>		

1 Remove the plastic protective ring from the POWER ON/OFF pushbutton switch before use

2 Illuminates when pressed

3 Reduced blanking

## 5 Using Your 841 Pattern Generator

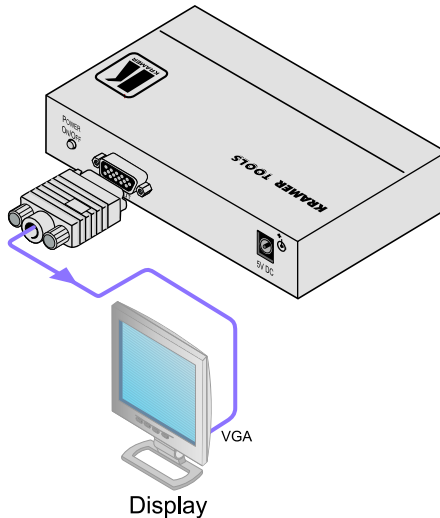
This section describes how to:

- Connect the **841 Pattern Generator** (see section 5.1)
- Operate the **841 Pattern Generator** (see section 5.2)
- Interpret each pattern number definition (see section 5.3)

### 5.1 Connecting Your 841 Pattern Generator

To connect the **841 Pattern Generator**, do the following<sup>1</sup>:

1. Connect the OUTPUT connector to a VGA acceptor, for example, a flat-panel LCD display (as *Figure 2* illustrates), or a projector or plasma screen.
2. Connect the 5V DC power adapter (wall transformer) to the 5V DC socket and connect the transformer to the mains electricity.



*Figure 2: Connecting the 841 Pattern Generator*

---

<sup>1</sup> Switch OFF the power on the VGA acceptor before connecting it to your 841. After connecting your 841, switch on its power and then switch on the power on the VGA acceptor

## 5.2 Operating Your 841 Pattern Generator

Several patterns (see *Table 3*) are programmed into the **841 Pattern Generator**, to test various aspects in the flat panel LCD display, projector, plasma screen or cable. For example, the **841** tests:

- A flat panel LCD display<sup>1</sup> by testing that all pixels illuminate with the correct amounts of light, linearity, and high frequency response (use pattern 10)
- A plasma screen, by checking the black level of the plasma monitor (use pattern 00 to generate the black screen)
- A projector, by verifying that the colors display as required, tuning the size and focus of the picture (use pattern 02)
- A cable, by checking the quality<sup>2</sup> of the colors, both separately and together using the following patterns:  
02 – 100% Color bar    04 – Red        05 – Green  
06 – Blue                07 – Yellow    08 – Cyan        09 – Magenta

To operate the **841 Pattern Generator**, do the following:

1. Select the desired resolution as explained in *Table 2*.
2. Press the appropriate *PATTERN* button (*PATTERN* + to display the next pattern or *PATTERN* – to display the previous pattern) to generate the required pattern.  
The 7-segment display shows the selected pattern number.
3. Observe the output on your flat panel LCD display, projector, or plasma screen.
4. To activate the AUTO function that cycles through all the patterns automatically, press and hold the *PATTERN* + and *PATTERN* – buttons together for about 3 seconds.

---

<sup>1</sup> That is built on a matrix of pixels, each pixel consisting of three components: R, G and B

<sup>2</sup> For example, a fuzzy red color in the picture indicates a problem with the red wire



### 5.3 Interpreting Each Pattern Number Definition

Table 3 describes each of the 31 different patterns:

Table 3: Pattern Number Definitions

PATTERN NUMBER		DEFINITION
00	Static	Black screen
01		75% saturated color bar
02		100% saturated color bar
03		Grayscale bar
04		Red screen
05		Green screen
06		Blue screen
07		Yellow screen
08		Cyan screen
09		Magenta screen
10		White screen
11		Gray screen
12		Red, green, blue ramps
13		White crosshatch on black background
14		Red crosshatch on green background
15		Red crosshatch on blue background
16		White squares
17		White dots
18		Active picture border
19	Centered round target and active picture border	
20	Motion	Moving vertical line
21		Moving horizontal line
22		Aperture moving over colored background
23		Aperture moving over color bar background
24		Moving red ramp
25		Moving green ramp
26		Moving blue ramp
27	Static	Bounce
28		100/0 Vertical Split
29		100/0 Horizontal Split
30		Chess board

## 5.4 Power Considerations

The **841** can be operated while connected to its 5V DC power supply. It also contains a rechargeable battery for use during field work without a power supply. Note the following:

- **Power/Charge Indications** – When the power switch is operated, the unit turns on and the POWER LED lights green. Whenever the unit is plugged into a 5V DC power adapter the battery charges. The CHARGE LED lights blue while the unit is charging and the CHARGE LED turns off when the battery is fully charged
- **Charge Capacity** – The **841** operates for approximately 5 hours at the highest resolution on a full charge. Lower resolutions may last longer
- **Low Charge Indication** – When the charge in the battery is about to run out, LO appears in the display. When the display begins to flash the pattern number then LO (for example, 30 – LO – 30 – LO), about 5 minutes of charge remain
- **Charging Times** – The battery charges from 0% to 80% in about 1.5 hours and 0% to 100% in about 2.7 to 3 hours. A fully discharged battery (when charged for the first time or after one month of non-use) must be charged for 3 hours
- **Emergency Charge** – A fully exhausted battery can be charged for 5 minutes to provide about 5 minutes of emergency operation

## 6 Technical Specifications

The **841** technical specifications are shown in *Table 4*:

*Table 4: 841 Technical Specifications<sup>1</sup>*

OUTPUT:	1 VGA, RGBHV on a 15-pin HD connector
OUTPUT RESOLUTIONS:	SVGA (800x600), XGA (1024x768), SXGA (1280x1024), UXGA (1600x1200), WXGA (1280x800), WSXGA (1680x1050), WUXGA (1920x1200), WXGA+ (1440x900), SXGA+ (1400x1050), 1920x1080, 1280x720, 1152x864, 1280x960, 1920x1200 (reduced blanking); all resolutions are 60Hz progressive
CONTROLS:	Control buttons: PATTERN +, PATTERN –, UXGA, SXGA, XGA, SVGA, SHIFT (ON)
LED INDICATORS:	ON – green, CHARGE – blue
POWER SOURCE:	5V DC, 1.4A (charge + VGA), 1.0A (charge only)
BATTERY CAPACITY:	2.1Ah
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 0.98" x 2.95") W, D, H
WEIGHT:	0.3kg (0.66lbs)
ACCESSORIES:	Power supply, mounting bracket

<sup>1</sup> Specifications are subject to change without notice

---

## LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

### HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

### WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

### WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site [www.kramerelectronics.com](http://www.kramerelectronics.com).
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
  - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
  - ii) Product modification, or failure to follow instructions supplied with the product
  - iii) Repair or attempted repair by anyone not authorized by Kramer
  - iv) Any shipment of the product (claims must be presented to the carrier)
  - v) Removal or installation of the product
  - vi) Any other cause, which does not relate to a product defect
  - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

### WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

### HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on your product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

### LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

### EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

**NOTE:** All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

- EN-50081: "Electromagnetic compatibility (EMC);  
generic emission standard.  
Part 1: Residential, commercial and light industry"
- EN-50082: "Electromagnetic compatibility (EMC) generic immunity standard.  
Part 1: Residential, commercial and light industry environment".
- CFR-47: FCC\* Rules and Regulations:  
Part 15: "Radio frequency devices  
Subpart B Unintentional radiators"

### CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.  
\* FCC and CE approved using STP cable (for twisted pair products)



---

**For the latest information on our products and a list of Kramer distributors, visit our Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com) where updates to this user manual may be found.  
We welcome your questions, comments and feedback.**



**Caution**

**Safety Warning:**

Disconnect the unit from the power supply before opening/servicing.



---

**Kramer Electronics, Ltd.**

Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com)

E-mail: [info@kramereel.com](mailto:info@kramereel.com)

P/N: 2900-000416 REV 2