

# QUICK START GUIDE AND USER MANUAL

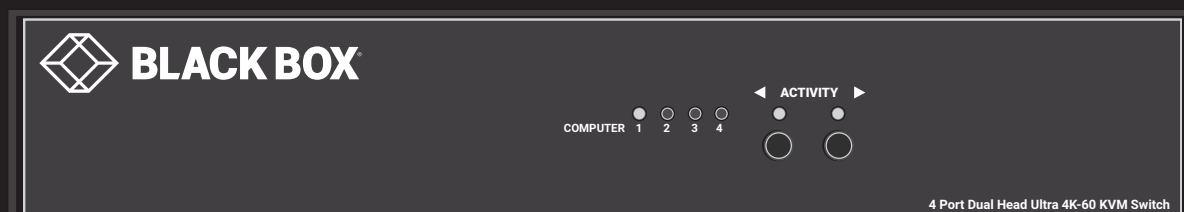
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HD6224A

# 4K60 HDMI DUAL-HEAD KVM SWITCH

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24/7 TECHNICAL SUPPORT AT 1.877.877.2269 OR VISIT [BLACKBOX.COM](http://BLACKBOX.COM)



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## HARDWARE INSTALLATION

1. Ensure that power is disconnected from the 4K60 HDMI Dual-Head KVM Switch.
2. Connect the HDMI cables and USB cables (male-A to male-B) from the computers to the respective ports on the KVM Switch.
3. Optionally connect audio cables from the computers to the respective ports on the KVM Switch.
4. Optionally connect RS-232 for control functions.
5. Connect the USB keyboard and mouse to the two USB ports with keyboard and mouse symbols.
6. Optionally connect speakers to the KVM Switch.
7. Optionally connect up to 2 USB peripheral devices such as printers or flash drives.
8. Connect the display monitors to the OUTPUT connectors on the KVM Switch.
9. Power on the KVM Switch.

## FRONT-PANEL CONTROL

To switch ports using the front panel, press the Activity buttons to navigate between connected computers. EDID learning is also done through the front-panel buttons by pressing both buttons simultaneously.

## COMMANDS

TABLE QS-1. COMMANDS

COMMANDS	HOTKEYS	RS-232 CONTROL
Switch all devices (KVM, USB 2.0, and Audio)	[CTRL] [CTRL] m [port #] [ENTER]	//m [port #] [ENTER]
Switch KVM only	[CTRL] [CTRL] c [port #] [ENTER]	//c [port #] [ENTER]
Switch Audio only	[CTRL] [CTRL] a [port #] [ENTER]	//a [port #] [ENTER]
Switch USB 2.0 only	[CTRL] [CTRL] u [port #] [ENTER]	//u [port #] [ENTER]
EDID Learning	[CTRL] [CTRL] e [ENTER]	//e [ENTER]
Same as front panel Activity button	[CTRL] [CTRL] [up-arrow]	n/a
Same as front panel Activity button	[CTRL] [CTRL] [down-arrow]	n/a
Reset	[CTRL] [CTRL] r	//r
Factory Default Reset	[CTRL] [CTRL] f	//f

# CHAPTER 1: SPECIFICATIONS

**TABLE 1-1. SPECIFICATIONS**

<b>Video</b>	
Link Rate	5.4 Gbps/lane
Input Interface	(8) HDMI 2.0 female
Output Interface	(2) HDMI 2.0 female
Resolution	480i to 4K x 2K @ 60 Hz (YUV420)
Input Equalization	Automatic
Video Bandwidth	300 MHz, 10.2 Gbps
HDCP Compliant	Yes
Input/Output Max. Cable Length	20 ft. (6.2 m) (depending on cable quality)
<b>Audio</b>	
Input Interface	(4) 3.5-mm stereo audio jack
Output Interface	(1) 3.5-mm stereo audio jack
Frequency Response	20 Hz to 20 KHz
Common Mode	Rejection @ 60 dB
Nominal Level	0.0 to 1.0 V
<b>Control</b>	
Front Panel	(4) Computer LEDs, (2) Activity buttons and LEDs
RS-232	DB9 female, 115200 bps, N, 8 1, No flow control
Hotkeys	Via keyboard
Emulation	Keyboard, Video and Mouse
<b>USB</b>	
Signal Type	USB 2.0, 1.1, and 1.0 w/ internal hub
Input Interface	(4) USB Type B (female)
Device Input Interface	(2) USB 1.1 Type A (female) for keyboard-mouse; (2) USB 2.0 Type A Transparent
<b>Other</b>	
Operating Temperature	23 to 95° F (-5 to +35° C)
Storage Temperature	-4 to +185° F (-20 to +85° C)
Humidity	5 to 90%, noncondensing
Power	External 100-240 VAC/5 VDC, 4 A
Dimensions	2.875" H x 5.75" D x 12.75" W (7.3 x 14.6 x 32.4 cm)
Weight	4.1 lb. (1.9 kg)
Approvals	UL, CE, ROHS Compliant



## CHAPTER 2: OVERVIEW

### 2.1 INTRODUCTION

The 4K60 HDMI Dual-Head KVM Switch - 4-Port is a dedicated multi-platform KVM switch capable of managing four dual-head 4K computers through a single KVM. Built with ultra-HD ready HDMI outputs, the KVM Switch offers full 4K emulation at 60 Hz directly from the device. Until now, HDMI switches lost emulated picture when disconnected from monitors, leading to confusion and disorganization upon reconnecting. With the 4K60 HDMI Dual-Head KVM Switch, full EDID-assisted HDMI video emulation ensures visual workspaces and screen resolutions are remembered.

The KVM Switch is HDCP compliant, supporting screen resolutions up to 4K Ultra-HD (3840 x 2160 @ 60 Hz) with responsive EDID emulation. Additionally, the KVM Switch is compatible with any USB peripheral.

The KVM Switch is also easy to control with both a simple front-panel interface, as well as RS-232 or hot-keys.

- ◆ Source switching made easy: The KVM Switch offers simplified management between four dual-head HDMI equipped computers' USB 2.0 outputs. Keyboards, mice, and other connected USB devices can be switched between with ease. This dynamic KVM switch can be controlled via hot keys or RS-232 commands, as well as directly through the console's easy-to-read front panel.
- ◆ EDID passthrough and recognition: The KVM Switch features EDID passthrough technology and source recognition, which enable smooth and efficient switching in virtually any scenario. This plug-and-play EDID functionality makes set up hassle-free and simple.
- ◆ Full USB keyboard and mouse emulation: The USB keyboard and mouse emulation used by the KVM Switch provides quick source switching via keyboard hotkeys. The KVM Switch simulates the presence of a keyboard and mouse for every attached computer. This essential function simulates keyboard and mouse control for all connected computers, so switching between each is kept seamless and completely uninterrupted.

### 2.2 FEATURES

- ◆ Supports up to Ultra-HD 4K (3840 x 2160) @ 30/50/60 Hz
- ◆ Supports 3D
- ◆ Supports LPCM, Dolby-AC3, DTS7.1, and DSD/Dolby TrueHD/DTS-HD master audio
- ◆ Supports HDMI 1.3, 1.4, and 2.0
- ◆ HDMI and HDCP compliant
- ◆ Control up to four dual-head computers with a single KVM
- ◆ Full EDID HDMI video emulation
- ◆ Zero pixel loss with TMDS signal correction
- ◆ Supports USB keyboard-mouse emulation
- ◆ Supports all USB 2.0 devices
- ◆ Uses hotkey commands for quick channel selection
- ◆ Independent (asynchronous) switching of KVM and peripheral USB ports. Users can scan a document and save in another computer
- ◆ Complete KVM emulation for error-free booting
- ◆ Easy switching via front-panel, RS-232 or hotkeys
- ◆ Full HDMI support, backwards compatibility

## 2.3 WHAT'S INCLUDED

Before you install this switch, verify that your package contains the following items:

- (1) 4K60 HDMI Dual-Head KVM Switch - 4-Port
- (1) 5-VDC, 4-A power adapter

If anything is missing or damaged, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com).

## 2.4 HARDWARE DESCRIPTION

### 2.4.1 FRONT PANEL

Figure 2-1 shows the front panel of the HD6224A. Table 2-1 describes its components.

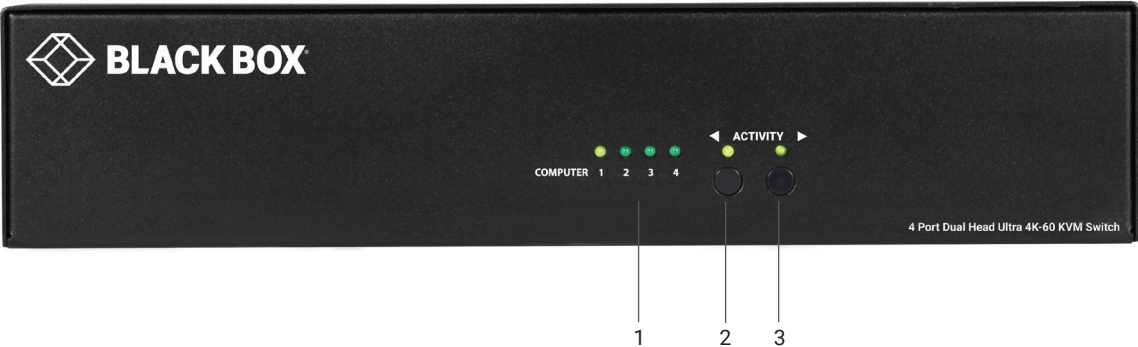


FIGURE 2-1. FRONT PANEL OF THE HD6224A

TABLE 2-1. HD6224A FRONT-PANEL COMPONENTS

NUMBER IN FIGURE 2-1	COMPONENT	DESCRIPTION
1	(4) Computer LEDs	Computer 1, 2, 3, 4
2	(1) Activity button and LED	Press the button to navigate between connected computers. LED lights when button is active
3	(1) Activity button and LED	Press the button to navigate between connected computers. LED lights when button is active

## 2.4.2 BACK PANEL

Figure 2-2 shows the back panel of the HD6224A. Table 2-2 describes its components.



FIGURE 2-2. BACK PANEL OF THE HD6224A

TABLE 2-2. HD6224A BACK-PANEL COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) DB9 female connector	Used for RS-232 control
2	(1) barrel connector	Links to 5-V power supply
3	(4) USB Type B connectors	Connects to computer input interfaces
4	(4) Audio IN connectors	Connectors to input audio
5	(4) USB Type A connectors	Connects to device output interfaces
6	(1) Audio OUT connector	Connects to output audio
7	(2) HDMI 2.0 female connectors	Links to Output A and Output B
8	(8) HDMI 2.0 female connectors	Links to Inputs 1A, 2A, 3A, 4A, 1B, 2B, 3B, and 4B

## CHAPTER 3: HARDWARE INSTALLATION

1. Ensure that power is disconnected from the KVM Switch.
2. Connect the HDMI cables and USB cables (male-A to male-B) from the computers to the respective ports on the KVM Switch.
3. Optionally connect audio cables from the computers to the respective ports on the KVM Switch.
4. Optionally connect RS-232 for control functions.
5. Connect the USB keyboard and mouse to the two USB ports with keyboard and mouse symbols.
6. Optionally connect speakers to the KVM Switch.
7. Optionally connect up to two USB peripheral devices such as printers or flash drives.
8. Connect the display monitors to the OUTPUT connectors on the KVM Switch.
9. Power on the KVM Switch.

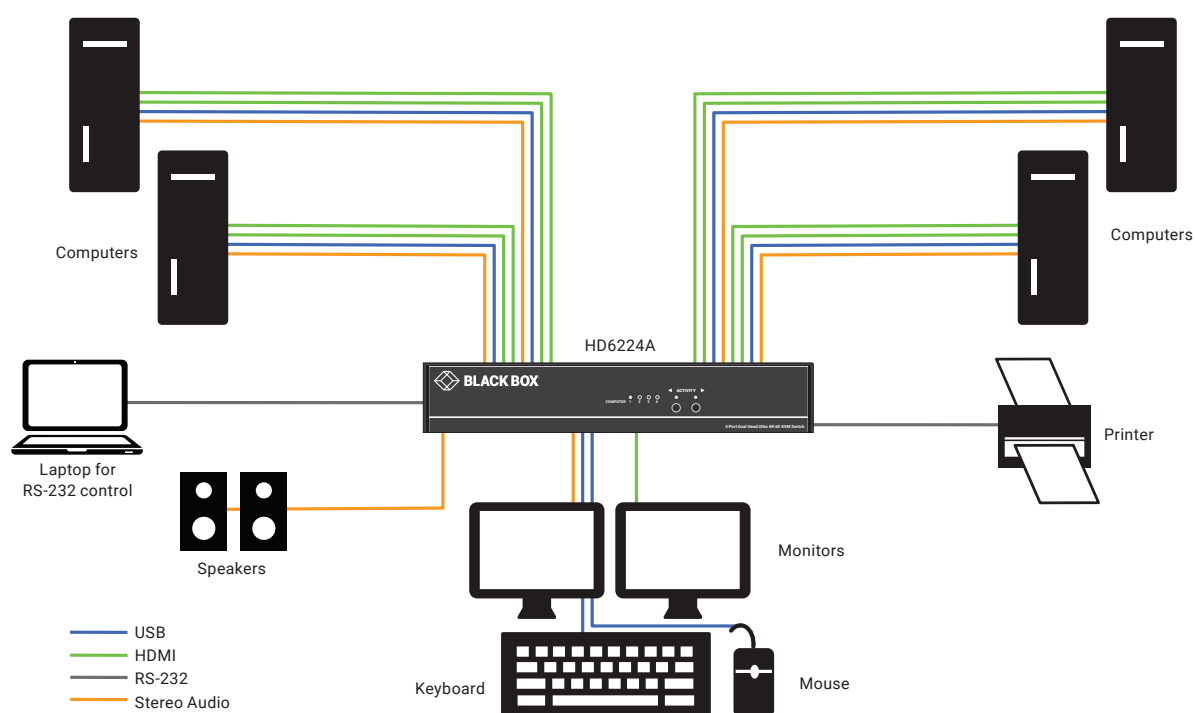


FIGURE 3-1. TYPICAL INSTALLATION



## CHAPTER 4: FRONT-PANEL CONTROL

To switch ports using the front panel, press the Activity buttons to navigate between connected computers. EDID learning is also done through the front panel buttons by pressing both buttons simultaneously.

## CHAPTER 5: HOTKEY COMMANDS

A hotkey command is a keyboard sequence used to trigger an action on the KVM Switch through the use of the keyboard connected on the USB port of the KVM Switch. To activate the hotkey sequence, press the CTRL key twice and then enter the desired hotkey commands. See Table 5-1.

**TABLE 5-1. COMMANDS**

COMMANDS	HOTKEYS	RS-232 CONTROL
Switch all devices (KVM, USB 2.0, and Audio)	[CTRL] [CTRL] [port #] [ENTER]	//m [port #] [ENTER]
Switch KVM only	[CTRL] [CTRL] c [port #] [ENTER]	//c [port #] [ENTER]
Switch Audio only	[CTRL] [CTRL] a [port #] [ENTER]	//a [port #] [ENTER]
Switch USB 2.0 only	[CTRL] [CTRL] u [port #] [ENTER]	//u [port #] [ENTER]
EDID Learning	[CTRL] [CTRL] e [ENTER]	//e [ENTER]
Same as front panel Activity button	[CTRL] [CTRL] [up-arrow]	n/a
Same as front panel Activity button	[CTRL] [CTRL] [down-arrow]	n/a
Reset	[CTRL] [CTRL] r	//r
Factory Default Reset	[CTRL] [CTRL] f	//f



## CHAPTER 6: RS-232 CONTROL

Controlling the KVM Switch via RS-232 requires an RS-232 card installed on your computer or a USB to RS-232 adapter.

Check the KVM Switch and your computer to determine if you need a male-to-male or a male-to-female cable and how long it needs to be. The KVM Switch requires a straight-through cable. You can use a null-modem adapter to convert a crossed cable to a straight-through cable. An example of a straight through cable pinout is shown in Figure 6-1. The standard maximum length for an RS-232 cable is 50 feet (15.2 meters). Contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com) if you require more information.

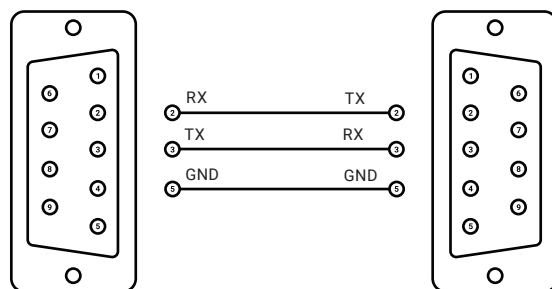


FIGURE 6-1. RS-232 DB9-TO-DB9 STRAIGHT-THROUGH CABLE

You will need to identify the COM port number used. On a Windows PC:

1. Click on the start button.
2. Click on Control Panel.
3. Click on Device Manager.
4. Click on the arrow next to Ports (COM & LPT).

You should see the COM port number in use.

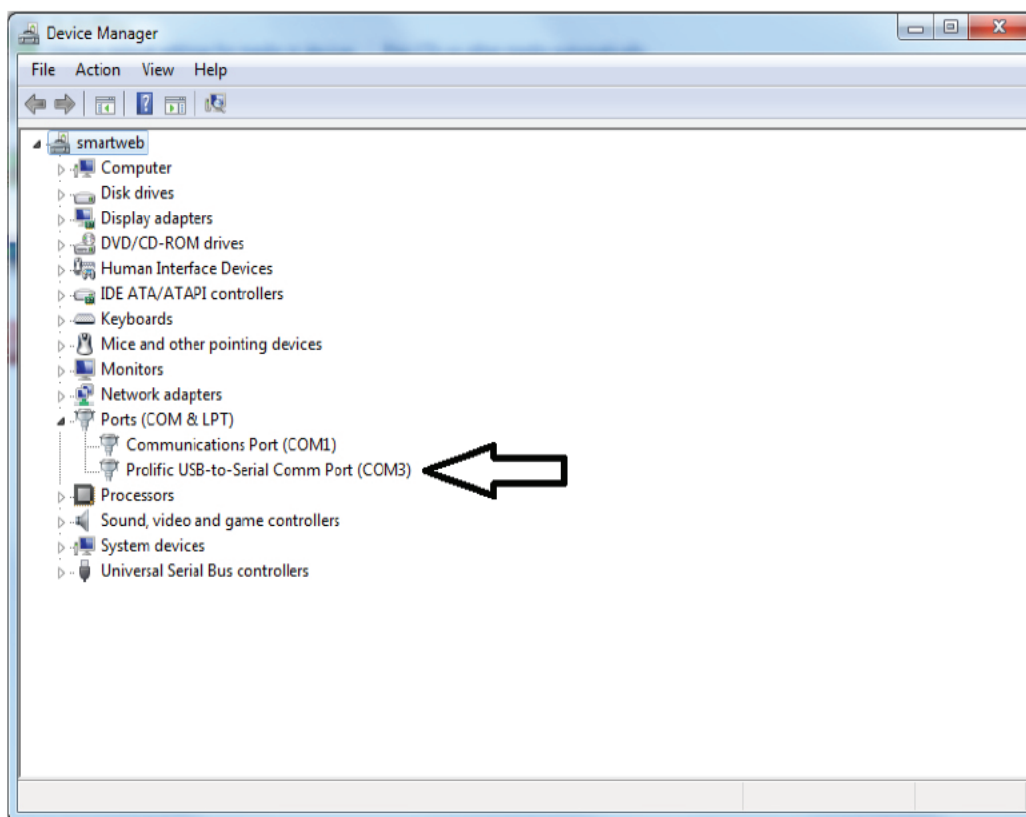


FIGURE 6-2. COM PORT NUMBER

Run the terminal client of your choice such as HyperTerminal or PuTTY. Select the correct COM port on the computer. Use the following connection settings: 115200, N, 8, 1, no flow control.

Cycling power on your unit will display a boot up message in your terminal software if the connection is correct.

**NOTE:** Your terminal software may not default to or display all of the settings above. If you attempt to connect and the settings above are not set correctly, after you set them correctly you may need to cycle power on your unit for communication to be established.

See Table 5-1 for a list of RS-232 commands.

## APPENDIX A: REGULATORY INFORMATION

### A.1 FCC CLASS A STATEMENT

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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

## APPENDIX A: REGULATORY INFORMATION

### A.2 NOM STATEMENT

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



## **APPENDIX B: DISCLAIMER/TRADEMARKS**

### **B.1 DISCLAIMER**

Black Box Corporation shall not be liable for damages of any kind, including, but not limited to, punitive, consequential or cost of cover damages, resulting from any errors in the product information or specifications set forth in this document and Black Box Corporation may revise this document at any time without notice.

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